

September 10, 2015

By electronic mail

William E. Watson, Chair  
Kingston Board of Health

Bradford Cleaves  
Kingston Wind Independence, LLC

Dear Chairman Watson and Mr. Cleaves,

I am pleased to transmit to you the final Kingston Wind Independence Turbine Acoustical Monitoring Study. The Study was conducted in response to requests from Kingston Wind Independence LLC (KWI) and the Kingston Board of Health to the Massachusetts Clean Energy Center (MassCEC) and the Massachusetts Department of Environmental Protection (MassDEP). The Study was conducted by Harris Miller Miller and Hanson Inc. (HMMH) under contract to MassCEC.

The Study includes a broad range of acoustical data and analysis, including:

- measured sound level data for turbine-on compared to turbine-off collected according to MassDEP's noise policy methodology as applied to wind turbines, and collected using other metrics and methodologies;
- predicted sound level data for turbine-on compared to turbine-off for a range of wind speeds and directions, and times of day; and
- data and analysis specific to low frequency sound and amplitude modulation of sound (i.e. the change in sound levels over relatively short periods of time).

Please note that due to the size of the document the attached version includes only the main body of the Study. The full Study is available on MassCEC's web site at <http://www.masscec.com/content/wind-energy-research-and-analysis> and MassDEP's web site at <http://www.mass.gov/eea/agencies/massdep/climate-energy/energy/wind-turbines/>.

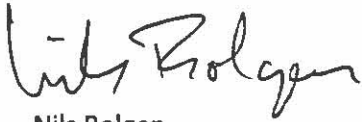
Also attached is a letter from Douglas Fine, Assistant Commissioner at MassDEP, describing MassDEP's role in the Study and presenting a summary of the Study findings with respect to MassDEP's noise policy.

You will recall that the prior version of the Study, dated April 15, 2015, was marked "draft for public comment." As we did with the initial scoping of the Study, MassCEC sponsored a process for the public and other interested parties to submit comments on the draft report. That process is complete. The Consensus Building Institute has prepared a summary of comments received. This is posted on MassCEC's web site at the same link as above. The comment process did not lead to changes in HMMH's findings as presented in the April 2015 version of the Study. The process did identify a number of areas where the Study methodology could be presented more clearly. Attached to this letter is a list of specific sections of the Study that were edited or re-written.

William E. Watson, Chairman, Kingston Board of Health  
Bradford Cleaves, Kingston Wind Independence LLC  
September 10, 2015  
Page 2

MassCEC, MassDEP and HMMH will be available for a follow-up discussion of the report results with the Board of Health. I look forward to being in contact with you to arrange that meeting. Meanwhile, please contact me at 617-315-9311 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Nils Bolgen". The signature is fluid and cursive, with the first name "Nils" and last name "Bolgen" clearly distinguishable.

Nils Bolgen  
Program Director

**Attachments:**

List of edits to April 16, 2015 version of the Kingston Wind Independence Acoustic Monitoring Study  
Kingston Wind Independence Acoustical Monitoring Study (abridged), August 19, 2015  
MassDEP letter, September 10, 2015

**cc:**

Thomas Bott, Kingston Planning Director  
Kially Ruiz, KWI  
Duncan Peterson, KWI  
Christopher Menge, HMMH  
Eric Cox, HMMH  
Douglas Fine, MassDEP

### KWI Acoustic Monitoring: Summary of Edits to April 16 Draft Report

Section	Location	Edits
Executive Summary	Tables on pages iii and iv	The tables now includes wind turbine power levels.
Table of Contents	Pages v – viii	Sections and tables with edits are shown in red.
2.2 Sound Power Levels	Page 3	New paragraph 3 regarding MassDEP's requirement for direct measurement of turbine sound levels.
2.3 Supervisory Control and Data Acquisition (SCADA)	Page 3	Re-written to better explain how wind and power generation data from the SCADA was used, and the procedure for correcting nacelle wind speed to better correlate with turbine power output.
2.4 Live Deck Monitoring Website	Page 4, paragraph 2	New paragraph added to explain that data from this site is not intended for use in the analysis.
4.2 Monitoring Conditions	Page 10, paragraph 1	New paragraph describing prevailing wind speeds and directions.
4.3 Instrumentation	Page 12, paragraphs 3 and 4	Edits related to wind shear and the use of maximum sound levels in each 1-second monitoring interval.
4.6 Monitoring Schedule and Summary	Page 14	Date corrected to be January 21, 2014.
5.1 Data Analysis Methodology	Page 16, paragraph 2	Edits related to use of maximum sound levels in each 1-second monitoring interval.
5.2 Analysis of Wind Data	Page 18, paragraph 1	Edits related to the procedure for correcting nacelle wind speed to better correlate with turbine power output.
6.0 Monitoring Results for A-weighted Sound Levels 6.1 13 Schofield Road 6.2 3 Leland Road 6.3 11 Leland Road 6.4 38 Prospect Street 6.5 Kingston Intermediate School	Page 19, paragraph 2 Page 26, paragraph 2 Page 32, paragraph 2 Page 38, paragraph 2 Page 44, paragraph 2	New sentence related to wind shear added at the end of the paragraph in each section.
7.0 Monitoring Results for Low Frequency Sound and Infrasound	Page 46, paragraph 4	Clarifying edit related to use of slow-response data for low frequency sound.
7.2 Octave Band Sound Level Increase Assessment	Page 48, last paragraph	Clarifying edits.
10.4 Estimated KWI Turbine Sound Levels	Page 94, paragraph 3	Clarifying edits and footnote added related to directionality of wind turbine sound.
10.5 Sound Level Increase Predictions	Page 94, paragraph 1	New text added regarding diurnal trends in ambient L90 sound levels.
11 Conclusions	Page 122, Tables 50, 51 and 52	The tables now include wind turbine power levels.



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker  
Governor

Karyn E. Polito  
Lieutenant Governor

Matthew A. Beaton  
Secretary

Martin Suuberg  
Commissioner

September 10, 2015

Kingston Board of Health  
Attention: Mr. Bill Watson, Chair  
Kingston Town House  
26 Evergreen Street  
Kingston, MA 02364

RE: MassDEP Review of Kingston Wind Independence (KWI) Turbine Acoustical Monitoring Study  
Final Technical Report, August 19, 2015

Dear Chairman Watson,

As part of MassDEP's ongoing technical support to the Town, this letter summarizes the agency's review of the Kingston Wind Independence (KWI) Turbine Acoustical Monitoring Study Final Technical Report dated August 19, 2015. The study was conducted in response to requests from KWI and the Kingston Board of Health to the Massachusetts Clean Energy Center (MassCEC) and Massachusetts Department of Environmental Protection (MassDEP). This report provides additional data beyond what was contained in the interim report dated June 13, 2014. The acoustical study was performed by the consulting firm of Harris, Miller, Miller and Hanson Inc. (HMMH) under contract to MassCEC. Note that a copy of this report can be found on MassDEP's website at: <http://www.mass.gov/eea/agencies/massdep/climate-energy/energy/wind-turbines/>

This report provides sampling data and analysis in accordance with the scope of study developed for this project. As you will recall, because HMMH was unable to successfully capture sampled data for all wind conditions at all sites despite weeks of efforts to capture those conditions, MassCEC and MassDEP agreed to ask HMMH to mathematically extrapolate results from those sites with no measured data.

MassDEP has reviewed the enclosed report with a focus on data and analyses related to compliance with the Commonwealth's noise regulations and policy. The findings in the final technical report related to the Commonwealth's noise regulations and policy are unchanged from the findings in the public comment draft, which was issued on April 16, 2015. Agency review focused on findings regarding exceedences of 10 dBA above background, and whether a pure tone condition exists. In doing so, MassDEP evaluated only the A-weighted broadband sound data collected on the slow meter setting, which was performed in accordance with the agency's current acoustic monitoring protocols and in accordance with the approved scope. This letter does not cover all of the information contained in the report, but in this letter we highlight the major conclusions related to the MassDEP noise regulations and policy.

This information is available in alternate format. Call Michelle Waters-Ekanem, Diversity Director, at 617-292-5751. TTY# MassRelay Service 1-800-439-2370  
MassDEP Website: [www.mass.gov/dep](http://www.mass.gov/dep)

Printed on Recycled Paper



Turbine impact sound data collected in February, March and April 2014, combined with ambient data collected in September 2014, indicates that exceedences of 10 dBA have been measured, and are likely to occur at one or more sampling location to the East of Route 3 in the following conditions:

- Year-round between 12:00 a.m. and 4:00 a.m. at winds of 7 m/s or more from the South to Southwest, and
- Year-round between 11:30 p.m. and 4:30 a.m. at winds of 9 m/s or more from the South to Southwest.

Turbine impact sound data collected in February, March and April 2014, indicates that no occurrences of pure-tone exist.

The report also *predicts, based on mathematical extrapolation*, additional exceedences of 10 dBA at locations East of Route 3 and also in the Copper Beech neighborhood (West of Route 3) under certain wind and seasonal conditions based on interpolation and extrapolation of monitoring data. The predicted exceedences are:

- East of Route 3, year-round, between 12:00 a.m. and 4:00 a.m. at winds of 4 m/s and above, regardless of wind direction;
- East of Route 3, year-round, between 11:00 p.m. and 12:00 a.m. at winds above 9 m/s, regardless of wind direction; and
- West of Route 3 (Copper Beech), in the winter only, between 12:00 a.m. and 4:00 a.m., at winds around 9 m/s, regardless of wind direction.

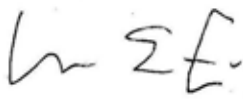
The Department has high confidence about the measured exceedences included in the full technical report and relies on measured data in definitively determining whether a condition of exceedence exists. The predicted exceedences are based on mathematical extrapolation of actual measured data to additional sites or seasonal conditions and on reference to data from other wind turbine research to provide as much data as possible in the absence of sampled data.

There is additional data and analysis included in the full technical report which goes beyond MassDEP's protocol for determining compliance. This additional data includes sound levels using various filters, speciated sound by octave band (low-frequency sound and infrasound), data on amplitude modulation, and sampling conducted on the fast meter setting. This information was included in the project scope as a result of MassCEC's stakeholder engagement process. MassDEP has not reviewed nor validated this additional information because it does not pertain to the agency's current guidelines and protocols for determining compliance.

MassDEP continues to be available to discuss this report and the options for moving forward to address the measured exceedences identified. We look forward to meeting with the Board after you have reviewed the contents in order to answer any questions you may have about our assessment of the findings.

To follow up on next steps, and should you have any questions regarding MassDEP's assessment of the full report, please feel free to contact me at 617-292-5792.

Sincerely,



Douglas E. Fine  
Assistant Commissioner

Cc:

Tom Bott, Planning Director, Kingston

Bradford Cleaves, Kingston Wind Independence

Kially Ruiz, Kingston Wind Independence

Duncan Peterson, Kingston Wind Independence

Millie Garcia-Serrano, Acting Regional Director, Southeast Regional Office, MassDEP

Nancy Seidman, Assistant Commissioner, Bureau of Waste Prevention, MassDEP

Nils Bolgen, Massachusetts Clean Energy Center (MassCEC)

Christopher Menge, Harris Miller Miller & Hanson (HMMH)

Eric Cox, Harris Miller Miller & Hanson (HMMH)

# **Kingston Wind Independence Turbine Acoustical Monitoring Study Final Technical Report**

HMMH Report No. 305270.001  
August 19, 2015

Prepared for:

**Massachusetts Clean Energy Center**  
63 Franklin Street, 3rd Floor  
Boston, MA 02110

Prepared by:

J. Eric Cox  
Christopher W. Menge



**HARRIS MILLER MILLER & HANSON INC.**

**Harris Miller Miller & Hanson Inc.**  
77 South Bedford Street  
Burlington, MA 01803  
T 781.229.0707  
F 781.229.7939

## Executive Summary

Harris Miller Miller & Hanson Inc. (HMMH) conducted an acoustical monitoring study of the Kingston Wind Independence (KWI) wind turbine in cooperation with the Massachusetts Department of Environmental Protection (MassDEP), the Massachusetts Clean Energy Center (MassCEC), the Town of Kingston Board of Health, and the KWI operator. The acoustical monitoring study was commissioned in response to a request from the Kingston Board of Health and the KWI operator to MassCEC and MassDEP stemming from concerns and complaints voiced by local residents regarding noise from KWI.

This technical report includes and expands upon the acoustical monitoring results presented in the June 13, 2014 “Interim Report for Kingston Wind Independence Turbine Acoustical Study”. The report incorporates the results of data analysis conducted subsequent to publication of the interim study report, and includes measurements and predictions of additional exceedances of MassDEP noise policy on Schofield Road, Leland Road, and Copper Beech Drive.

The findings presented in this technical report are based upon two separate acoustical monitoring campaigns – attended monitoring of turbine on and turbine off sound levels at the quietest times of night between December 2013 and April 2014, and continuous unattended monitoring of background ambient sound levels with the KWI turbine off for a five day period in September 2014.

The **initial acoustical monitoring** was conducted between December 2013 and April 2014. The design of the study was to conduct measurements at some of the closest community locations with the KWI turbine shut down and also with the wind turbine in operation under worst-case conditions, which were during the quietest nighttime periods in the winter season and with downwind conditions. The monitoring data was then analyzed to determine baseline ambient sound levels and the relative increase in A-weighted sound levels due to nighttime operation of the KWI wind turbine, particularly in the context of MassDEP noise policy. Broadband sound level increases were likewise investigated for other sound level weightings (C, G, and Z) that include larger contributions from low frequency audible sound as well as from sound below the lower limit of human audibility (approximately 20 Hz) known as infrasound. A sound level modulation depth analysis was also conducted.

The monitoring conducted on Schofield Road during contiguous periods with the KWI turbine shut down (“ambient” condition) and then operating revealed increases of slow-response A-weighted average maximum (Avg  $L_{\max}$ ) sound levels<sup>1</sup> during turbine operation over nighttime ambient  $L_{90}$  sound levels (the sound level exceeded 90% of the time) of up to approximately 15 dBA. The broadband sound level increases measured at this location were also very comparable using other sound level weightings (C, G, and Z) that include a greater contribution from the lowest frequencies of sound. Likewise, octave band sound level increases were found to be similar across most frequencies of sound.

Acoustical monitoring conducted at additional sites to the east of Route 3 and farther from the turbine showed increases of turbine-operating Avg  $L_{\max}$  over ambient  $L_{90}$  of up to approximately 9 to 10 dBA on Leland Road and up to about 8 dBA along Prospect Street. Sound level increases at these distances from the KWI turbine were generally somewhat greater in the lower frequency octave bands, indicating that higher frequency sound generated by the turbine attenuates at a greater rate with distance. For this reason, the A-weighted sound level increases measured in these locations were typically several decibels lower than the increases observed on Schofield Road during comparable periods, while broadband sound level

---

<sup>1</sup> For utility-scale wind turbines, MassDEP establishes compliance with its noise policy by comparing “slow-response A-weighted average maximum (Avg  $L_{\max}$ ) sound levels” to “ $L_{90}$  ambient background sound levels.”

increases calculated using other sound level weightings were somewhat higher and closer to the Schofield Road monitoring results.

Overall, increases of turbine-operating Avg  $L_{\max}$  over ambient  $L_{90}$  exceeding 10 dBA were identified in the Schofield Road, Leland Road, and Prospect Street community for nighttime operation of the KWI turbine during downwind conditions with wind speeds above 7 m/s. Analysis of the octave band sound levels measured with the turbine operating showed that it does not create a “pure tone condition”, which is an additional component of the MassDEP noise policy.

Also, the turbine-operating Avg  $L_{\max}$  over ambient  $L_{90}$  sound level increases measured at locations on Schofield Road, Leland Road, and Prospect Street using a slow-response sound level meter setting were about 1 to 2 dBA greater when data was collected using a fast-response setting. This difference is largely due to higher  $L_{\max}$  values;  $L_{90}$  values are more comparable between the two meter response settings.

In addition, the sound level modulation depths calculated for periods with the KWI wind turbine operating at low to moderate wind speeds were less than or comparable to the modulation depths computed for periods with the turbine shut down. Modulation depths calculated over intervals with the wind turbine operating at moderate to higher wind speeds were up to approximately 1 to 3 dBA greater as compared with ambient conditions. A modulation frequency of around 1 Hz was observed with the turbine operating, typical for wind turbine sound. Ambient sound level variations with the KWI turbine shut down are generally somewhat random and only very occasionally periodic.

Daytime acoustical monitoring was conducted at the Kingston Intermediate School in the late morning with moderate wind speeds. A-weighted  $L_{90}$  sound levels measured with the KWI turbine operating increased from ambient background  $L_{90}$  sound levels by less than 1 dBA. Broadband sound level increases calculated using other sound level weightings (C, G, and Z) were less than 2 dB. No difference was found between the sound level modulation depths calculated for contiguous periods with the KWI turbine shut down and then operating. Traffic dominated the ambient sound levels throughout the monitoring and the wind turbine was not audible at any time.

Turbine-operating Avg  $L_{\max}$  over ambient  $L_{90}$  sound level increases exceeding 10 dBA were also estimated in the Copper Beech Drive community for nighttime operation of the KWI turbine during downwind conditions with wind speeds of 9 m/s and above. This estimate was based on comparison of nighttime ambient (KWI turbine off) sound level monitoring data to extrapolations of turbine-only sound level data collected during attended monitoring at other locations.

**Summary of Measured Conditions for Sound Level Increases  
Exceeding 10 dBA due to Operation of the KWI Wind Turbine**

Community	Time of Year	Time of Day	Power Level (kW)	Wind Speed (m/s)	Wind Direction
Schofield Rd / Leland Rd / Prospect St	Winter	approx. 1 to 3 AM	above 529 kW	above 7 m/s	South to Southwest

**Summary of Initial Estimated Conditions for Sound Level Increases  
Exceeding 10 dBA due to Operation of the KWI Wind Turbine**

Community	Time of Year	Time of Day	Power Level (kW)	Wind Speed (m/s)	Wind Direction
Copper Beech Drive	Winter	approx. 1 to 3 AM	1176 kW and above	9 m/s and above	South to East



Since increases of turbine-operating Avg  $L_{max}$  over nighttime ambient  $L_{90}$  exceeding 10 dBA were identified at some locations during the acoustical monitoring study, and because sound from traffic on Route 3 is very significant at the closest neighborhood locations outside of the quietest nighttime periods, a **supplemental ambient monitoring program** was conducted in September 2014 to investigate daily and seasonal variations in A-weighted ambient  $L_{90}$  sound levels in the affected community.

The ambient  $L_{90}$  sound level data were then assessed against measured KWI turbine sound levels interpolated to integer wind speed values for the Schofield Road and Leland Road monitoring locations, as well as additional turbine-only data extrapolated to higher and lower wind speeds not directly measured. KWI turbine-only sound levels were likewise extrapolated for the 18 Copper Beech Drive site to estimate potential increases in ambient background sound levels over a range of wind speeds and during various periods throughout the day. This information was used to evaluate potential sound level increases associated with operation of the KWI wind turbine at different times of day and year and with various wind conditions in the context of MassDEP noise policy.

In the Schofield Road, Leland Road, and Prospect Street community, sound level increases of less than 10 dBA are predicted during daytime operation of the KWI wind turbine from 4:30am to 11:00pm throughout the week and weekend. Exceedances of the 10 dBA maximum increase MassDEP noise policy due to nighttime operation of the KWI turbine are predicted to have the potential to occur throughout the year between 12:00am and 4:00am for wind speeds of 4 m/s and above and between 11:00pm and 4:30am for wind speeds above 9 m/s, regardless of wind direction.

In the Copper Beech Drive community, sound level increases of less than 10 dBA are predicted from 4:00am to 12:00am throughout the week and weekend regardless of the season. Exceedances of the MassDEP noise policy due to nighttime operation of the KWI turbine are predicted to have the potential to occur during the winter season only (no insect noise) between 12:00am and 4:00am for wind speeds around 9 m/s, regardless of wind direction.

**Summary of Final Predicted Conditions for Sound Level Increases  
Potentially Exceeding 10 dBA due to Operation of the KWI Wind Turbine**

Community	Time of Year	Time of Day	Power Level (kW)	Wind Speed (m/s)	Wind Direction
Schofield Rd / Leland Rd / Prospect St	All Seasons	12 AM to 4 AM	67 kW and above	4 m/s and above	All
		11 PM to 12 AM	above 1176 kW	above 9 m/s	
		4 AM to 4:30 AM			
Copper Beech Drive	Winter	12 AM to 4 AM	around 1176 kW	around 9 m/s	All

Finally, any noise abatement orders resulting from the findings of this acoustical study that are to be evaluated based on data logs from the KWI turbine SCADA system are recommended to either directly reference power generation levels or otherwise refer to wind speed data that is adjusted using a +1.5 m/s correction factor since the wind speeds measured by the ultrasonic anemometers mounted on the KWI turbine nacelle underestimate actual wind speeds by about 1.5 m/s on average.

HMMH would like to acknowledge and thank the Kingston residents who provided access to their properties and significant cooperation throughout the acoustical monitoring study and also several other organizations and individuals who supported and assisted with the study including MassCEC, MassDEP, the Town of Kingston, the KWI turbine operator, and the operator of the No Fossil Fuel wind turbines.

## Table of Contents

Revisions of the April 16, 2015 draft version of this technical report are indicated in **red**.

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
<b>2</b>	<b>Kingston Wind Independence Turbine Technical Specifications .....</b>	<b>3</b>
2.1	Power Curve.....	3
2.2	<b>Sound Power Levels.....</b>	<b>3</b>
2.3	<b>Supervisory Control and Data Acquisition (SCADA) .....</b>	<b>3</b>
2.4	<b>Live Deck Monitoring Website.....</b>	<b>4</b>
<b>3</b>	<b>Massachusetts Department of Environmental Protection Noise Policy.....</b>	<b>7</b>
<b>4</b>	<b>Acoustical Monitoring Program .....</b>	<b>8</b>
4.1	Monitoring Locations.....	8
4.2	<b>Monitoring Conditions .....</b>	<b>10</b>
4.3	<b>Instrumentation .....</b>	<b>12</b>
4.4	<b>Measurement Uncertainty .....</b>	<b>12</b>
4.5	Monitoring Procedures.....	13
4.6	<b>Monitoring Schedule and Summary.....</b>	<b>14</b>
<b>5</b>	<b>Analysis of Acoustical Monitoring Data.....</b>	<b>16</b>
5.1	<b>Data Analysis Methodology.....</b>	<b>16</b>
5.2	<b>Analysis of Wind Data .....</b>	<b>18</b>
<b>6</b>	<b>Monitoring Results for A-weighted Sound Levels .....</b>	<b>19</b>
6.1	<b>13 Schofield Road .....</b>	<b>19</b>
6.2	<b>3 Leland Road .....</b>	<b>26</b>
6.3	<b>11 Leland Road .....</b>	<b>32</b>
6.4	<b>38 Prospect Street.....</b>	<b>38</b>
6.5	<b>Kingston Intermediate School.....</b>	<b>44</b>
<b>7</b>	<b>Monitoring Results for Low Frequency Sound and Infrasound .....</b>	<b>46</b>
7.1	Broadband Sound Level Increase Comparisons.....	46
7.2	<b>Octave Band Sound Level Increase Assessment.....</b>	<b>47</b>
<b>8</b>	<b>Results of Modulation Depth Analysis .....</b>	<b>66</b>
8.1	Modulation Depth Calculations.....	67
8.2	Modulation Depth Example Time-histories .....	67
<b>9</b>	<b>Assessment for Copper Beech Drive Neighborhood .....</b>	<b>77</b>
9.1	Ambient Sound Level Monitoring .....	77
9.2	Measured KWI Turbine Sound Levels by Wind Speed .....	81
9.3	KWI Turbine Sound Level Estimates for Copper Beech Drive .....	86
9.4	Nighttime Sound Level Increase Estimates for Copper Beech Drive .....	89
<b>10</b>	<b>Supplemental Ambient Monitoring Program .....</b>	<b>92</b>
10.1	Monitoring Dates and Locations .....	92
10.2	Instrumentation .....	92
10.3	Analysis of Ambient Monitoring Data.....	93

10.4	Estimated KWI Turbine Sound Levels .....	94
10.5	Sound Level Increase Predictions .....	94
10.5.1	Schofield Road .....	95
10.5.2	Leland Road .....	102
10.5.3	Copper Beech Drive .....	112
<b>11</b>	<b>Conclusions .....</b>	<b>121</b>
<b>Appendix A</b>	<b>Description of Sound Metrics .....</b>	<b>A-1</b>
A.1	Decibels (dB), Frequency and Sound Level Weightings .....	A-1
A.1.1	A-weighting Network.....	A-1
A.1.2	Other Broadband Sound Level Weightings.....	A-2
A.1.3	Octave Band and 1/3-Octave Band Sound Levels .....	A-2
A.2	Metrics that Describe Sound Levels over Time .....	A-4
A.2.1	Maximum Sound Level ( $L_{max}$ ) .....	A-4
A.2.2	Minimum Sound Level ( $L_{min}$ ) .....	A-4
A.2.3	Equivalent Sound Level ( $L_{eq}$ ).....	A-4
A.2.4	Statistical Sound Level Descriptors .....	A-4
A.3	Sound Level Meter Response Time .....	A-6
A.4	Sound Level Amplitude Modulation .....	A-6
A.4.1	Modulation Depth .....	A-6
<b>Appendix B</b>	<b>MassDEP Noise Policy .....</b>	<b>B-1</b>
<b>Appendix C</b>	<b>Acoustical Monitoring Site Photographs .....</b>	<b>C-1</b>
<b>Appendix D</b>	<b>Detailed Acoustical Monitoring Data.....</b>	<b>D-1</b>

## List of Figures

Figure 1.	KWI Wind Turbine Power Curve.....	5
Figure 2.	KWI Wind Turbine Sound Power Levels .....	6
Figure 3.	Study Area and Acoustical Monitoring Sites .....	9
Figure 4.	Octave Band Sound Levels Measured at 13 Schofield Road with the KWI Turbine Operating .....	50
Figure 5.	Octave Band Sound Levels Measured at 13 Schofield Road with the KWI Turbine Shut Down .....	51
Figure 6.	Octave Band Sound Level Increases Measured at 13 Schofield Road .....	52
Figure 7.	Octave Band Sound Levels Measured at 3 Leland Road with the KWI Turbine Operating .....	54
Figure 8.	Octave Band Sound Levels Measured at 3 Leland Road with the KWI Turbine Shut Down .....	55
Figure 9.	Octave Band Sound Level Increases Measured at 3 Leland Road .....	56
Figure 10.	Octave Band Sound Levels Measured at 11 Leland Road with the KWI Turbine Operating .....	58
Figure 11.	Octave Band Sound Levels Measured at 11 Leland Road with the KWI Turbine Shut Down .....	59
Figure 12.	Octave Band Sound Level Increases Measured at 11 Leland Road .....	60
Figure 13.	Octave Band Sound Levels Measured at 38 Prospect Street with the KWI Turbine Operating.....	62
Figure 14.	Octave Band Sound Levels Measured at 38 Prospect Street with the KWI Turbine Shut Down .....	63
Figure 15.	Octave Band Sound Level Increases Measured at 38 Prospect Street.....	64
Figure 16.	Modulation Depth Example Time Histories for 13 Schofield Road .....	69
Figure 17.	Modulation Depth Example Time Histories for 3 Leland Road.....	71
Figure 18.	Modulation Depth Example Time Histories for 11 Leland Road .....	73
Figure 19.	Modulation Depth Example Time Histories for 38 Prospect Street .....	75
Figure 20.	KWI Turbine Sound Levels by Wind Speed Measured at 13 Schofield Road .....	82
Figure 21.	KWI Turbine Sound Levels by Wind Speed Measured at 3 Leland Road .....	83
Figure 22.	KWI Turbine Sound Levels by Wind Speed Measured at 11 Leland Road .....	84
Figure 23.	KWI Turbine Sound Levels by Wind Speed Measured at 38 Prospect Street.....	85

Figure 24. KWI Turbine Sound Levels by Wind Speed Estimated for 18 Copper Beech Drive .....	87
Figure 25. KWI Turbine Sound Levels by Wind Speed Estimated for 6 Copper Beech Drive .....	88
Figure 26. Ambient Sound Level Time History Measured at 13 Schofield Road .....	97
Figure 27. Ambient Sound Levels by Wind Speed Measured at 13 Schofield Road.....	98
Figure 28. Ambient Sound Level Time History Measured at 3 Leland Road .....	104
Figure 29. Ambient Sound Levels by Wind Speed Measured at 3 Leland Road.....	105
Figure 30. Ambient Sound Level Time History Measured at 18 Copper Beech Drive (no insect noise) .....	113
Figure 31. Ambient Sound Levels by Wind Speed Measured at 18 Copper Beech Drive (no insect noise) .....	114
Figure 32. Ambient Sound Level Time History Measured at 18 Copper Beech Drive (with insect noise) .....	117
Figure 33. Ambient Sound Levels by Wind Speed Measured at 18 Copper Beech Drive (with insect noise) .....	118
Figure A-1. Broadband Sound Level Weighting Networks.....	A-3
Figure A-2. Sound Metric Calculations for an A-weighted Sound Level Time History .....	A-5
Figure A-3. Modulation Depth Calculations for an Amplitude-Modulated Acoustic Signal .....	A-7

## List of Tables

Table 1. Acoustical Monitoring Locations and Conditions .....	11
Table 2. Overall Summary of Acoustical Monitoring at 13 Schofield Road .....	21
Table 3. Summary of Acoustical Monitoring at 13 Schofield Road on April 7, 2014.....	22
Table 4. Summary of Acoustical Monitoring at 13 Schofield Road on March 22, 2014.....	23
Table 5. Summary of Acoustical Monitoring at 13 Schofield Road on March 2, 2014.....	24
Table 6. Summary of Acoustical Monitoring at 13 Schofield Road on March 15, 2014.....	25
Table 7. Overall Summary of Acoustical Monitoring at 3 Leland Road .....	27
Table 8. Summary of Acoustical Monitoring at 3 Leland Road on April 7, 2014.....	28
Table 9. Summary of Acoustical Monitoring at 3 Leland Road on March 22, 2014.....	29
Table 10. Summary of Acoustical Monitoring at 3 Leland Road on March 2, 2014.....	30
Table 11. Summary of Acoustical Monitoring at 3 Leland Road on March 15, 2014.....	31
Table 12. Overall Summary of Acoustical Monitoring at 11 Leland Road .....	33
Table 13. Summary of Acoustical Monitoring at 11 Leland Road on April 7, 2014.....	34
Table 14. Summary of Acoustical Monitoring at 11 Leland Road on March 22, 2014.....	35
Table 15. Summary of Acoustical Monitoring at 11 Leland Road on March 2, 2014.....	36
Table 16. Summary of Acoustical Monitoring at 11 Leland Road on March 15, 2014.....	37
Table 17. Overall Summary of Acoustical Monitoring at 38 Prospect Street.....	39
Table 18. Summary of Acoustical Monitoring at 38 Prospect Street on April 7, 2014 .....	40
Table 19. Summary of Acoustical Monitoring at 38 Prospect Street on March 22, 2014 .....	41
Table 20. Summary of Acoustical Monitoring at 38 Prospect Street on March 2, 2014 .....	42
Table 21. Summary of Acoustical Monitoring at 38 Prospect Street on March 15, 2014 .....	43
Table 22. Summary of Acoustical Monitoring at Kingston Intermediate School on February 18, 2014.....	45
Table 23. Summary of Low-frequency and Infrasound Monitoring at 13 Schofield Road .....	49
Table 24. Summary of Low-frequency and Infrasound Monitoring at 3 Leland Road.....	53
Table 25. Summary of Low-frequency and Infrasound Monitoring at 11 Leland Road.....	57
Table 26. Summary of Low-frequency and Infrasound Monitoring at 38 Prospect Street .....	61
Table 27. Summary of Low-frequency and Infrasound Monitoring at Kingston Intermediate School .....	65
Table 28. Summary of Modulation Depth Analysis for 13 Schofield Road .....	68
Table 29. Summary of Modulation Depth Analysis for 3 Leland Road .....	70
Table 30. Summary of Modulation Depth Analysis for 11 Leland Road .....	72
Table 31. Summary of Modulation Depth Analysis for 38 Prospect Street.....	74
Table 32. Summary of Modulation Depth Analysis for Kingston Intermediate School .....	76
Table 33. Summary of Ambient Monitoring at 18 Copper Beech Drive on April 9, 2014.....	79
Table 34. Summary of Ambient Monitoring at 6 Copper Beech Drive on April 9, 2014.....	80
Table 35. Nighttime Sound Level Increase Estimates for 18 Copper Beech Drive .....	90
Table 36. Nighttime Sound Level Increase Estimates for 6 Copper Beech Drive.....	91

## Report Contents

### Final Technical Report for Kingston Wind Independence Turbine Acoustical Study

---

Table 37. Daytime Sound Level Increase Predictions for 13 Schofield Road with Heavy Traffic .....	99
Table 38. Nighttime Sound Level Increase Predictions for 13 Schofield Road with Light Traffic .....	100
Table 39. Nighttime Sound Level Increase Predictions for 13 Schofield Road with Variable Traffic .....	101
Table 40. Daytime Sound Level Increase Predictions for 3 Leland Road with Heavy Traffic .....	106
Table 41. Daytime Sound Level Increase Predictions for 11 Leland Road with Heavy Traffic .....	107
Table 42. Nighttime Sound Level Increase Predictions for 3 Leland Road with Light Traffic .....	108
Table 43. Nighttime Sound Level Increase Predictions for 11 Leland Road with Light Traffic .....	109
Table 44. Nighttime Sound Level Increase Predictions for 3 Leland Road with Variable Traffic .....	110
Table 45. Nighttime Sound Level Increase Predictions for 11 Leland Road with Variable Traffic .....	111
Table 46. Daytime Sound Level Increase Predictions for 18 Copper Beech Drive (no insect noise) .....	115
Table 47. Nighttime Sound Level Increase Predictions for 18 Copper Beech Drive (no insect noise) .....	116
Table 48. Daytime Sound Level Increase Predictions for 18 Copper Beech Drive (with insect noise) .....	119
Table 49. Nighttime Sound Level Increase Predictions for 18 Copper Beech Drive (with insect noise) .....	120
Table 50. <b>Summary of Measured Conditions for KWI Sound Level Increases Exceeding 10 dBA</b> .....	122
Table 51. <b>Summary of Initial Estimated Conditions for KWI Sound Level Increases Exceeding 10 dBA</b> .....	122
Table 52. <b>Summary of Final Predicted Conditions for KWI Sound Level Increases Exceeding 10 dBA</b> .....	123



## 1 Introduction

This technical report provides the comprehensive results of an acoustical monitoring study of the Kingston Wind Independence (KWI) wind turbine operating at a closed landfill located on Cranberry Road in Kingston, MA. This study was conducted by Harris Miller Miller & Hanson Inc. (HMMH) in cooperation with the Massachusetts Department of Environmental Protection (MassDEP), the Massachusetts Clean Energy Center (MassCEC), the Town of Kingston Board of Health, and the KWI operator.

The acoustical monitoring study was commissioned in response to concerns and complaints about noise received by the Kingston Board of Health from local residents; therefore community involvement was an important part of the study. A key element of that process was an initial project scoping meeting held at the Kingston Town Hall on December 17, 2012. During this meeting, affected and interested residents provided their input on the study scope, including suggestions regarding measurement locations, appropriate wind conditions, acoustical monitoring procedures, and the methodology for analysis of the data collected. This information was incorporated into a draft study scope document, which was distributed to all stakeholders for written comment on February 14, 2013. All comments received were then carefully reviewed and a revised study scope dated March 15, 2013 reflected this additional input. The acoustical monitoring study scope was finalized, with respect to specific wind conditions and sound monitoring locations, on August 8, 2013 following a delay in commencement of the project due to operational issues with the KWI wind turbine.

The protocols for acoustical monitoring of the KWI turbine detailed in the study scope were then further revised on January 23, 2014 to address issues identified during the initial nights of monitoring. The sound from heavy volumes of overnight traffic on Route 3 and sound generated by auxiliary equipment that operates for several minutes after the wind turbine has been shut down invalidated some field data and required minor modifications in the monitoring protocols. The target wind conditions for acoustical monitoring were also revised on February 6, 2014 to facilitate timely collection of data.

The acoustical monitoring was conducted between December 2013 and April 2014. The final design of the study was to conduct measurements at some of the closest community locations with the KWI turbine shut down and also with the wind turbine in operation under worst-case conditions, which were during the quietest nighttime periods in the winter season and with downwind conditions. The monitoring data was then analyzed to determine baseline ambient sound levels and the relative increase in A-weighted sound levels due to nighttime operation of the KWI wind turbine, particularly in the context of MassDEP noise policy. Broadband sound level increases were likewise investigated for other sound level weightings (C, G, and Z) that include larger contributions from low frequency audible sound as well as from sound below the lower limit of human audibility (approximately 20 Hz) known as infrasound. A sound level modulation depth analysis was also conducted.

The interim results (i.e. for a limited number of monitoring dates and locations) of the acoustical monitoring were provided on June 13, 2014 in an interim study report. A supplemental ambient monitoring study was subsequently conducted during a 5-day period in September 2014 when the wind turbine was shut down for annual maintenance. This additional ambient data plus further analysis of data collected between January and April 2014 was used to estimate sound level increases due to operation of the KWI wind turbine at different times of day and year in the context of MassDEP noise policy.

Technical specifications of the KWI wind turbine are discussed in Section 2 of this technical report. MassDEP noise policy is summarized in Section 3. Information on the acoustical monitoring program including locations, monitoring conditions, instrumentation, procedures, and a summary of monitoring activities are outlined in Section 4. Details of the data analysis methodology are provided in Section 5.

Results of the acoustical monitoring study are presented in Section 6 for A-weighted sound levels, Section 7 for low frequency sound and infrasound, and Section 8 for modulation depth analysis.

Section 9 discusses an additional sound level increase assessment for the Copper Beech Drive neighborhood and Section 10 provides details of the supplemental ambient monitoring program, the ambient monitoring results, and the resulting sound level increase predictions. The final conclusions of the acoustical study are outlined in Section 11.

A detailed description of the sound metrics and terminology used in this report is attached as Appendix A. The complete MassDEP noise policy is provided in Appendix B. Monitoring site photographs and detailed acoustic data are attached as Appendices C and D, respectively.

## **2 Kingston Wind Independence Turbine Technical Specifications**

The KWI wind turbine is a Hyundai Heavy Industries HQ2000 WT86 2.0 Megawatt wind turbine with an approximately 80 meter tower height.

### **2.1 Power Curve**

The power curve shown in Figure 1 indicates the power produced by the KWI turbine as a function of the wind speed at the turbine hub height.

At wind speeds above 3.5 meters per second (m/s) there is sufficient wind for the turbine to begin to operate (i.e. the “cut-in” speed). At wind speeds above 10 m/s the turbine approaches full power generation. The KWI turbine reaches maximum 2000 kW production levels at hub-height wind speeds above 12 m/s.

### **2.2 Sound Power Levels**

The sound power level curve shown in Figure 2 indicates the acoustic sound power produced by the KWI turbine as a function of the wind speed at the turbine hub height, as provided in the January 27, 2011 “Hyundai Heavy Industries Wind Turbine Generator Standard Warranty (Noise Emission)”.

At wind speeds above 10 m/s the turbine sound power level exceeds 104 dBA and approaches the maximum sound power level to within less than 1 dBA. The KWI turbine reaches a maximum sound power level of 105 dBA at hub-height wind speeds above 14 m/s.

Note that MassDEP protocols for wind turbine assessments generally rely on direct measurement of turbine sound levels to the extent possible. The KWI turbine sound power curve is provided here for reference purposes only.

### **2.3 Supervisory Control and Data Acquisition (SCADA)**

HMMH was provided hub-height wind speed and direction data for periods when acoustical monitoring was conducted as well as energy production and other meteorological and operational information via the KWI turbine Supervisory Control and Data Acquisition (SCADA) system. The wind speed and wind direction are measured by two ultrasonic anemometers that are mounted on the KWI turbine nacelle.

Wind speed and direction data were recorded by the SCADA system during all acoustical monitoring, both with the KWI turbine operating and shut down. This information allowed for a direct comparison of wind conditions between contiguous turbine-on and turbine-off periods.

Power generation data was also recorded by the SCADA system during periods with the KWI turbine operating. Hub-height wind speed information was derived from the turbine power levels and compared with the wind speed data measured by the nacelle-mounted anemometers. On average, a correction factor of about +1.5 m/s was required to adjust the wind speed data to the turbine power level data (i.e. the actual wind speed is assumed to be slightly higher than the value provided by the SCADA system).

Given that the uncorrected wind speeds were typically similar between contiguous turbine-on and turbine-off periods and a consistent offset was not observed, it was therefore appropriate to adjust all wind speed data analyzed for this study (including acoustical monitoring periods with the KWI turbine operating and also periods with the turbine shut down) so that the wind speed information is accurate and cross-comparable and directly correlates with SCADA power level data during turbine-on periods.

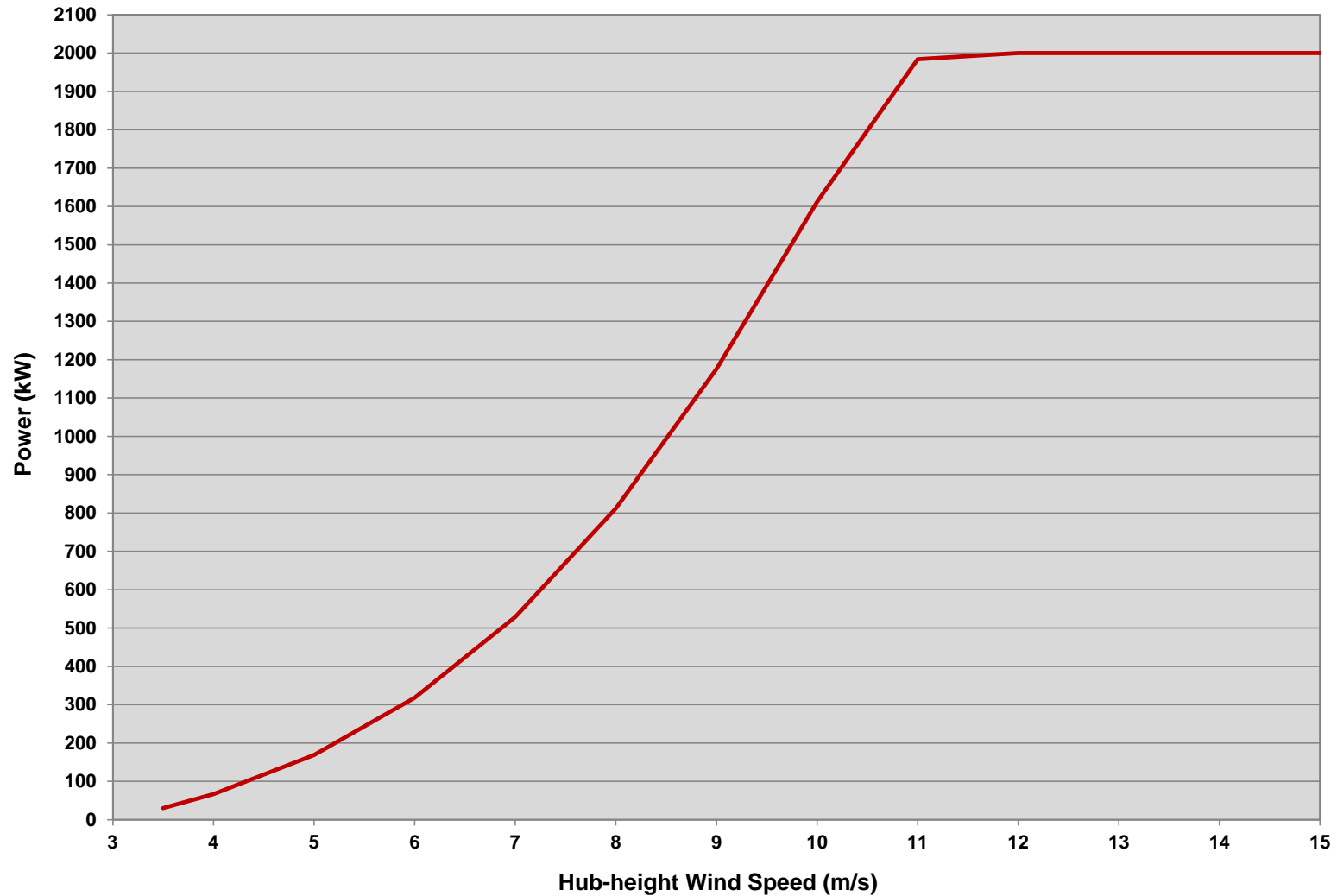
## 2.4 Live Deck Monitoring Website

Limited energy production data from the turbine SCADA system as well as concurrent meteorological data from the Plymouth Airport are publically available on the KWI Live Deck Monitoring website:

[http://www.live.deckmonitoring.com/?id=kingston\\_wind](http://www.live.deckmonitoring.com/?id=kingston_wind)

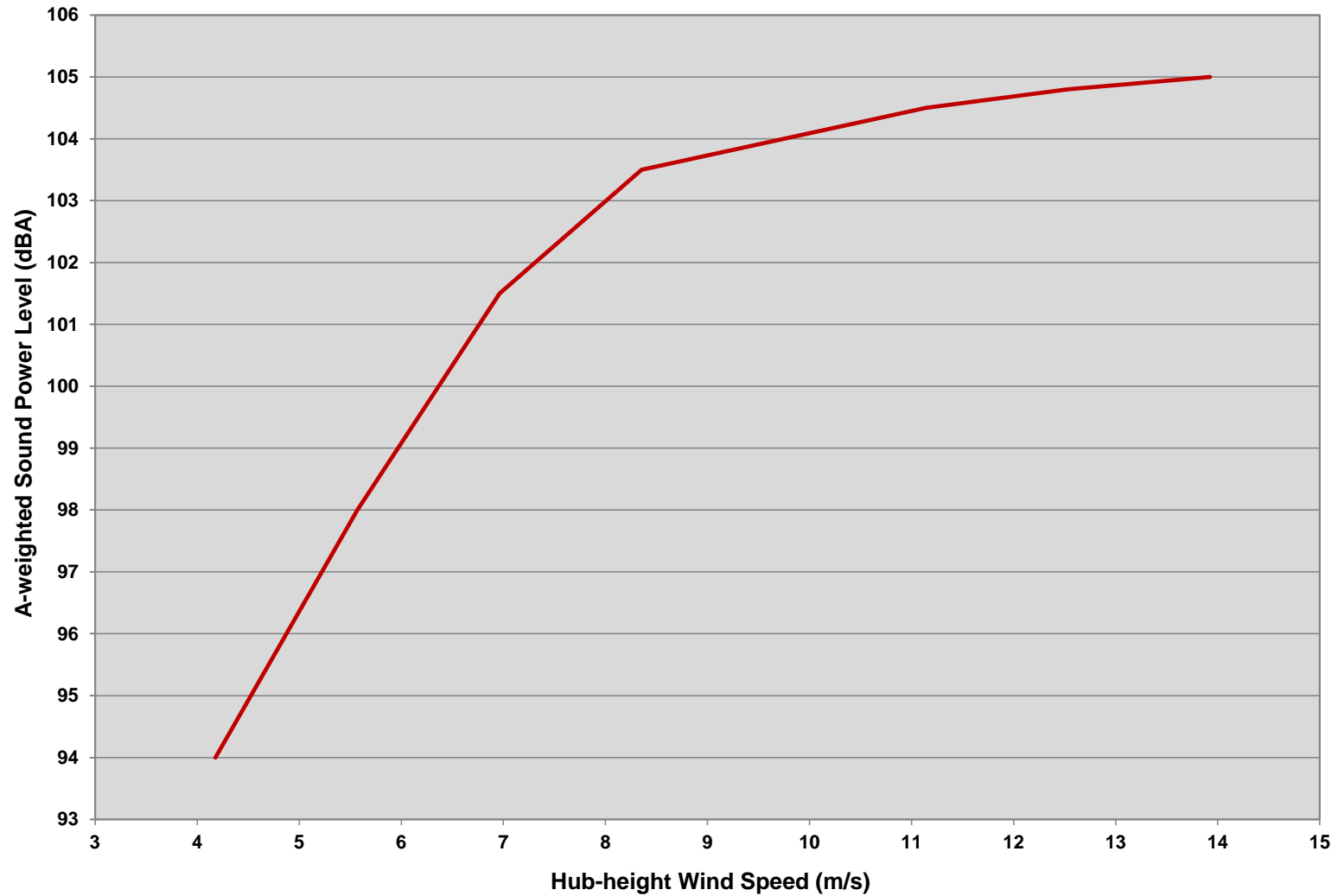
Note that the KWI Live Deck website is not intended as an analytical tool and does not display wind speed or wind direction data directly from the turbine SCADA system due to technical and hardware limitations. Therefore, the wind speed and direction information shown on the Live Deck website may not necessarily be exactly representative of what is occurring at the KWI turbine hub at any specific time.

**Figure 1. KWI Wind Turbine Power Curve**  
**Hyundai Heavy Industries HQ2000 WT86 2.0 MW Wind Turbine**





**Figure 2. KWI Wind Turbine Sound Power Levels**  
**Hyundai Heavy Industries HQ2000 WT86 2.0 MW Wind Turbine**



### **3 Massachusetts Department of Environmental Protection Noise Policy**

The applicable standard for assessment of the KWI wind turbine is the MassDEP noise policy outlined below. Appendix B provides the complete policy from MassDEP.

The Code of Massachusetts Regulations (Title 310, Section 7.10, amended September 1, 1972) empowers the Division of Air Quality Control (DAQC) of the Department of Environmental Protection (DEP) to enforce its noise standards. According to DAQC Policy 90-001 (February 1, 1990), a source of sound will be considered to be violating the MassDEP noise policy if the source:

- (1) increases the broadband sound level by more than 10 dBA above ambient, or
- (2) produces a “pure tone condition,” when any octave-band center frequency sound pressure level exceeds the two adjacent frequency sound pressure levels by 3 decibels or more.

Ambient “background” sound levels are defined as the slow-response A-weighted  $L_{90}$  statistical percentile sound levels measured during equipment operating hours. A detailed description of the sound metrics and terminology used in this report is provided in Appendix A.

## 4 Acoustical Monitoring Program

HMMH collected acoustic data under a variety of wind conditions at several monitoring locations both with the KWI turbine in normal operation and also with the wind turbine shut down. The specific acoustical monitoring sites are shown in Figure 3 and include six residential locations as well as a measurement site at the Kingston Intermediate School. Supplemental site photographs are included in Appendix C.

### 4.1 Monitoring Locations

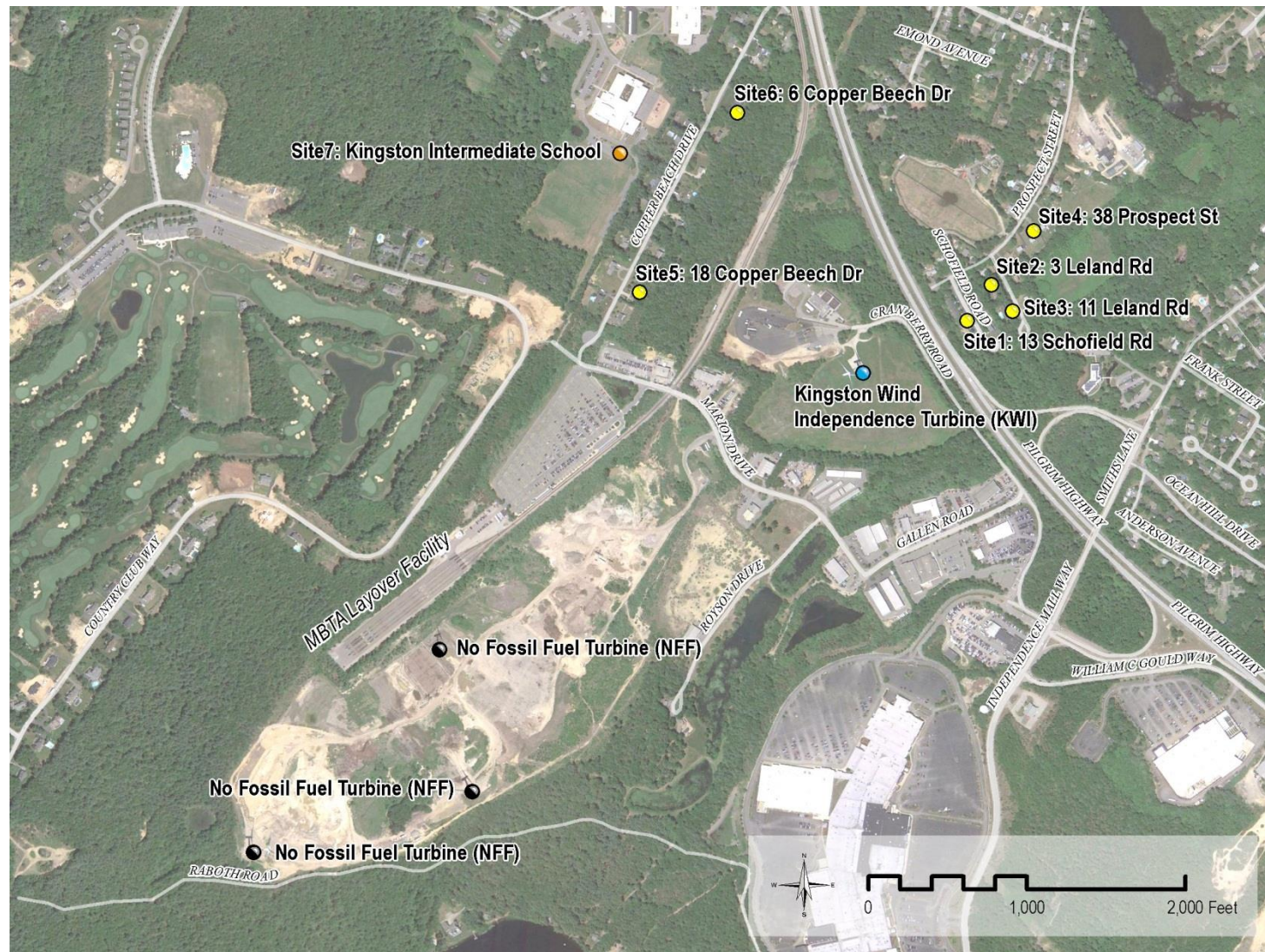
The monitoring site at 13 Schofield Road is located at a multi-family town-house style residential development approximately 740 feet to the northeast from the KWI wind turbine. This is the closest residential neighborhood to the turbine. The monitoring sites at 3 Leland Road, 11 Leland Road, and 38 Prospect Street are located at single-family homes about 990 feet, 1025 feet, and 1410 feet to the northeast of the KWI wind turbine, respectively. Route 3 runs from northwest to southeast between the KWI turbine and these four residential monitoring locations, about 520 feet away from KWI.

The monitoring sites at 18 Copper Beech Drive and 6 Copper Beech Drive are located at single-family homes approximately 1535 feet and 1855 feet to the northwest from the KWI wind turbine, respectively. The residence located at 18 Copper Beech Drive is the closest home in this neighborhood to the KWI turbine and also one of the most distant from Route 3. The monitoring site at the Kingston Intermediate School is located about 2170 feet to the northwest of KWI, on the side of the building in closest proximity to the wind turbine and the farthest from Route 3. Massachusetts Bay Transportation Authority (MBTA) commuter rail tracks run from northeast to southwest between the KWI turbine and these three monitoring locations, about 970 feet away from KWI.

Sound sources observable at the monitoring sites in the daytime include vehicles on Route 3, local traffic, aircraft overflights, and MBTA commuter trains. During the quietest nighttime hours, Route 3 traffic continues and other distant sound sources are at times also audible; these include commercial or industrial equipment, commuter trains that idle overnight during very cold weather at the MBTA layover facility located beyond the end of Copper Beech Drive and adjacent to Country Club Way, and the three No Fossil Fuel (NFF) wind turbines located beyond the MBTA facility between Country Club Way and Raboth Road.

Note that commuter trains were heard idling at the MBTA layover facility on only one occasion, during unsuccessful acoustical monitoring conducted on February 28, 2014 with very cold weather. On all of the nights of successful measurements presented in this report, the air temperature was somewhat higher and MBTA trains were not idled overnight. Also, while the NFF wind turbines were at times audible during the nighttime monitoring, these sources were not observed to dominate ambient sound levels.

**Figure 3. Study Area and Acoustical Monitoring Sites**





## 4.2 Monitoring Conditions

An October 10, 2006 wind resource report<sup>2</sup> prepared by the University of Massachusetts at Amherst Renewable Energy Research Laboratory indicates that the most regularly occurring wind conditions at the KWI turbine site are moderate hub-height wind speeds of about 6 to 8 m/s from the southwest.

Table 1 presents target conditions for acoustical monitoring of the KWI wind turbine as outlined in a February 6, 2014 HMMH memorandum<sup>3</sup> on revised acoustical monitoring scenarios. The table incorporates some modifications to protocols provided in an August 5, 2013 letter<sup>4</sup> on the revised study scope regarding target ranges of wind speed and direction and appropriate times of day and year for conducting the monitoring.

The February 6, 2014 revisions to the monitoring protocol (footnote 3) provided the flexibility necessary to complete data collection for the acoustical study in a timely fashion while also providing sufficient information regarding sound level increases due to operation of the KWI wind turbine under worst-case conditions. Results of the acoustical monitoring are presented in Sections 6 through 8 of this report for the following scenarios outlined in the February 6, 2014 memorandum: Scenarios 1 through 3 at the four monitoring sites located to the east of Route 3 and Scenario 7 at the Kingston Intermediate School.

HMMH did not have an opportunity to conduct acoustical monitoring of the KWI turbine in the Copper Beech Drive neighborhood on a night with southeast winds (downwind) for Scenarios 4 through 6. However, nighttime ambient sound level data was successfully collected in this community with the turbine shut down, in an effort to better understand the local ambient sound environment. To estimate sound level increases associated with operation of the KWI wind turbine in the context of MassDEP noise policy, the measured ambient levels were combined with estimates of KWI turbine sound levels in this neighborhood to compute potential sound level increases due to downwind operation of the turbine. The sound level estimates were developed by extrapolating the turbine-only sound levels measured at the four residential sites to the east of Route 3 during periods dominated by the turbine. (Refer to Section 9.)

---

<sup>2</sup> University of Massachusetts Renewable Energy Research Lab report, “Final Wind Data Report, Kingston MA” October 10, 2006.

<sup>3</sup> HMMH memorandum, “Revised Acoustical Monitoring Scenarios for Kingston Wind Independence Turbine” February 6, 2014.

<sup>4</sup> HMMH letter, “Revised Scope for Acoustical Monitoring of Kingston Wind Independence Turbine” August 5, 2013.



**Table 1. Acoustical Monitoring Locations and Conditions**

Scenario	Location	Monitoring Sites	Season	Wind Speed	Wind Direction (note 2)	Receptor position to turbine
1	Schofield Rd, Leland Rd, Prospect St.	4 nighttime	Winter (note 2)	4-6 m/s	S-NW 180°-225°-315°	Downwind approaching Crosswind
2	Schofield Rd, Leland Rd, Prospect St.	4 nighttime	Winter (note 2)	7-9 m/s	S-NW 180°-225°-315°	Downwind approaching Crosswind
3	Schofield Rd, Leland Rd, Prospect St.	4 nighttime	Winter (note 2)	10+ m/s	S-NW 180°-225°-315°	Downwind approaching Crosswind
4	Copper Beech Dr.	2 nighttime	Winter	4-6 m/s	NE-S 45°-135°-180°	Downwind approaching Crosswind
5	Copper Beech Dr.	2 nighttime	Winter	7-9 m/s	NE-S 45°-135°-180°	Downwind approaching Crosswind
6	Copper Beech Dr.	2 nighttime	Winter	10+ m/s	NE-S 45°-135°-180°	Downwind approaching Crosswind
7 (note 1)	Kingston Elementary & Intermediate School	1 daytime	Winter	Any	E-S 90°-135°-180°	Approx. Downwind

**Notes:**

This table was previously included in the HMMH memorandum dated February 6, 2014 with subject "Revised Acoustical Monitoring Scenarios for Kingston Wind Independence Turbine".

1. Winds from this direction are somewhat rare, thus it may be difficult to capture this scenario. If conditions have not allowed for sampling at the Kingston schools to occur by the end of February 2014 or shortly thereafter, then the monitoring schedule will be re-evaluated.
2. Based on the results of acoustical monitoring of the KWI turbine during the winter season, additional measurements may also be considered, including during the summer.

### 4.3 Instrumentation

The acoustical monitoring was conducted using ANSI Type 1 “Precision” Bruel & Kjaer model 2250 sound level analyzer kits including a microphone, pre-amplifier, microphone stand, 7 inch windscreen, and an acoustic calibrator. All of the sound measurement instrumentation is owned by HMMH, conforms to ANSI Standard S1.4 for Type 1 (Precision) sound level meters, and have current calibrations traceable to the U.S. National Institute of Standards and Technology (NIST). Additional field calibrations of the instruments were carried out before and after each nighttime measurement using a NIST-certified acoustical calibrator.

All measurements were conducted in accordance with industry best practices and in general compliance with appropriate professional standards such as ASTM E 1779-96a (Reapproved 2004) “Standard Guide for Preparing a Measurement Plan for Conducting Outdoor Sound Measurements”, ANSI S12.18 “Procedures for Outdoor Measurement of Sound Pressure Level” and ANSI S12.9 Part 3 “Quantities and Procedures for Description and Measurement of Environmental Sound, Part 3: Short-Term Measurements with an Observer”.

Sound measurement microphones were tripod-mounted at a 5-6 foot elevation and placed at least 25 feet from large reflecting surfaces (such as buildings) and at least 5 feet from smaller objects (such as trees and poles) and with a direct line of sight to the KWI turbine. The operator of the sound analyzer was located at least 25-50 feet away from the microphone position and remained silent at all times to prevent interference with the data collection. Anemometers used to monitor wind speeds near ground level were tripod-mounted at a 3-4 foot height and placed near the sound analyzer operator for easy observation. Monitoring wind speeds at this elevation was important for investigation of wind shear conditions during the measurements and also because the 7-inch diameter windscreens used for the monitoring are only rated for accurate measurement of A-weighted sound levels with up to 5 m/s wind speeds near the ground.

The acoustical instrumentation measured sound levels continuously in the frequency range from 5.6 Hz to 20,000 Hz. The instruments were programmed to log both slow-response and fast-response broadband A-weighted and C-weighted sound levels as well as unweighted 1/3-octave band data in 1-second intervals. To account for momentary variation in turbine sound levels, the maximum levels in each 1-second interval were used, which is consistent with MassDEP protocols for wind turbine assessments. Fast-response broadband A-weighted sound levels were also logged simultaneously at a 1/10-second rate to allow for modulation depth analysis. In addition, G-weighted and Z-weighted (unweighted) broadband sound levels and unweighted octave band data were computed from the 1-second 1/3-octave band data.

Simultaneous hub-height wind speed and direction data was obtained in 10-minute intervals from the KWI turbine SCADA system, as well as energy production and other meteorological and operational information. Wind speed and direction data was also collected in 1-second intervals from the real-time SCADA system output using a screen capture video of the SCADA system utility software.

### 4.4 Measurement Uncertainty

Instrumentation field calibrations were carried out before and after each measurement and included all microphone extension cables in the signal chain. Calibration drift was less than 0.1 dB during all measurements at all seven monitoring sites. In addition, 7-inch diameter windscreens were employed that are rated for accurate measurement of A-weighted sound levels with up to 5 m/s wind speeds near the ground. Winds near ground level were generally calm or very low during the acoustical monitoring and no short-term wind gusts of more than about 3 to 5 m/s were observed.

Overall, the Bruel & Kjaer model 2250 Type 1 (Precision) sound level meters can measure sound levels to an accuracy of about  $\pm 1$  dBA. Also, the acoustical monitoring procedures included measuring corresponding turbine-on/off periods as contiguously as possible and with the same instrumentation, an approach that results in reduced uncertainty when cross comparing the acoustical data.

#### 4.5 Monitoring Procedures

The protocols for acoustical monitoring of the KWI turbine were outlined in a January 23, 2014 HMMH memorandum<sup>5</sup>. This memo presented some modifications to the August 5, 2013 letter (footnote 4) that were needed to address issues identified during the initial nights of monitoring, which include sound from heavy volumes of overnight traffic on Route 3 and also sound generated by KWI turbine auxiliary equipment that operates for several minutes after the wind turbine has been shut down<sup>6</sup>. The revised acoustical monitoring procedures were as follows:

During each night of monitoring, HMMH staff collected data between the hours of approximately 1 AM and 3 AM, when traffic on Route 3 is lightest, and until 4:30 AM on March 15, 2014 due to a technical issue with the yaw brake rendering the KWI turbine non-operable earlier in the night. At each monitoring site, we first measured with the wind turbine and all auxiliary equipment fully shut down for about 20 minutes to allow for collection of ambient acoustical data. We then measured with the wind turbine in operation for a period of about 30 minutes. It typically took a few minutes for the remote operators to initiate the KWI turbine startup and another couple of minutes for the blades to begin to turn at full speed, so the initial five minutes of monitoring with the wind turbine operating was not analyzed and we have generally focused analysis efforts on the subsequent 20 minutes of data collection. An additional five minutes of monitoring data was also captured for contingency purposes (this data was utilized in some instances to improve the consistency and robustness of the dataset for some measurements with higher volumes of traffic on Route 3 or extended periods of wind generated sound).

HMMH consultants attended all measurements at all sites. Generally, two consultants and sound level monitors were deployed to allow measurements at two locations simultaneously. Using this approach, acoustical monitoring could be conducted at up to four locations during the quietest nighttime hours with the least amount of traffic on Route 3. During the data collection, HMMH staff members logged the sound sources that appeared to dominate measured sound levels on a moment-to-moment basis and also noted wind speeds that occurred near the ground at each site.

During all of the acoustical monitoring, high-quality audio recordings were captured in addition to sound metric data and attended observations. As a result, the sounds heard during all measurements could be listened to subsequently using proprietary software provided by the manufacturer of the sound analyzer instrumentation. This allowed any of the measurements to be reviewed again later and more than once if necessary, to further identify sound sources and select appropriate data for detailed analysis.

---

<sup>5</sup> HMMH memorandum, “Kingston KWI Turbine Acoustical Monitoring Protocol – Proposed Revisions” January 23, 2014.

<sup>6</sup> During nighttime acoustical monitoring conducted on January 20, 2014, the HMMH consultant noticed that auxiliary equipment in the wind turbine nacelle continued operating for 10 or more minutes after the turbine was shut down and the blades stopped spinning. HMMH concluded that there was a small but non-negligible effect on the ambient sound levels that were collected while this secondary equipment was still operating. Therefore, to ensure valid and conservative measurement of ambient background sound, HMMH modified the acoustical monitoring procedures to ensure that the wind turbine was completely shut down (blades stopped turning and auxiliary equipment off) before conducting any subsequent nighttime ambient sound level monitoring.

## 4.6 Monitoring Schedule and Summary

After some delays due to operational issues with the KWI turbine, the acoustical monitoring study commenced in December 2013. The schedule for acoustical monitoring of the wind turbine was finalized in a March 28, 2014 HMMH memorandum<sup>7</sup>. This memo provided notification of an extension of the timeframe for acoustical monitoring into mid-April 2014, with the final night of measurements subsequently conducted on Wednesday April 9, 2014.

A summary and timeline of HMMH's efforts to conduct acoustical monitoring is provided below. Acoustical monitoring results are presented in Sections 6 through 9 of this report for all successful data collection. (Refer to Section 10 of this report for information on the supplemental ambient monitoring.)

- Successful data-collection efforts:
  - **February 18, 2014** – successful daytime acoustical monitoring was conducted at the Kingston Intermediate School (Scenario #7)
  - **March 2, 2014** – successful nighttime acoustical monitoring with moderate wind speeds was conducted in the Schofield/Leland/Prospect neighborhood (Scenario #2)
  - **March 15, 2014** – successful nighttime acoustical monitoring with higher wind speeds was conducted in the Schofield/Leland/Prospect neighborhood (Scenario #3)
  - **March 22, 2014** – additional nighttime acoustical monitoring with moderate wind speeds was conducted in the Schofield/Leland/Prospect neighborhood (Scenario #2)
  - **April 7, 2014** – successful nighttime acoustical monitoring with low wind speeds was conducted in the Schofield/Leland/Prospect neighborhood (Scenario #1)
  - **April 9, 2014** – successful nighttime ambient acoustical monitoring was conducted in the Copper Beech Drive neighborhood
- Notes on other data-collection efforts:
  - **December 13, 2013** – data initially thought to be useful, but later, ambient sound levels were found to be affected by KWI auxiliary equipment sound during shutdown periods, so the monitoring was repeated to ensure a conservative and valid assessment of ambient sound levels
  - **January 21, 2014** – wind direction and speeds that were forecast did not develop and ambient sound levels again affected by KWI auxiliary equipment sound
  - **February 20, 2014** – monitoring unsuccessful due to nearby atypical sound (snow removal)
  - **February 22, 2014** – monitoring cancelled due to technical issue with auto-lubrication system rendering KWI turbine non-operable
  - **February 28, 2014** – high wind speeds were forecast (Scenario #3), but only moderate wind speeds occasionally approaching higher speeds developed, so additional monitoring was conducted on March 15, 2014 with stronger and more steady wind speeds to capture turbine full-power conditions as requested by residents and agreed to by MassDEP and MassCEC; also commuter trains could be heard idling at the MBTA layover facility due to very cold weather
  - **March 15, 2014** – monitoring delayed due to technical issue with yaw brake rendering KWI turbine non-operable early in the night, then monitoring successfully completed later in the night

---

<sup>7</sup> HMMH memorandum, "Extended Acoustical Monitoring Schedule for Kingston Wind Independence Turbine" March 28, 2014.

- **March 22, 2014** – low wind speeds were forecast (Scenario #1), but moderate wind speeds actually developed (Scenario #2, which had already been measured on March 2, 2014), so additional monitoring during low wind conditions was conducted on April 7, 2014
- **April 3 and April 4, 2014** – the wind speeds that were forecast did not develop, so monitoring was cancelled

## 5 Analysis of Acoustical Monitoring Data

The methodology for analysis of the KWI wind turbine acoustical monitoring data was outlined initially in an August 5, 2013 HMMH letter (footnote 4) and incorporates key elements of the MassDEP protocols used for acoustical studies of wind turbines. This section of the report largely mirrors that scope letter.

### 5.1 Data Analysis Methodology

As discussed previously, HMMH conducted nighttime measurements with the KWI wind turbine shut down for approximately 20 minutes to allow collection of ambient acoustical data, followed by approximately 20 minutes of monitoring with the wind turbine operating, with additional time in between for all turbine components to fully shut down or return to normal operating conditions.

The acoustical instrumentation measured sound levels continuously in the frequency range from 5.6 Hz to 20,000 Hz. The instruments were programmed to log both slow-response and fast-response broadband A-weighted and C-weighted sound levels as well as unweighted 1/3-octave band data in 1-second intervals. To account for momentary variation in turbine sound levels, the maximum levels in each 1-second interval were used, which is consistent with MassDEP protocols for wind turbine assessments. Fast-response broadband A-weighted sound levels were also logged simultaneously at a 1/10-second rate to allow for modulation depth analysis. In addition, G-weighted and Z-weighted (unweighted) broadband sound levels and unweighted octave band data were computed from the 1-second 1/3-octave band data.

The acoustical monitoring data was then analyzed in 5-minute and 20-minute intervals<sup>8</sup>. Detailed acoustic data are attached as Appendix D. For each individual 5-minute and total 20-minute measurement period with the turbine on or off, a detailed monitoring report is provided in Appendix D presenting the acoustic data both graphically and numerically. The date and time span of each measurement are clearly indicated, as well as the average wind speed and direction, and other useful information such as the air temperature and the turbine energy production. A log of any atypical sound events and corresponding time periods that were excluded from the measurement data is also provided. When uncharacteristic sound events were very high frequency and occurred intermittently throughout the monitoring, exclusion of all affected times was not feasible, and so the measurement data was instead adjusted using interpolation of the 1-second 1/3-octave band data to remove the sound event contribution. Specific uncharacteristic sound events are discussed further in subsequent sections of this report and include sound from spring peepers at all residential sites, sound from a cord tapping on a flagpole at 38 Prospect Street, and sound from a heating system exhaust vent at the Kingston Intermediate School.

For each measurement, a summary of the acoustical metric data is also provided calculated over both the 20-minute period with the KWI turbine shut down and the subsequent 20 minutes with the turbine operating normally. Comparison summaries between the different sound metrics reported are then provided for the 20-minute ambient period and the 20-minute period of turbine operation using various broadband sound level weightings. The summary and detailed acoustical monitoring reports are provided in Appendix D for both slow-response and fast-response sound level meter settings.

---

<sup>8</sup> Throughout this report, “5-minute” and “20-minute” measurement periods are referred to both with the wind turbine operating and shut down. Results calculated over these time periods will typically not correspond to exactly 5 minutes or 20 minutes in total duration since the measurements are adjusted to remove any uncharacteristic sound events and are then presented both including and also excluding periods of Route 3 traffic noise, making them shorter in duration. Therefore, the “5-minute” and “20-minute” periods cited throughout this report refer to approximate periods of time. The actual percentages of time included for results calculated over these periods are shown on the detailed acoustical monitoring reports provided in Appendix D.



Broadband sound levels in A-, C-, and G-weightings are reported for a variety of acoustical metrics, including the maximum ( $L_{\max}$ ), equivalent (energy-average) ( $L_{\text{eq}}$ ), and statistical percentile sound levels ( $L_n$ , denoting the sound level exceeded n-percent of the time). Statistical sound levels of particular interest are the  $L_{01}$ , which represents typical maximum sound levels, the  $L_{50}$ , which represents the median sound level, and the  $L_{90}$ , which represents the ambient “background” level from relatively continuous sources. Per MassDEP protocols, maximum ( $L_{\max}$ ) sound levels are only reported for each 5-minute period and this data was then combined to determine and report an average maximum ( $\text{Avg } L_{\max}$ ) sound level for each corresponding 20-minute period. Unweighted octave-band and one-third octave-band data are also reported, as well as overall broadband Z-weighted (unweighted) sound levels and the calculated sound level modulation depths.

Appendix A provides a detailed description of the sound metrics and terminology used in this report and includes a comparison of the different broadband sound level weighting networks in Figure A-1 and illustrations of various sound metric calculations in Figures A-2 and A-3. Detailed acoustical monitoring data are provided in Appendix D in both 5-minute and 20-minute intervals.

The same set of acoustical metrics was developed for each measurement under two conditions relative to ambient sound. One condition with the KWI turbine operating included all ambient sound (most significantly from traffic on Route 3) along with the sound generated by the wind turbine; the other condition included only periods when the turbine dominated the sound level and other sounds (such as traffic on Route 3 or wind generated sound) were not noticeable.

Analysis of the limited time periods “excluding Route 3 traffic” is useful in determining sound levels directly attributable to the KWI turbine for assessment of sound level increases associated with operation of the wind turbine in the context of MassDEP noise policy. This approach allows average maximum ( $\text{Avg } L_{\max}$ ), equivalent ( $L_{\text{eq}}$ ), and statistical  $L_{90}$  turbine-only sound levels to be compared with ambient  $L_{90}$  background levels. However, this methodology also limits assessment of turbine levels to the very quietest periods in between Route 3 traffic events, which may in some instances result in calculation of turbine-only sound levels that are lower than the measured ambient  $L_{90}$  background level for monitoring conducted at lower wind speeds and at greater distances from the KWI turbine. Analysis of each entire measurement period “including Route 3 traffic” only allows for comparison of turbine-operating  $L_{90}$  sound levels to ambient  $L_{90}$  levels, but provides a more robust and representative  $L_{90}$  to  $L_{90}$  sound level increase comparison.

Similarly, one set of metrics with all ambient sound present and “including Route 3 traffic” was developed for each entire measurement period with the KWI turbine shut down; another set of metrics “excluding Route 3 traffic” was developed for those periods when sound from Route 3 traffic was not noticeable. Nighttime ambient background  $L_{90}$  sound levels during the quietest periods are typically only somewhat influenced by sound from Route 3 traffic and are thus very similar for either data set. However, other acoustical metrics such as average maximum ( $\text{Avg } L_{\max}$ ) and equivalent ( $L_{\text{eq}}$ ) sound levels are dominated by sound from Route 3 traffic in the complete data set but are representative of sound levels generated by other less dominant and generally more distant sound sources for the data set excluding periods of Route 3 traffic, which is useful for comparing sound levels produced by the KWI turbine to sound levels associated with Route 3 traffic and also sound levels attributable to other ambient sources.

Note that MassDEP protocols for wind turbine assessments utilize the ambient  $L_{90}$  background sound levels calculated over each entire monitoring period “including Route 3 traffic”.



## 5.2 Analysis of Wind Data

Concurrent hub-height wind speed and direction data was obtained for each monitoring period in 10-minute intervals from the KWI turbine SCADA system, as well as energy production and other meteorological and operational information. The wind speed data measured by the anemometers mounted on the KWI turbine nacelle was compared with wind speed information calculated directly from the turbine power generation during each monitoring period, resulting in an average correction factor of +1.5 m/s (i.e. the actual wind speed is assumed to be slightly higher than the value provided by the SCADA system). All wind speed data analyzed for this study was adjusted in this manner (including acoustical monitoring periods with the KWI turbine operating and also periods with the turbine shut down) so that the wind speed information is accurate and cross-comparable and directly correlates with the SCADA power level data during turbine-on periods.

Wind speed and direction data was also collected in 1-second intervals from the real-time KWI SCADA system output. This data could not be obtained in a digital format, so a screen capture video of the SCADA system utility software was used as the only feasible way to record this information for later review. This data was used to determine the hub-height wind speed corresponding with the maximum sound level attributable to the KWI wind turbine in each 5-minute monitoring period, which is highlighted in red text on the detailed acoustical monitoring reports included in Appendix D. This analysis indicated that maximum sound levels generally occurred at wind speeds comparable to 10-minute average wind speed values and were typically not associated with short-term wind gusts.

## 6 Monitoring Results for A-weighted Sound Levels

A-weighted sound level results for acoustical monitoring of the KWI wind turbine are presented in Tables 2 through 22 for each 20-minute monitoring period. This data was used to assess sound level increases due to nighttime operation of the KWI wind turbine in the context of MassDEP noise policy. Supporting and supplemental detailed acoustic data are provided in Appendix D, which includes results for both 5-minute and 20-minute intervals.

Ambient sound levels are observed to vary somewhat among the measurement sites due to differing view angles and distances to Route 3 as well as the different levels of shielding provided by local terrain and/or nearby buildings at each monitoring location. Also, very high frequency sound generated by spring peepers occurred intermittently throughout the acoustical monitoring conducted on April 7, 2014. While this biogenic sound was only observed to have a significant effect on ambient sound levels at the 38 Prospect Street measurement site, the data collected at all sites was adjusted to remove the sound event contribution (as previously discussed in Section 5.1) to ensure a conservative worst-case assessment representative of winter conditions.

### 6.1 13 Schofield Road

A summary of A-weighted sound level results is presented in Table 2 for all successful nighttime acoustical monitoring of the KWI wind turbine conducted at the 13 Schofield Road measurement site. More detailed results are also provided in Tables 3 through 6 for each night of monitoring at this location.

Measurements were conducted with average hub-height wind speeds ranging from about 5 to 10 m/s. The wind speed and direction were generally very stable and consistent during each night of acoustical monitoring, with wind speed ranges observed to vary by less than 1 m/s between all contiguous turbine shutdown and operating periods. Ground level wind conditions were generally calm and therefore appropriately representative of worst-case wind shear.

When results were calculated over each entire acoustical monitoring period “including Route 3 traffic”, A-weighted  $L_{90}$  sound levels measured with the KWI turbine operating increased from ambient background  $L_{90}$  sound levels by approximately 5 to 10 dBA with increasing hub-height wind speed when using a slow-response sound level meter setting and by about 5 to 11 dBA using a fast-response setting.

When the data collected with the KWI turbine operating was reduced to include only periods dominated by the wind turbine and to “exclude Route 3 traffic” (as well as any periods of wind generated sound), the 20-minute average maximum ( $A_{vg} L_{max}$ ) sound levels directly attributable to the KWI turbine were approximately 9 to 15 dBA above ambient background  $L_{90}$  sound levels using a slow-response meter setting and were about 9 to 16 dBA above ambient using a fast-response setting. Similarly, the equivalent ( $L_{eq}$ ) sound levels attributable to the KWI turbine were about 6 to 12 dBA above ambient background sound levels using a slow-response meter setting and were approximately 6 to 13 dBA above ambient using a fast-response setting. The  $L_{90}$  sound levels measured during periods dominated by the KWI turbine were approximately 4 to 10 dBA above ambient  $L_{90}$  sound levels using a slow-response setting and were about 4 to 11 dBA above ambient using a fast-response setting. (Note that the ambient background sound levels referred to here were calculated over each entire monitoring period with the KWI turbine shut down and “include Route 3 traffic”.)

Overall, increases of turbine-operating  $A_{vg} L_{max}$  over ambient  $L_{90}$  exceeding 10 dBA were identified for nighttime operation of the KWI turbine during downwind conditions with wind speeds above 7 m/s. Analysis of the octave band sound levels measured at this site with the turbine operating showed that it does not create a “pure tone condition”, which is an additional component of the MassDEP noise policy.

Also, note that the reported results include an exceedance of the MassDEP 10 dBA maximum increase noise policy measured on March 22, 2014 with 7 to 8 m/s wind speeds which was identified subsequent to publication of the June 13, 2014 HMMH interim study report<sup>9</sup>.

---

<sup>9</sup> HMMH technical memorandum, “Interim Report for Kingston Wind Independence Turbine Acoustical Study” June 13, 2014.

**Table 2. Overall Summary of Acoustical Monitoring at 13 Schofield Road (740 feet from KWI)**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Avg Lmax KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Avg Lmax to L90 Increase (dBA) (e)
4/7/2014	5 to 6	SW to WSW	130 to 210	Slow	35.5	40.7	5.2	44.8	9.3
				Fast	36.5	41.6	5.1	45.7	9.2
3/22/2014	7 to 8	SW	539 to 669	Slow	33.0	41.7	8.7	45.5	12.5
				Fast	33.4	42.4	9.0	46.4	13.0
3/2/2014	8 to 9	SSW	831 to 1026	Slow	34.1	44.2	10.1	49.2	15.0
				Fast	34.7	44.7	10.0	50.8	16.2
3/15/2014	10	South	1505 to 1805	Slow	39.1	49.5	10.4	52.8	13.7
				Fast	39.5	50.4	10.9	55.2	15.7

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Results for acoustical monitoring on 3/2/2014 and 3/15/2014 also included in June 13, 2014 interim study report.
- 3) High frequency sound from spring peepers removed from acoustical monitoring data collected on 4/7/2014.
- 4) L90 to L90 Increase:  $c = b - a$
- 5) Avg Lmax to L90 Increase:  $e = d - a$

**Table 3. Summary of Acoustical Monitoring at 13 Schofield Road on April 7, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
4/7/2014	2:20 to 3:10 AM	Scenario # 1	5.7 to 6.0	248 to 258	4.8 to 5.2	233 to 256	130 to 210

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	35.5	40.7	5.2	Avg Lmax 44.8	9.3	No
				Leq 41.9	6.4	
				L90 39.7	4.2	
Fast	36.5	41.6	5.1	Avg Lmax 45.7	9.2	No
				Leq 42.8	6.3	
				L90 40.6	4.1	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from data.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$

**Table 4. Summary of Acoustical Monitoring at 13 Schofield Road on March 22, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/22/2014	2:20 to 3:05 AM	Scenario # 2	7.7 to 7.8	230 to 235	7.1 to 7.3	235 to 236	539 to 669

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	33.0	41.7	8.7	Avg Lmax 45.5	12.5	No
				Leq 43.2	10.2	
				L90 41.4	8.3	
Fast	33.4	42.4	9.0	Avg Lmax 46.4	13.0	No
				Leq 43.9	10.5	
				L90 42.0	8.6	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) L90 to L90 Increase:  $c = b - a$
- 3) Increase from Ambient L90:  $e = d - a$

**Table 5. Summary of Acoustical Monitoring at 13 Schofield Road on March 2, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/2/2014	2:20 to 3:05 AM	Scenario # 2	7.8 to 8.7	197 to 199	7.7 to 8.9	200 to 205	831 to 1026

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	34.1	44.2	10.1	Avg Lmax 49.2	15.0	No
				Leq 46.3	12.2	
				L90 42.7	8.6	
Fast	34.7	44.7	10.0	Avg Lmax 50.8	16.2	No
				Leq 47.4	12.7	
				L90 43.4	8.7	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Results for acoustical monitoring on 3/2/2014 also included in June 13, 2014 interim study report.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$



**Table 6. Summary of Acoustical Monitoring at 13 Schofield Road on March 15, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/15/2014	2:20 to 3:05 AM	Scenario # 3	10.0 to 10.3	177 to 178	9.8 to 10.3	176 to 179	1505 to 1805

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	39.1	49.5	10.4	Avg Lmax 52.8	13.7	No
				Leq 50.5	11.3	
				L90 49.2	10.1	
Fast	39.5	50.4	10.9	Avg Lmax 55.2	15.7	No
				Leq 51.7	12.2	
				L90 50.1	10.6	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Results for acoustical monitoring on 3/15/2014 also included in June 13, 2014 interim study report.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$

## 6.2 3 Leland Road

A summary of A-weighted sound level results is presented in Table 7 for all successful nighttime acoustical monitoring of the KWI wind turbine conducted at the 3 Leland Road measurement site. More detailed results are also provided in Tables 8 through 11 for each night of monitoring at this location.

Measurements were conducted with average hub-height wind speeds ranging from about 5 to 10 m/s. The wind speed and direction were generally stable and consistent during each night of acoustical monitoring, with wind speed ranges observed to vary by less than 1 m/s between contiguous turbine shutdown and operating periods for measurements at moderate and higher wind speeds and by about 2 m/s for the measurement on April 7, 2014 at lower wind speeds. Ground level wind conditions were generally calm and appropriately representative of worst-case wind shear.

When results were calculated over each entire acoustical monitoring period “including Route 3 traffic”, A-weighted  $L_{90}$  sound levels measured with the KWI turbine operating increased from ambient background  $L_{90}$  sound levels by approximately 2 to 7 dBA with increasing hub-height wind speed when using a slow-response sound level meter setting and by about 2 to 8 dBA using a fast-response setting.

When the data collected with the KWI turbine operating was reduced to include only periods dominated by the wind turbine and to “exclude Route 3 traffic” (as well as any periods of wind generated sound), the 20-minute average maximum ( $A_{vg} L_{max}$ ) sound levels directly attributable to the KWI wind turbine were approximately 0 to 9 dBA above ambient background  $L_{90}$  sound levels using a slow-response meter setting and were about 1 to 11 dBA above ambient using a fast-response setting. Similarly, the equivalent ( $L_{eq}$ ) sound levels attributable to the KWI turbine were about 1 dBA lower to 8 dBA higher than ambient background sound levels using a slow-response meter setting and were approximately 0 to 9 dBA above ambient using a fast-response setting. The  $L_{90}$  sound levels measured during periods dominated by the KWI turbine were approximately 1 dBA lower to 7 dBA higher than ambient  $L_{90}$  sound levels using either a slow-response or a fast-response setting. (Note that the ambient background sound levels referred to here were calculated over each entire monitoring period with the KWI turbine shut down and “include Route 3 traffic”. Also, please refer to Section 5.1 regarding calculation of turbine-only sound levels that are lower than the measured ambient  $L_{90}$  background level.)

Overall, increases of turbine-operating  $A_{vg} L_{max}$  over ambient  $L_{90}$  approaching 10 dBA were identified for nighttime operation of the KWI turbine during downwind conditions with wind speeds around 10 m/s. Analysis of the octave band sound levels measured at this site with the turbine operating showed that it does not create a “pure tone condition”.

**Table 7. Overall Summary of Acoustical Monitoring at 3 Leland Road (990 feet from KWI)**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Avg Lmax KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Avg Lmax to L90 Increase (dBA) (e)
4/7/2014	5 to 7	WSW to W	173 to 189	Slow	39.8	41.4	1.7	40.0	0.2
				Fast	40.7	42.2	1.6	41.6	0.9
3/22/2014	7 to 8	SW	586 to 819	Slow	39.8	41.7	2.0	44.0	4.3
				Fast	39.9	42.4	2.4	45.0	5.1
3/2/2014	8 to 9	SSW	827 to 1139	Slow	41.2	45.2	3.9	46.0	4.8
				Fast	41.5	45.9	4.3	47.9	6.4
3/15/2014	10	South	1505 to 1805	Slow	40.5	47.6	7.1	49.3	8.8
				Fast	40.8	48.5	7.7	51.6	10.8

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Results for acoustical monitoring on 3/2/2014 and 3/15/2014 also included in June 13, 2014 interim study report.
- 3) High frequency sound from spring peepers removed from acoustical monitoring data collected on 4/7/2014.
- 4) L90 to L90 Increase:  $c = b - a$
- 5) Avg Lmax to L90 Increase:  $e = d - a$

**Table 8. Summary of Acoustical Monitoring at 3 Leland Road on April 7, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
4/7/2014	1:00 to 1:45 AM	Scenario # 1	6.7 to 6.9	263 to 264	4.5 to 5.1	257 to 280	173 to 189

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	39.8	41.4	1.7	Avg Lmax 40.0	0.2	No
				Leq 39.2	-0.5	
				L90 38.4	-1.3	
Fast	40.7	42.2	1.6	Avg Lmax 41.6	0.9	No
				Leq 40.4	-0.3	
				L90 39.5	-1.2	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from data.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$

**Table 9. Summary of Acoustical Monitoring at 3 Leland Road on March 22, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/22/2014	1:00 to 1:45 AM	Scenario # 2	7.3 to 7.8	227 to 228	7.1 to 7.8	228 to 230	586 to 819

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	39.8	41.7	2.0	Avg Lmax 44.0	4.3	No
				Leq 42.3	2.6	
				L90 40.7	0.9	
Fast	39.9	42.4	2.4	Avg Lmax 45.0	5.1	No
				Leq 43.1	3.1	
				L90 41.1	1.2	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) L90 to L90 Increase:  $c = b - a$
- 3) Increase from Ambient L90:  $e = d - a$

**Table 10. Summary of Acoustical Monitoring at 3 Leland Road on March 2, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/2/2014	1:00 to 1:50 AM	Scenario # 2	8.5 to 8.9	196 to 197	8.4 to 8.8	199 to 200	827 to 1139

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	41.2	45.2	3.9	Avg Lmax 46.0	4.8	No
				Leq 45.4	4.2	
				L90 44.3	3.1	
Fast	41.5	45.9	4.3	Avg Lmax 47.9	6.4	No
				Leq 46.4	4.9	
				L90 45.0	3.4	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Results for acoustical monitoring on 3/2/2014 also included in June 13, 2014 interim study report.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$

**Table 11. Summary of Acoustical Monitoring at 3 Leland Road on March 15, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/15/2014	2:20 to 3:10 AM	Scenario # 3	10.0 to 10.3	177 to 178	9.8 to 10.3	176 to 179	1505 to 1805

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	40.5	47.6	7.1	Avg Lmax 49.3	8.8	No
				Leq 48.1	7.6	
				L90 47.1	6.6	
Fast	40.8	48.5	7.7	Avg Lmax 51.6	10.8	No
				Leq 49.4	8.6	
				L90 47.9	7.1	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Results for acoustical monitoring on 3/15/2014 also included in June 13, 2014 interim study report.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$



### 6.3 11 Leland Road

A summary of A-weighted sound level results is presented in Table 12 for all successful nighttime acoustical monitoring of the KWI wind turbine conducted at the 11 Leland Road measurement site. More detailed results are also provided in Tables 13 through 16 for each night of monitoring at this location.

Measurements were conducted with average hub-height wind speeds ranging from about 5 to 11 m/s. The wind speed and direction were generally very stable and consistent during each night of acoustical monitoring, with wind speed ranges observed to vary by less than 1 m/s between all contiguous turbine shutdown and operating periods. Ground level wind conditions were generally calm and appropriately representative of worst-case wind shear.

When results were calculated over each entire acoustical monitoring period “including Route 3 traffic”, A-weighted  $L_{90}$  sound levels measured with the KWI turbine operating increased from ambient background  $L_{90}$  sound levels by approximately 3 to 6 dBA with increasing hub-height wind speed when using either a slow-response sound level meter setting or a fast-response setting.

When the data collected with the KWI turbine operating was reduced to include only periods dominated by the wind turbine and to “exclude Route 3 traffic” (as well as any periods of wind generated sound), the 20-minute average maximum ( $A_{vg} L_{max}$ ) sound levels directly attributable to the KWI wind turbine were approximately 6 to 10 dBA above ambient background  $L_{90}$  sound levels using a slow-response meter setting and were about 7 to 11 dBA above ambient using a fast-response setting. Similarly, the equivalent ( $L_{eq}$ ) sound levels attributable to the KWI turbine were about 4 to 8 dBA above ambient background sound levels using either a slow-response meter setting or a fast-response setting. The  $L_{90}$  sound levels measured during periods dominated by the KWI turbine were approximately 2 to 6 dBA above ambient  $L_{90}$  sound levels using either a slow-response or a fast-response setting. (Note that the ambient background sound levels referred to here were calculated over each entire monitoring period with the KWI turbine shut down and “include Route 3 traffic”).

Overall, increases of turbine-operating  $A_{vg} L_{max}$  over ambient  $L_{90}$  exceeding 10 dBA were identified for nighttime operation of the KWI turbine during downwind conditions with wind speeds around 7 m/s. Analysis of the octave band sound levels measured at this site with the turbine operating showed that it does not create a “pure tone condition”, which is an additional component of the MassDEP noise policy.

Also, note that the reported results include an exceedance of the MassDEP 10 dBA maximum increase noise policy measured on March 22, 2014 with 7 to 8 m/s wind speeds which was identified subsequent to publication of the June 13, 2014 interim study report (footnote 9).

**Table 12. Overall Summary of Acoustical Monitoring at 11 Leland Road (1025 feet from KWI)**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Avg Lmax KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Avg Lmax to L90 Increase (dBA) (e)
4/7/2014	5 to 6	SW to WSW	130 to 210	Slow	35.6	39.0	3.3	42.0	6.3
				Fast	36.6	40.0	3.4	43.3	6.7
3/22/2014	7 to 8	SW	539 to 669	Slow	35.0	41.2	6.2	45.1	10.1
				Fast	35.5	41.9	6.4	46.7	11.2
3/2/2014	8 to 9	SSW	827 to 1139	Slow	41.2	44.8	3.7	46.9	5.8
				Fast	41.5	45.7	4.2	49.0	7.5
3/15/2014	10 to 11	South	1422 to 1880	Slow	43.4	48.9	5.5	50.8	7.3
				Fast	43.7	49.6	5.9	53.1	9.4

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from acoustical monitoring data collected on 4/7/2014.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Avg Lmax to L90 Increase:  $e = d - a$

**Table 13. Summary of Acoustical Monitoring at 11 Leland Road on April 7, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
4/7/2014	2:20 to 3:10 AM	Scenario # 1	5.7 to 6.0	248 to 258	4.8 to 5.2	233 to 256	130 to 210

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	35.6	39.0	3.3	Avg Lmax 42.0	6.3	No
				Leq 39.8	4.1	
				L90 37.8	2.1	
Fast	36.6	40.0	3.4	Avg Lmax 43.3	6.7	No
				Leq 40.8	4.2	
				L90 38.9	2.3	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from data.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$

**Table 14. Summary of Acoustical Monitoring at 11 Leland Road on March 22, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/22/2014	2:20 to 3:10 AM	Scenario # 2	7.7 to 7.8	230 to 235	7.1 to 7.3	235 to 236	539 to 669

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	35.0	41.2	6.2	Avg Lmax 45.1	10.1	No
				Leq 42.7	7.7	
				L90 41.0	5.9	
Fast	35.5	41.9	6.4	Avg Lmax 46.7	11.2	No
				Leq 43.5	8.0	
				L90 41.6	6.1	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) L90 to L90 Increase:  $c = b - a$
- 3) Increase from Ambient L90:  $e = d - a$

**Table 15. Summary of Acoustical Monitoring at 11 Leland Road on March 2, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/2/2014	1:00 to 1:50 AM	Scenario # 2	8.5 to 8.9	196 to 197	8.4 to 8.8	199 to 200	827 to 1139

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	41.2	44.8	3.7	Avg Lmax 46.9	5.8	No
				Leq 45.4	4.2	
				L90 43.9	2.7	
Fast	41.5	45.7	4.2	Avg Lmax 49.0	7.5	No
				Leq 46.5	5.0	
				L90 44.6	3.1	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) L90 to L90 Increase:  $c = b - a$
- 3) Increase from Ambient L90:  $e = d - a$

**Table 16. Summary of Acoustical Monitoring at 11 Leland Road on March 15, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/15/2014	3:40 to 4:30 AM	Scenario # 3	10.7 to 11.0	182	10.1 to 10.4	179 to 181	1422 to 1880

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	43.4	48.9	5.5	Avg Lmax 50.8	7.3	No
				Leq 49.3	5.8	
				L90 48.1	4.6	
Fast	43.7	49.6	5.9	Avg Lmax 53.1	9.4	No
				Leq 50.4	6.8	
				L90 48.9	5.2	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) L90 to L90 Increase:  $c = b - a$
- 3) Increase from Ambient L90:  $e = d - a$



## 6.4 38 Prospect Street

A summary of A-weighted sound level results is presented in Table 17 for all successful nighttime acoustical monitoring of the KWI wind turbine conducted at the 38 Prospect Street measurement site. More detailed results are provided in Tables 18 through 21 for each night of monitoring at this location.

Measurements were conducted with average hub-height wind speeds ranging from about 5 to 11 m/s. The wind speed and direction were generally stable and consistent during each night of acoustical monitoring, with wind speed ranges observed to vary by less than 1 m/s between contiguous turbine shutdown and operating periods for measurements at moderate and higher wind speeds and by about 2 m/s for the measurement on April 7, 2014 at lower wind speeds. Ground level wind conditions were generally calm and appropriately representative of worst-case wind shear.

When results were calculated over each entire acoustical monitoring period “including Route 3 traffic”, A-weighted  $L_{90}$  sound levels measured with the KWI turbine operating increased from ambient background  $L_{90}$  sound levels by approximately 1 to 5 dBA with increasing hub-height wind speed when using either a slow-response sound level meter setting or a fast-response setting.

When the data collected with the KWI turbine operating was reduced to include only periods dominated by the wind turbine and to “exclude Route 3 traffic” (as well as any periods of wind generated sound), the 20-minute average maximum ( $Avg L_{max}$ ) sound levels directly attributable to the KWI wind turbine were approximately 1 dBA lower to 8 dBA higher than ambient background  $L_{90}$  sound levels using a slow-response meter setting and were about 1 dBA lower to 9 dBA higher than ambient using a fast-response setting. Similarly, the equivalent ( $L_{eq}$ ) sound levels attributable to the KWI turbine were about 2 dBA lower to 6 dBA higher than ambient background sound levels using either a slow-response meter setting or a fast-response setting. The  $L_{90}$  sound levels measured during periods dominated by the KWI turbine were approximately 3 dBA lower to 3 dBA higher than ambient  $L_{90}$  sound levels using a slow-response setting and were about 3 dBA lower to 4 dBA higher than ambient using a fast-response setting. (Note that the ambient background sound levels referred to here were calculated over each entire monitoring period with the KWI turbine shut down and “include Route 3 traffic”. Also, please refer to Section 5.1 regarding calculation of turbine-only sound levels that are lower than the measured ambient  $L_{90}$  background level.)

Overall, measured increases of turbine-operating  $Avg L_{max}$  over ambient  $L_{90}$  did not exceed 10 dBA.

Analysis of the octave band sound levels measured at this site with the turbine operating showed that it does not create a “pure tone condition”.

**Table 17. Overall Summary of Acoustical Monitoring at 38 Prospect Street (1410 feet from KWI)**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Avg Lmax KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Avg Lmax to L90 Increase (dBA) (e)
4/7/2014	5 to 7	WSW to W	173 to 189	Slow	40.3	41.0	0.7	38.9	-1.4
				Fast	41.2	42.0	0.8	40.1	-1.1
3/22/2014	7 to 8	SW	586 to 819	Slow	39.5	41.8	2.3	42.1	2.6
				Fast	39.8	42.6	2.7	43.4	3.6
3/2/2014	8 to 9	SSW	831 to 1026	Slow	37.2	42.2	5.0	44.7	7.5
				Fast	37.7	42.9	5.2	46.3	8.6
3/15/2014	10 to 11	South	1422 to 1880	Slow	42.1	46.1	3.9	48.3	6.2
				Fast	43.2	47.3	4.1	51.2	8.0

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from acoustical monitoring data collected on 4/7/2014.
- 3) High frequency sound from cord tapping on a flagpole removed from acoustical monitoring data collected on 3/15/2014.
- 4) L90 to L90 Increase:  $c = b - a$
- 5) Avg Lmax to L90 Increase:  $e = d - a$

**Table 18. Summary of Acoustical Monitoring at 38 Prospect Street on April 7, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
4/7/2014	1:00 to 1:45 AM	Scenario # 1	6.7 to 6.9	263 to 264	4.5 to 5.1	257 to 280	173 to 189

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	40.3	41.0	0.7	Avg Lmax 38.9	-1.4	No
				Leq 38.6	-1.7	
				L90 37.6	-2.7	
Fast	41.2	42.0	0.8	Avg Lmax 40.1	-1.1	No
				Leq 39.7	-1.5	
				L90 38.7	-2.6	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from data.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$

**Table 19. Summary of Acoustical Monitoring at 38 Prospect Street on March 22, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/22/2014	1:00 to 1:45 AM	Scenario # 2	7.3 to 7.8	227 to 228	7.1 to 7.8	228 to 230	586 to 819

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	39.5	41.8	2.3	Avg Lmax 42.1	2.6	No
				Leq 41.2	1.8	
				L90 40.3	0.8	
Fast	39.8	42.6	2.7	Avg Lmax 43.4	3.6	No
				Leq 42.0	2.2	
				L90 40.7	0.9	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) L90 to L90 Increase:  $c = b - a$
- 3) Increase from Ambient L90:  $e = d - a$

**Table 20. Summary of Acoustical Monitoring at 38 Prospect Street on March 2, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/2/2014	2:20 to 3:05 AM	Scenario # 2	7.8 to 8.7	197 to 199	7.7 to 8.9	200 to 205	831 to 1026

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	37.2	42.2	5.0	Avg Lmax 44.7	7.5	No
				Leq 43.0	5.8	
				L90 39.4	2.2	
Fast	37.7	42.9	5.2	Avg Lmax 46.3	8.6	No
				Leq 44.1	6.4	
				L90 40.1	2.4	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) L90 to L90 Increase:  $c = b - a$
- 3) Increase from Ambient L90:  $e = d - a$

**Table 21. Summary of Acoustical Monitoring at 38 Prospect Street on March 15, 2014**

Date	Time	Scenario	KWI Turbine <b>SHUTDOWN</b>		KWI Turbine <b>OPERATING</b>		
			10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions (deg)	10-min Avg Power Levels (kW)
3/15/2014	3:40 to 4:25 AM	Scenario # 3	10.7 to 11.0	182	10.1 to 10.4	179 to 181	1422 to 1880

Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)	20-min Acoustical Metrics KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic) (d)	Increase from Ambient L90 (dBA) (e)	Pure-tone Condition?
Slow	42.1	46.1	3.9	Avg Lmax 48.3	6.2	No
				Leq 46.7	4.6	
				L90 45.5	3.4	
Fast	43.2	47.3	4.1	Avg Lmax 51.2	8.0	No
				Leq 48.3	5.2	
				L90 46.7	3.5	

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from cord tapping on a flagpole removed from data.
- 3) L90 to L90 Increase:  $c = b - a$
- 4) Increase from Ambient L90:  $e = d - a$



## 6.5 Kingston Intermediate School

A summary of A-weighted sound level results is presented in Table 22 for daytime acoustical monitoring of the KWI wind turbine at the Kingston Intermediate School on February 18, 2014.

Measurements were conducted with average hub-height wind speeds ranging from about 6 to 8 m/s. The wind speed and direction were generally very stable and consistent during the acoustical monitoring, with the wind speed range observed to vary by about 1 m/s between the contiguous turbine shutdown and operating periods. Ground level wind conditions were mostly calm and appropriately representative of worst-case wind shear.

When results were calculated over each entire acoustical monitoring period “including Route 3 traffic”, A-weighted  $L_{90}$  sound levels measured with the KWI turbine operating increased from ambient background  $L_{90}$  sound levels by less than 1 dBA using either a slow-response sound level meter setting or a fast-response setting.

Further analyses were not conducted because traffic dominated sound levels throughout the monitoring and the wind turbine was not audible at any time. Therefore, sound levels “excluding Route 3 traffic” and directly attributable to the KWI wind turbine could not be calculated.

**Table 22. Summary of Acoustical Monitoring at Kingston Intermediate School (2170 feet from KWI)**

Date	Time	Scenario	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Sound Level Meter Response	20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic) (a)	20-min L90 with KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic) (b)	L90 to L90 Increase (dBA) (c)
2/18/2014	10:30 to 11:15 AM	Scenario #7	6 to 8	East	428 to 690	Slow	46.0	46.4	0.4
						Fast	46.9	47.4	0.4

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from heating system exhaust removed from data.
- 4) L90 to L90 Increase:  $c = b - a$

## 7 Monitoring Results for Low Frequency Sound and Infrasound

In addition to the acoustical monitoring results for A-weighted sound levels presented in Section 6, broadband sound level increases were investigated for other sound level weighting networks that include larger contributions from low frequency audible sound and also contributions from sound below the lower limit of human audibility (approximately 20Hz) known as infrasound. Octave band sound level increases due to operation of the KWI wind turbine were also examined.

As described in Appendix A, there are several broadband sound level weighting networks, or scales, and each weighting emphasizes or de-emphasizes specific frequency ranges of the sound spectrum. A-weighting is most typically used for environmental sound analyses since it has been found to best correlate with human response to sound, while C-weighting is often used to assess the prominence of low frequency sound (relative to the A-level) and G-weighting is intended to isolate and measure only very low frequency sound and infrasound. Z-weighting is also commonly used and denotes completely unweighted broadband sound levels.

Figure A-1 of Appendix A presents a graph comparing the various broadband sound level weighting networks. As shown in this figure, the A-weighting, C-weighting, and Z-weighting networks comprise the frequency range from 10 Hz to 20,000 Hz, while the G-weighting network includes the frequency range from 0.25 Hz to 315 Hz. Also, as discussed previously, the acoustical monitoring instrumentation collected data down to 5.6 Hz, which is the lower frequency limit of both the 6.3Hz 1/3-octave band and the 8 Hz octave band. Therefore, a complete assessment of G-weighted sound levels was not possible, since the frequency range from 0.25 Hz to 5.5 Hz could not be sampled.

Tables 23 through 27 present broadband sound level increase comparisons between the various sound level weighting networks for the acoustical monitoring conducted at each measurement site. This analysis utilizes slow-response sound level data since the lower frequencies of sound which were of interest have longer periods of oscillation and are more slowly varying than mid to high frequency sound.

Figures 4 through 15 provide octave band sound levels for monitoring periods with the KWI turbine operating and shut down, as well as the corresponding octave sound level increases calculated between the ambient  $L_{90}$  sound levels and the equivalent ( $L_{eq}$ ) sound levels measured during periods dominated by sound from the wind turbine. The  $L_{eq}$  metric was selected for the octave-band analysis in order to best assess characteristic octave band sound level variations.

Additional detailed acoustic data are attached as Appendix D and include sound level increase calculations for various sound metrics and sound level weightings using both slow-response and fast-response meter settings, as well as supplemental octave band and 1/3-octave band data.

### 7.1 Broadband Sound Level Increase Comparisons

A summary of low frequency and infrasound monitoring results is presented in Table 23 comparing the broadband sound level increases calculated using various sound level weightings for each night of acoustical monitoring of the KWI wind turbine conducted at the 13 Schofield Road measurement site.

The results indicate that broadband sound level increases from ambient conditions due to operation of the KWI turbine are very comparable when calculated using any of the sound level weightings included in Table 23. The results within each range of wind speed generally differ by only about 1 to 2 dB among the various weighting networks for any particular sound level metric. Greater variation in the results of around 2 to 4 dB is only observed for the  $A_{vg} L_{max}$  metric at the highest wind speeds, which may be at least partially due to wind-induced sound in the instruments from wind gusts that occurred near ground

level on this night of measurements. While the 7-inch windscreens used throughout the acoustical monitoring allowed for accurate measurement of A-weighted sound levels even with such winds, the sound levels calculated using other weighting networks may have at times been briefly affected.

No particular sound level weighting shows a consistent association with the greatest broadband sound level increases. This suggests that the increases from ambient sound conditions due to operation of the KWI turbine that were measured at 13 Schofield Road are likely comparable across most frequencies of the sound spectrum, as further supported by the octave band sound level increase analysis discussed below in Section 7.2.

Tables 24 through 26 present low frequency and infrasound monitoring results comparing the broadband sound level increases calculated using various weighting networks for each night of acoustical monitoring of the KWI wind turbine conducted at the 3 Leland Road, 11 Leland Road, and 38 Prospect Street measurement sites, respectively.

The monitoring results for these locations indicate that broadband sound level increases from ambient conditions due to operation of the KWI turbine are often several decibels lower when calculated using A-weighting as compared to the other sound level weightings. The A-weighted sound level increases measured at these sites are also generally several decibels lower than the increases observed at 13 Schofield Road for comparable wind speed ranges, while somewhat smaller relative differences are found using the other sound level weightings. These findings imply that turbine sound level attenuation with distance is greater for higher frequencies of sound and somewhat less for lower frequencies, as further supported by the octave band analysis discussed in Section 7.2.

Table 27 presents low frequency and infrasound monitoring results comparing the sound level increases calculated using various broadband weighting networks for daytime acoustical monitoring of the KWI wind turbine conducted at the Kingston Intermediate School on February 28, 2014.

The results of the daytime monitoring at the Intermediate School indicate that the broadband sound level increase from ambient conditions due to operation of the KWI turbine was very small (less than 2 dB) when calculated using any of the sound level weightings included in Table 27. Also, note that the HMMH technician/analyst observed an increase in aircraft overflights and wind-generated sound during the period when the wind turbine was operating. These ambient sound events likely contributed to the marginal sound level increases observed.

## 7.2 Octave Band Sound Level Increase Assessment

Figures 4 through 15 provide slow-response octave band sound levels for monitoring periods with the KWI turbine operating and shut down as well as corresponding octave band sound level increases for each night of acoustical monitoring conducted at the 13 Schofield Road, 3 Leland Road, 11 Leland Road, and 38 Prospect Street measurement sites, respectively. Results from the daytime acoustical monitoring conducted at the Kingston Intermediate School are not included because traffic dominated sound levels throughout the measurement and therefore sound levels “excluding Route 3 traffic” and directly attributable to the KWI wind turbine could not be calculated.

Figures 4, 7, 10, and 12 present the slow-response equivalent ( $L_{eq}$ ) octave band sound levels measured at each monitoring location during periods dominated by sound from the KWI turbine. In some instances peaks are observed in the turbine sound spectra at 250 Hz and 500 Hz. However, the increases relative to adjacent octave bands were below the 3 dB threshold for a pure-tone condition per MassDEP noise policy as outlined in Section 3 and Appendix B.

Figures 5, 8, 11, and 13 present the slow-response ambient  $L_{90}$  octave band sound levels that were measured at each monitoring site. In some instances peaks are observed in the ambient sound spectra at 1000 Hz due to sound from distant commercial/industrial equipment.

Figures 6, 9, 12, and 15 provide the turbine-only  $L_{eq}$  to ambient  $L_{90}$  octave band sound level increases measured at each site for corresponding monitoring periods with the KWI turbine operating and shut down. Overall, the data collected at 13 Schofield Road indicates octave band sound level increases with moderate to higher wind speeds in the range of 10 to 14 dB or more for most octave bands up to 2000 Hz, while the largest octave band increases are closer to 10 to 12 dB in certain octave bands at the more distant monitoring locations.

Furthermore, the octave band sound level increases measured at the 13 Schofield Road monitoring site are generally comparable among the various octave bands, which supports the finding in Section 7.1 that measured broadband sound level increases were very similar among the different sound level weightings.

Also, octave band sound level increases measured at the more distant monitoring locations are generally somewhat greater in the lower frequency octave bands (relative to the higher frequency octave bands), indicating that higher frequency sound generated by the turbine attenuates at a greater rate with distance. This supports the findings in Section 7.1 that 1) the broadband sound level increases measured at these sites were somewhat lower when calculated using A-weighting as compared with other sound level weightings that include larger contributions from low frequency sound and that 2) the A-weighted sound level increases measured in these locations were typically several decibels lower than the increases observed on Schofield Road during comparable periods, while broadband sound level increases calculated using other sound level weighting networks were much closer to the Schofield Road monitoring results.

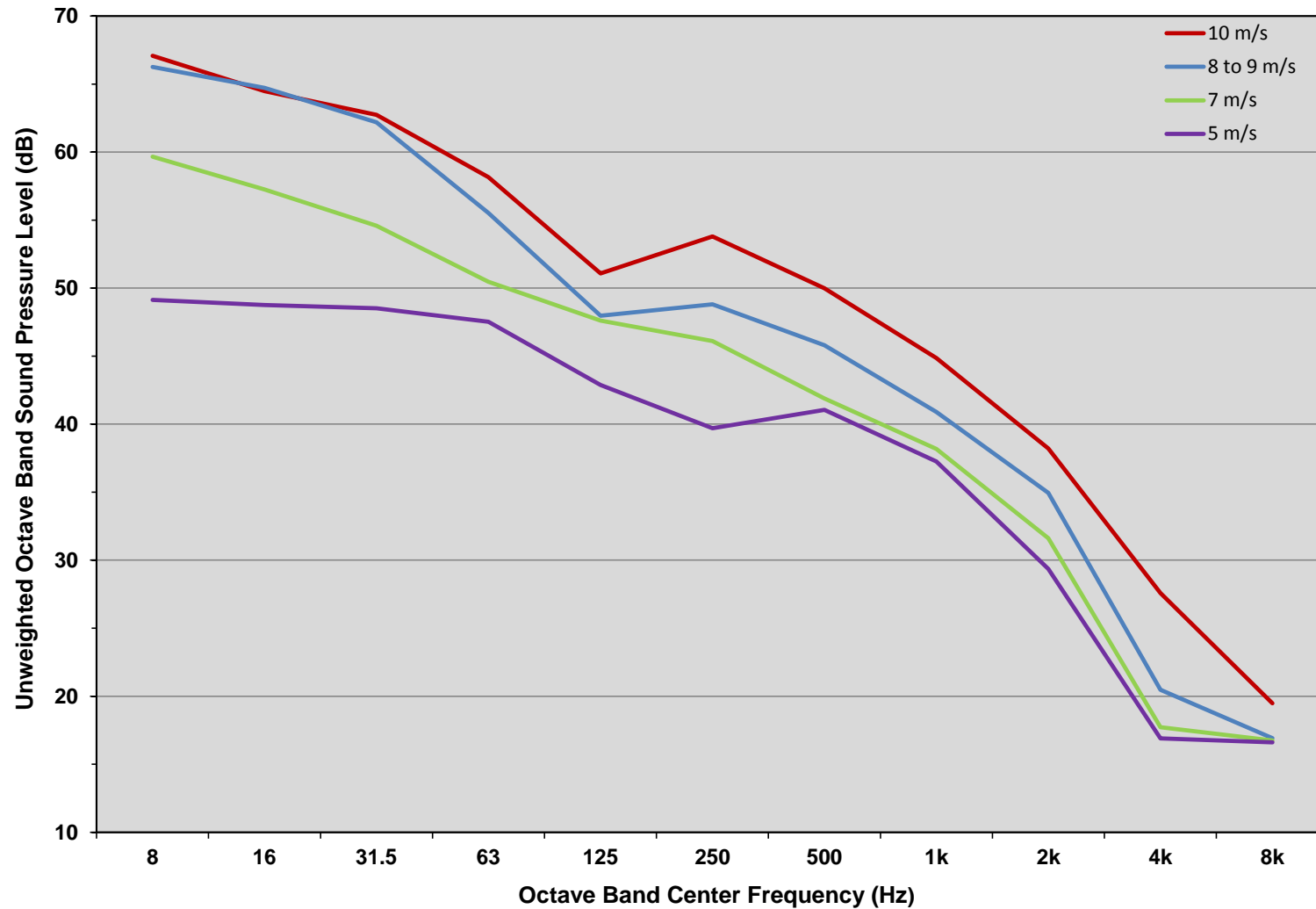
**Table 23. Summary of Low Frequency and Infrasound Monitoring at 13 Schofield Road**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	KWI Wind Turbine Acoustical Metric	Increase from Ambient L90 (slow response) 20-min Acoustical Metrics for KWI Wind Turbine <b>ONLY</b> (excl. Route 3 traffic) 20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (incl. Route 3 traffic)			
					(dBA)	(dBC)	(dBZ)	(dBG)
4/7/2014	5 to 6	SW to WSW	130 to 210	Avg Lmax	9.3	8.6	7.6	7.4
				Leq	6.4	5.5	4.8	4.6
				L90	4.2	3.2	3.0	3.0
3/22/2014	7 to 8	SW	539 to 669	Avg Lmax	12.5	10.9	11.5	12.6
				Leq	10.2	8.6	9.3	10.1
				L90	8.3	7.3	7.7	8.4
3/2/2014	8 to 9	SSW	831 to 1026	Avg Lmax	15.0	15.5	15.7	17.3
				Leq	12.2	12.7	12.7	13.4
				L90	8.6	9.4	8.8	9.5
3/15/2014	10	South	1505 to 1805	Avg Lmax	13.7	15.1	17.8	16.6
				Leq	11.3	12.7	12.4	12.5
				L90	10.1	11.4	10.8	10.7

**Notes:**

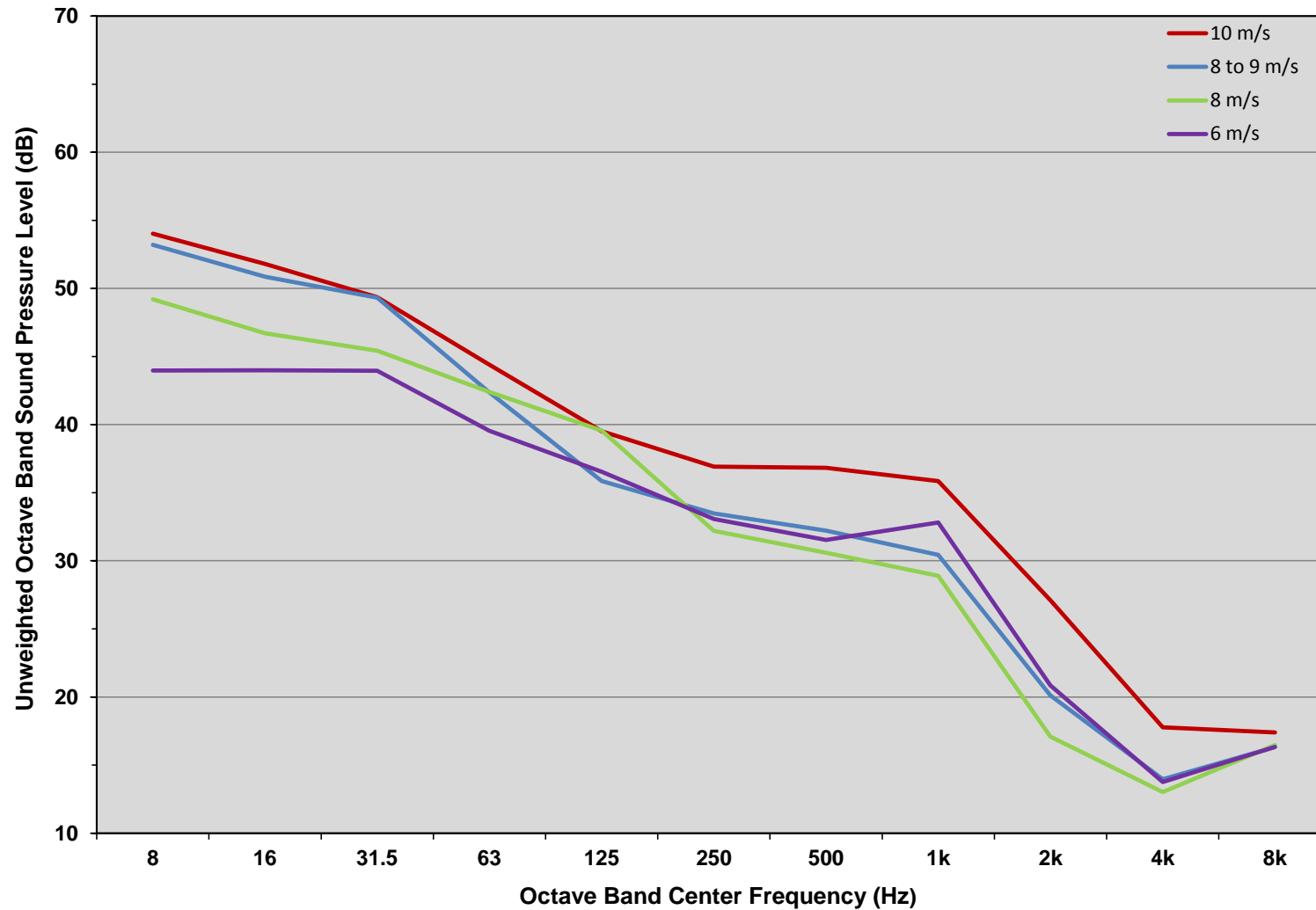
- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from data collected on 4/7/2014.

**Figure 4. 20-minute Slow-response Octave Band Equivalent (Leq) Sound Levels  
13 Schofield Road - KWI Wind Turbine ONLY (excluding Route 3 traffic)**

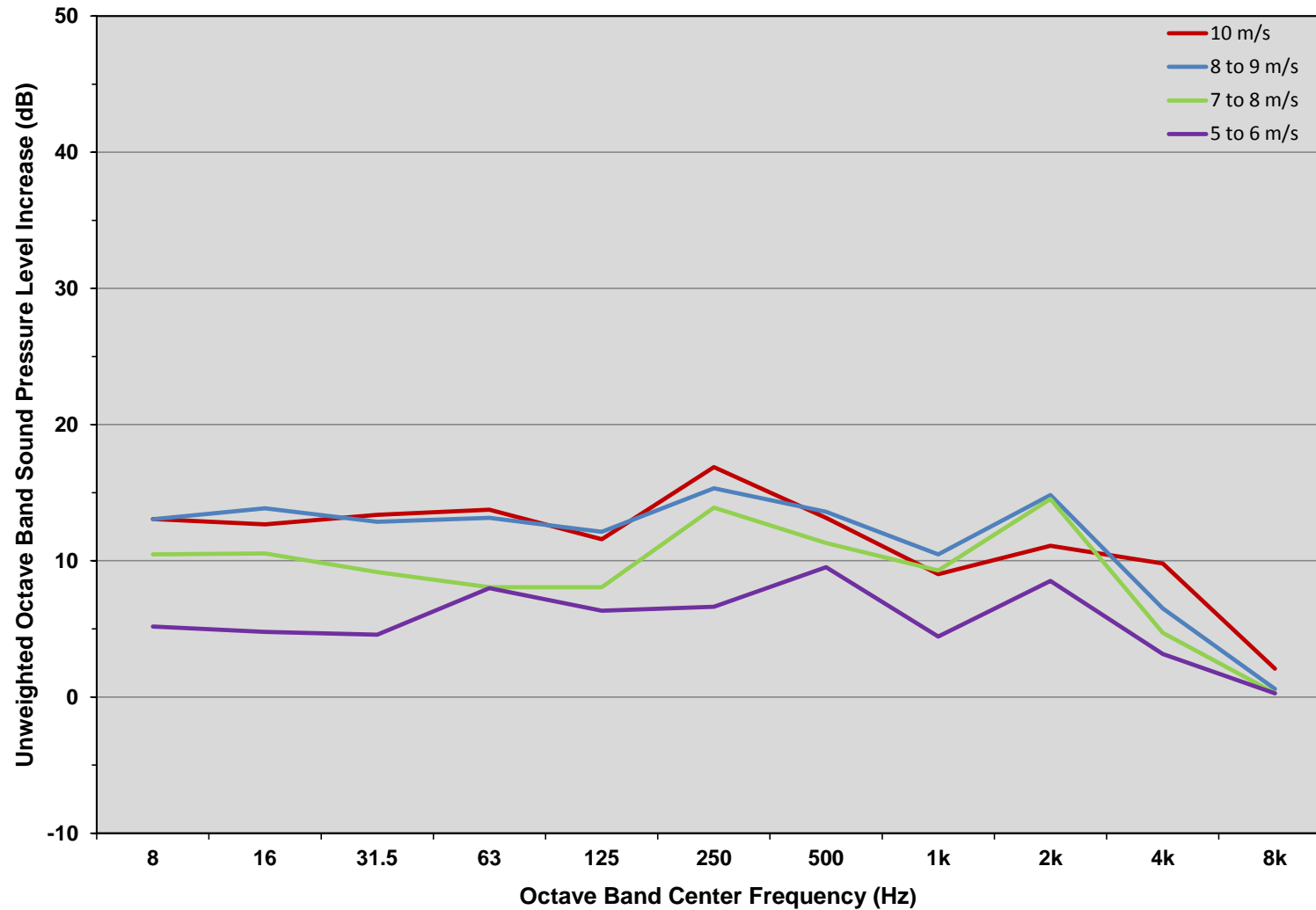




**Figure 5. 20-minute Slow-response Octave Band Ambient (L90) Sound Levels**  
13 Schofield Road - KWI Wind Turbine SHUTDOWN (including Route 3 traffic)



**Figure 6. Slow-response Octave Band Sound Level Increases  
from Ambient L90 to KWI Wind Turbine ONLY Leq - 13 Schofield Road**



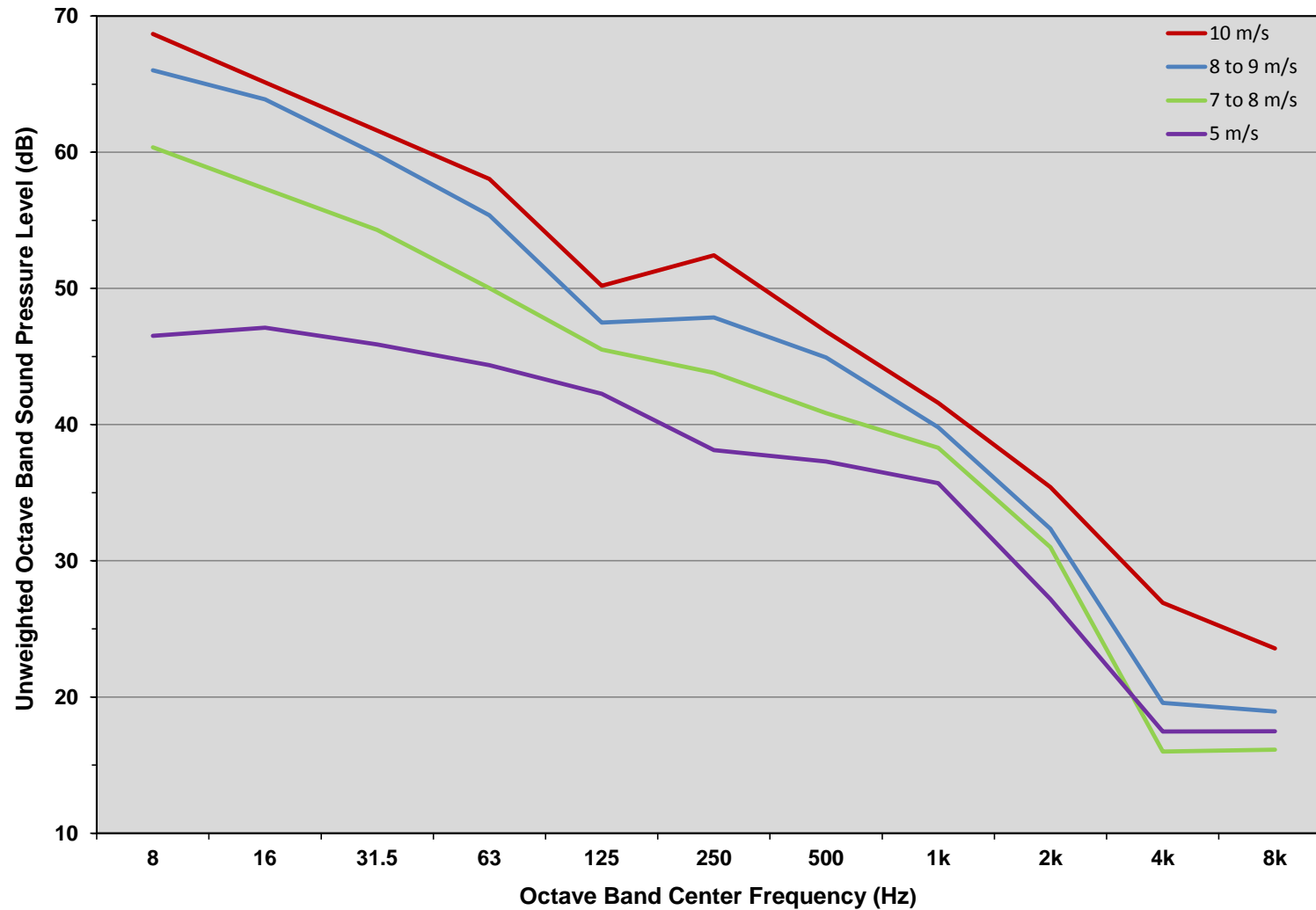
**Table 24. Summary of Low Frequency and Infrasound Monitoring at 3 Leland Road**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	KWI Wind Turbine Acoustical Metric	Increase from Ambient L90 (slow response) 20-min Acoustical Metrics for KWI Wind Turbine <b>ONLY</b> (excl. Route 3 traffic) 20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (incl. Route 3 traffic)			
					(dBA)	(dBC)	(dBZ)	(dBG)
4/7/2014	5 to 7	WSW to W	173 to 189	Avg Lmax	0.2	1.6	1.4	3.0
				Leq	-0.5	0.4	0.5	2.0
				L90	-1.3	-0.5	-0.4	0.7
3/22/2014	7 to 8	SW	586 to 819	Avg Lmax	4.3	8.0	10.5	12.4
				Leq	2.6	6.2	8.5	9.9
				L90	0.9	5.0	7.0	8.1
3/2/2014	8 to 9	SSW	827 to 1139	Avg Lmax	4.8	10.7	11.9	14.1
				Leq	4.2	9.3	10.2	11.8
				L90	3.1	7.8	8.5	9.7
3/15/2014	10	South	1505 to 1805	Avg Lmax	8.8	12.9	14.9	15.1
				Leq	7.6	10.4	10.8	11.1
				L90	6.6	9.2	8.7	9.1

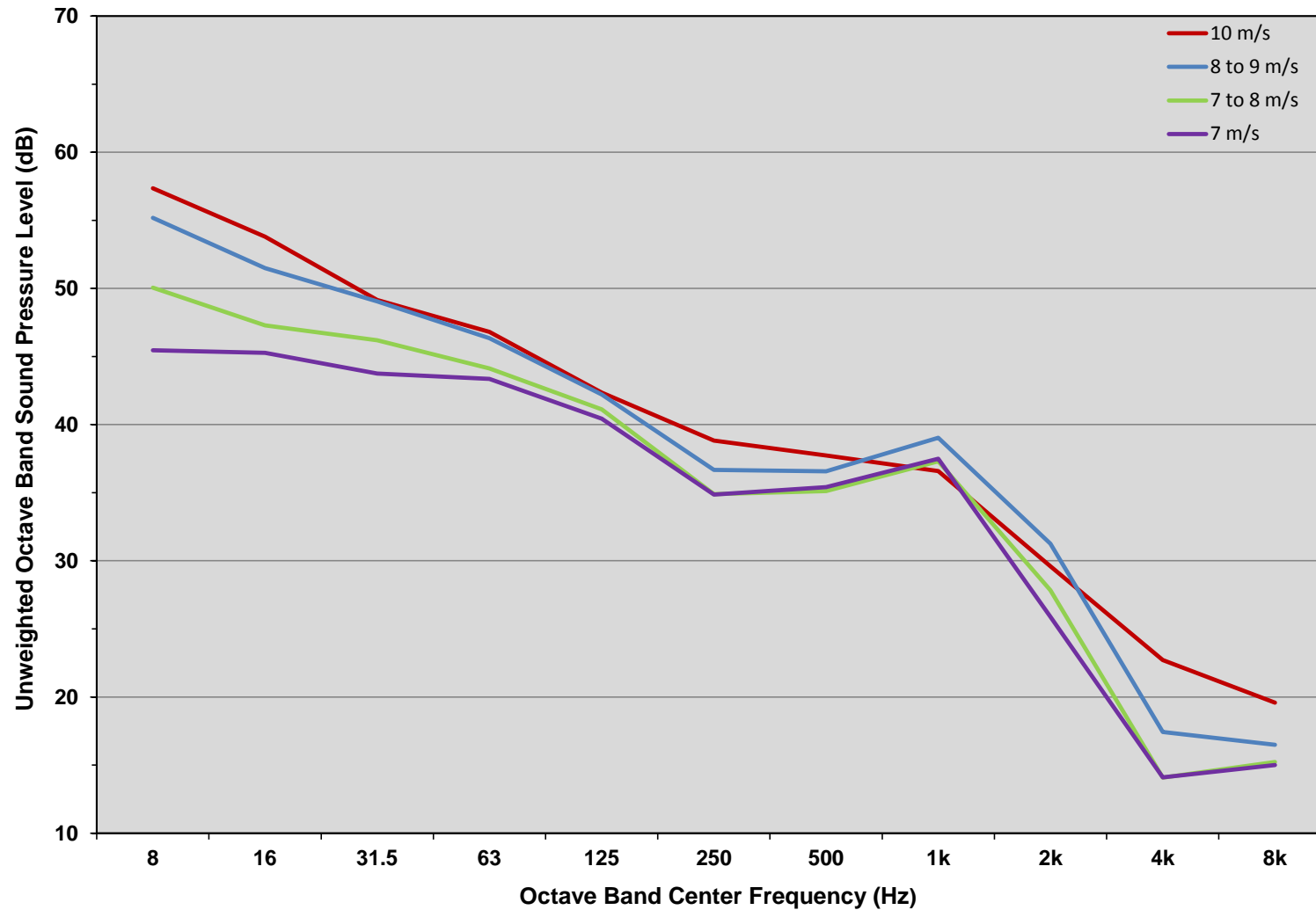
**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from data collected on 4/7/2014.

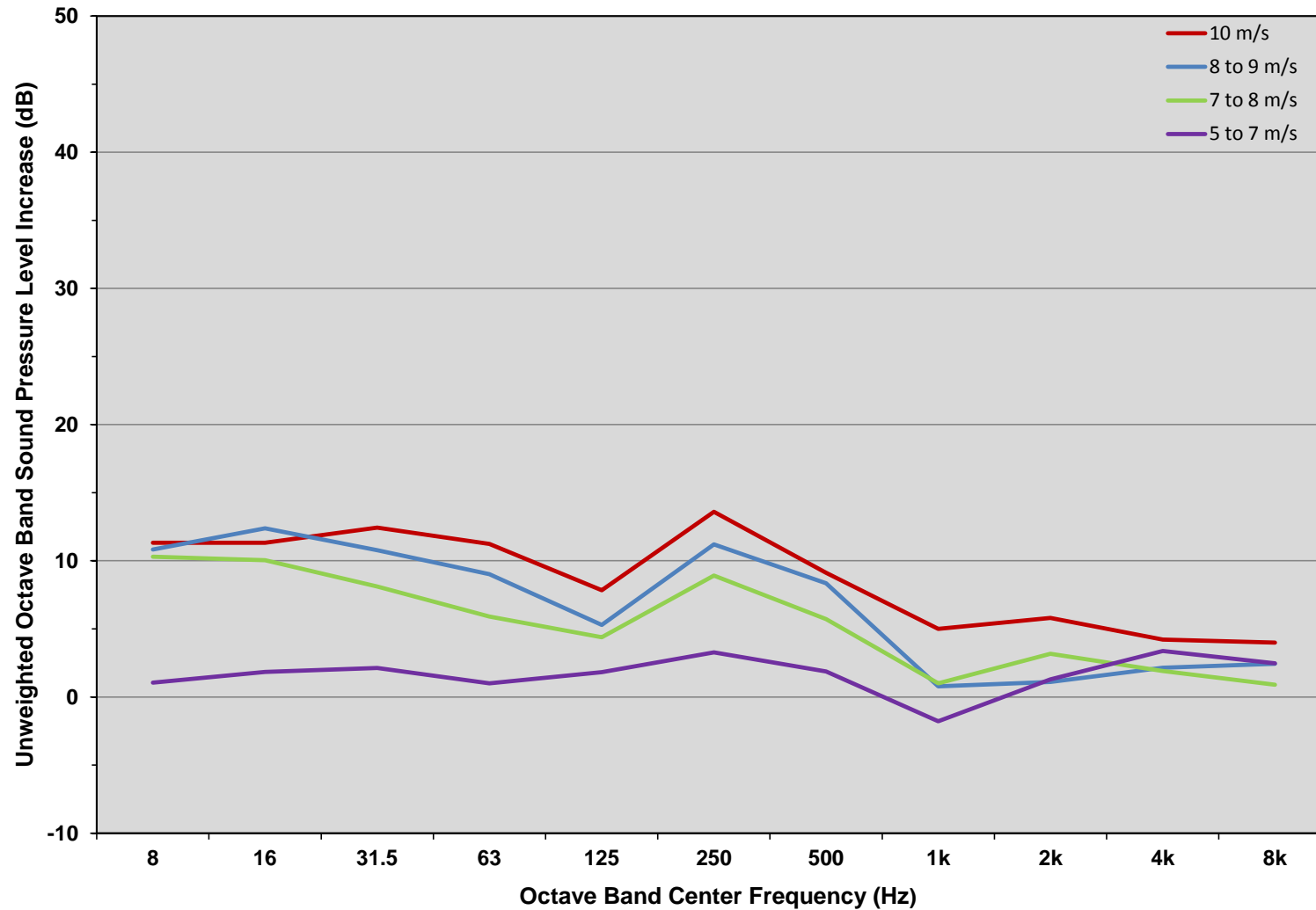
**Figure 7. 20-minute Slow-response Octave Band Equivalent (Leq) Sound Levels  
3 Leland Road - KWI Wind Turbine ONLY (excluding Route 3 traffic)**



**Figure 8. 20-minute Slow-response Octave Band Ambient (L90) Sound Levels**  
**3 Leland Road - KWI Wind Turbine SHUTDOWN (including Route 3 traffic)**



**Figure 9. Slow-response Octave Band Sound Level Increases  
from Ambient L90 to KWI Wind Turbine ONLY Leq - 3 Leland Road**



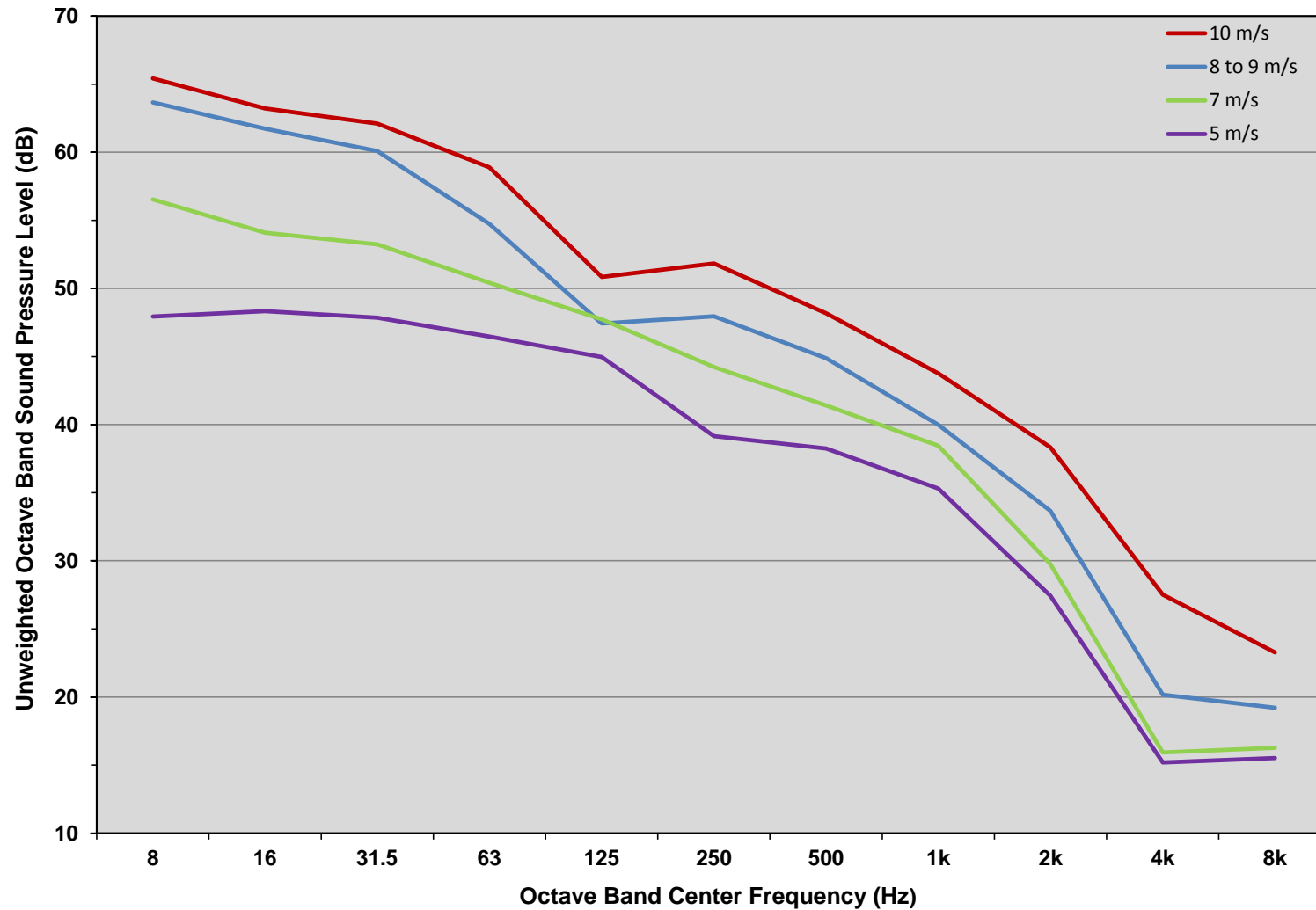
**Table 25. Summary of Low Frequency and Infrasound Monitoring at 11 Leland Road**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	KWI Wind Turbine Acoustical Metric	Increase from Ambient L90 (slow response) 20-min Acoustical Metrics for KWI Wind Turbine <b>ONLY</b> (excl. Route 3 traffic) 20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (incl. Route 3 traffic)			
					(dBA)	(dBC)	(dBZ)	(dBG)
4/7/2014	5 to 6	SW to WSW	130 to 210	Avg Lmax	6.3	7.2	6.5	7.4
				Leq	4.1	3.9	3.5	3.9
				L90	2.1	1.9	2.0	2.0
3/22/2014	7 to 8	SW	539 to 669	Avg Lmax	10.1	7.5	9.0	10.4
				Leq	7.7	5.9	7.0	7.9
				L90	5.9	5.1	5.8	6.5
3/2/2014	8 to 9	SSW	827 to 1139	Avg Lmax	5.8	10.4	11.7	12.6
				Leq	4.2	8.3	9.1	9.9
				L90	2.7	6.3	7.0	8.0
3/15/2014	10 to 11	South	1422 to 1880	Avg Lmax	7.3	10.8	10.8	11.3
				Leq	5.8	9.0	9.1	9.2
				L90	4.6	7.6	7.7	7.5

**Notes:**

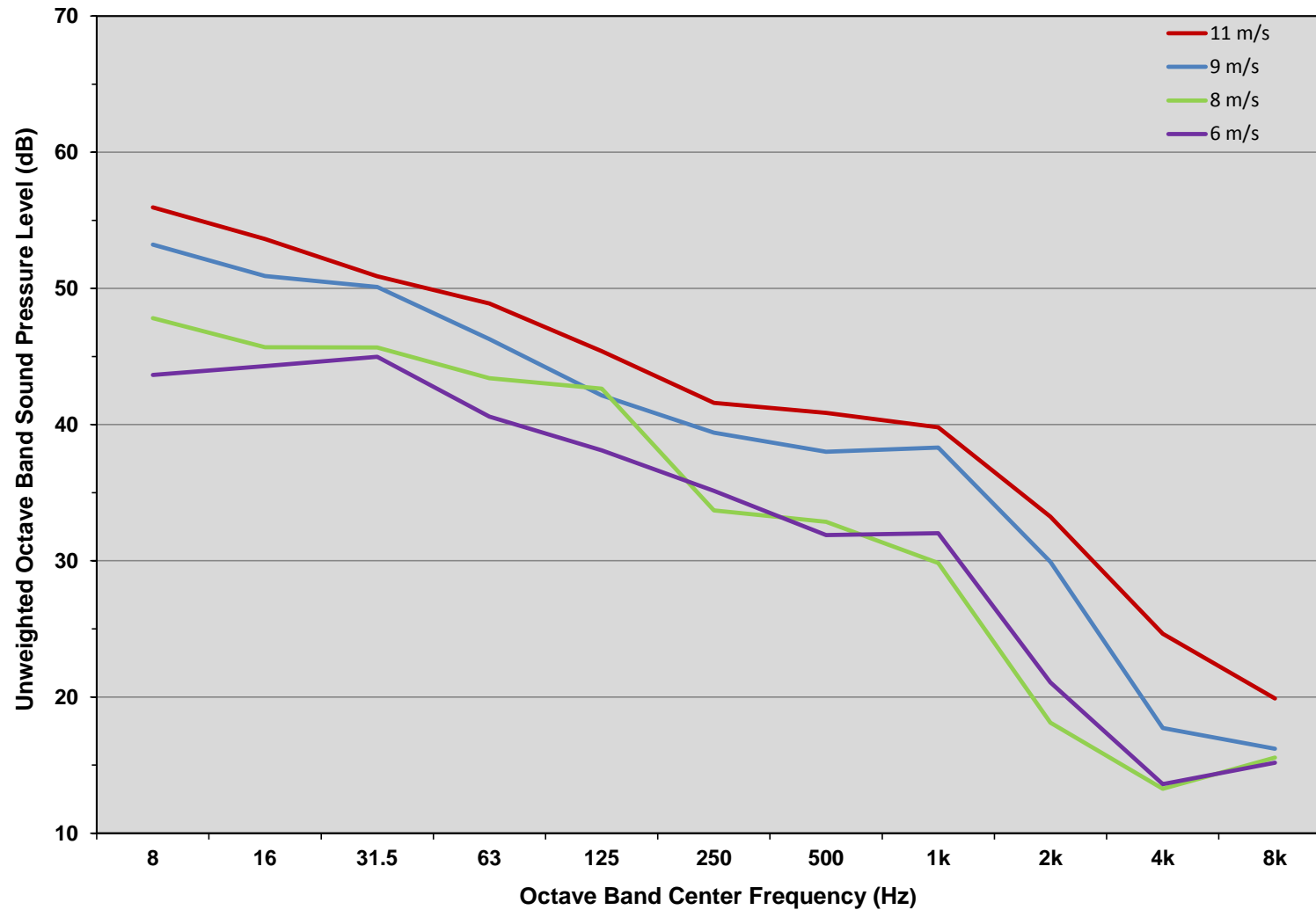
- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from data collected on 4/7/2014.

**Figure 10. 20-minute Slow-response Octave Band Equivalent (Leq) Sound Levels**  
11 Leland Road - KWI Wind Turbine ONLY (excluding Route 3 traffic)

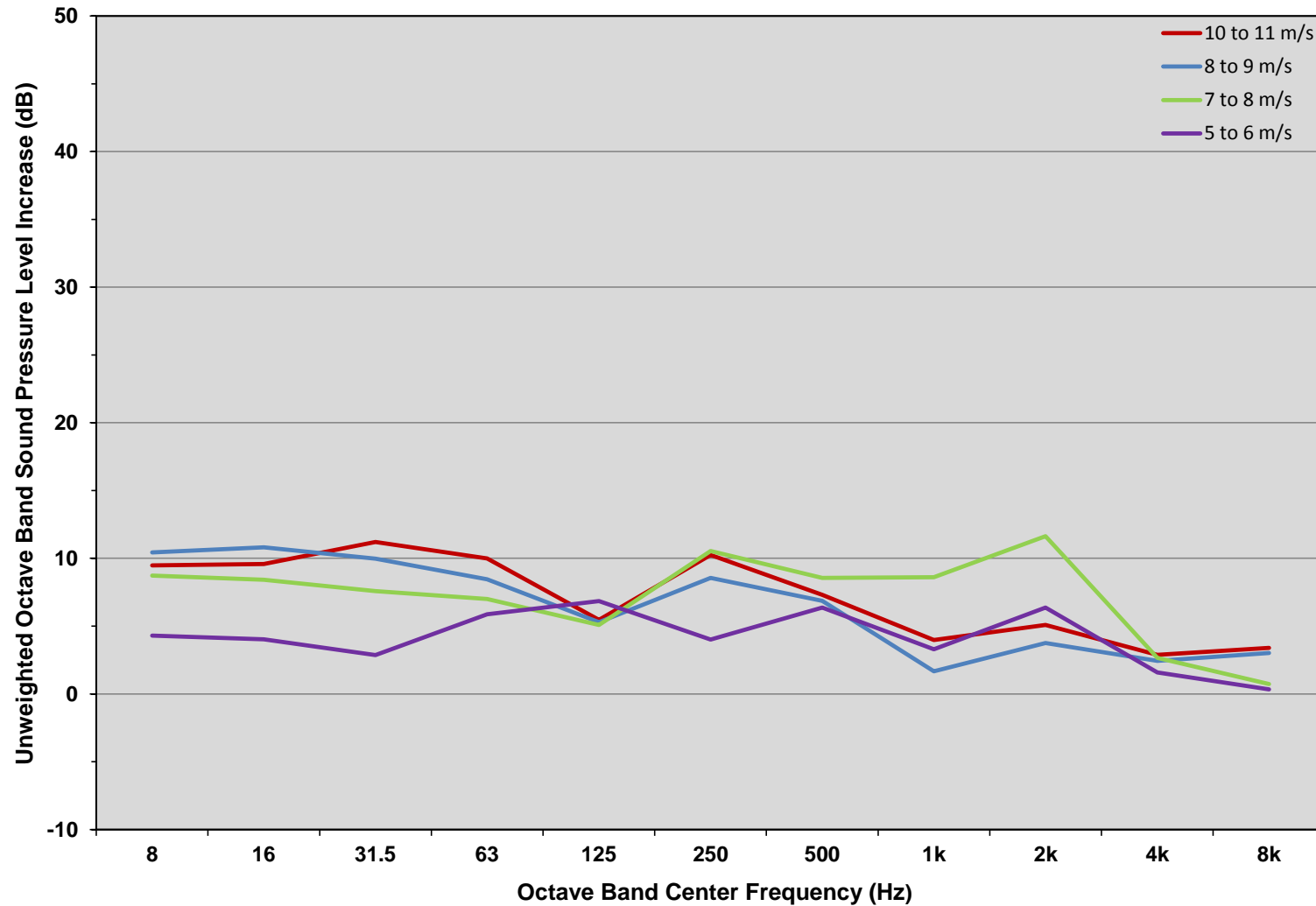




**Figure 11. 20-minute Slow-response Octave Band Ambient (L90) Sound Levels**  
11 Leland Road - KWI Wind Turbine SHUTDOWN (including Route 3 traffic)



**Figure 12. Slow-response Octave Band Sound Level Increases  
from Ambient L90 to KWI Wind Turbine ONLY Leq - 11 Leland Road**



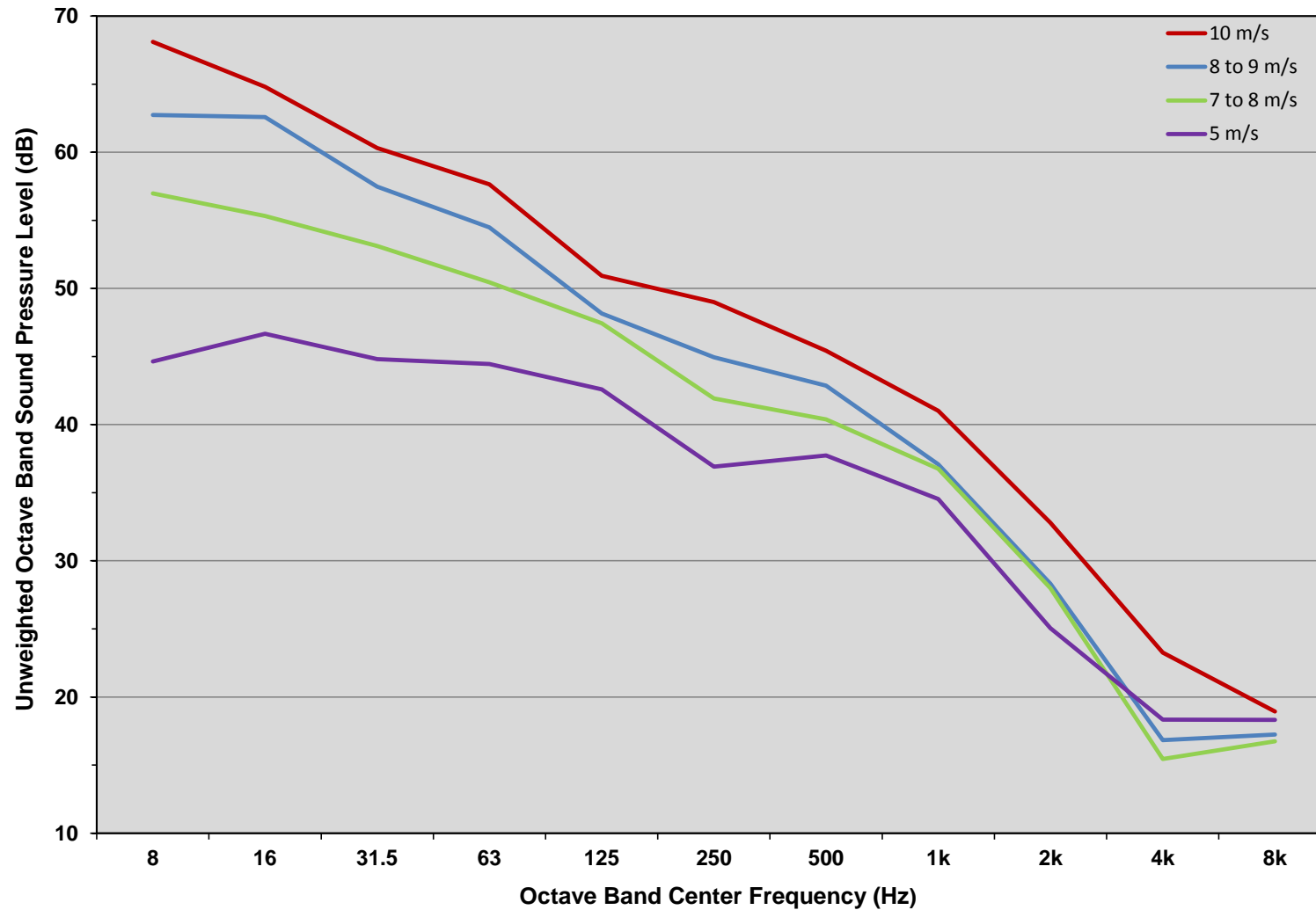
**Table 26. Summary of Low Frequency and Infrasound Monitoring at 38 Prospect Street**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	KWI Wind Turbine Acoustical Metric	Increase from Ambient L90 (slow response) 20-min Acoustical Metrics for KWI Wind Turbine <b>ONLY</b> (excl. Route 3 traffic) 20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (incl. Route 3 traffic)			
					(dBA)	(dBC)	(dBZ)	(DBG)
4/7/2014	5 to 7	WSW to W	173 to 189	Avg Lmax	-1.4	-1.4	-0.5	2.8
				Leq	-1.7	-1.6	-1.0	1.4
				L90	-2.7	-2.8	-1.9	0.0
3/22/2014	7 to 8	SW	586 to 819	Avg Lmax	2.6	5.6	8.2	10.8
				Leq	1.8	4.0	6.3	8.1
				L90	0.8	2.7	4.9	6.2
3/2/2014	8 to 9	SSW	831 to 1026	Avg Lmax	7.5	9.5	11.7	13.0
				Leq	5.8	7.3	8.8	9.9
				L90	2.2	3.6	5.1	6.0
3/15/2014	10 to 11	South	1422 to 1880	Avg Lmax	6.2	9.7	13.9	13.8
				Leq	4.6	7.2	9.6	9.7
				L90	3.4	5.7	6.4	7.0

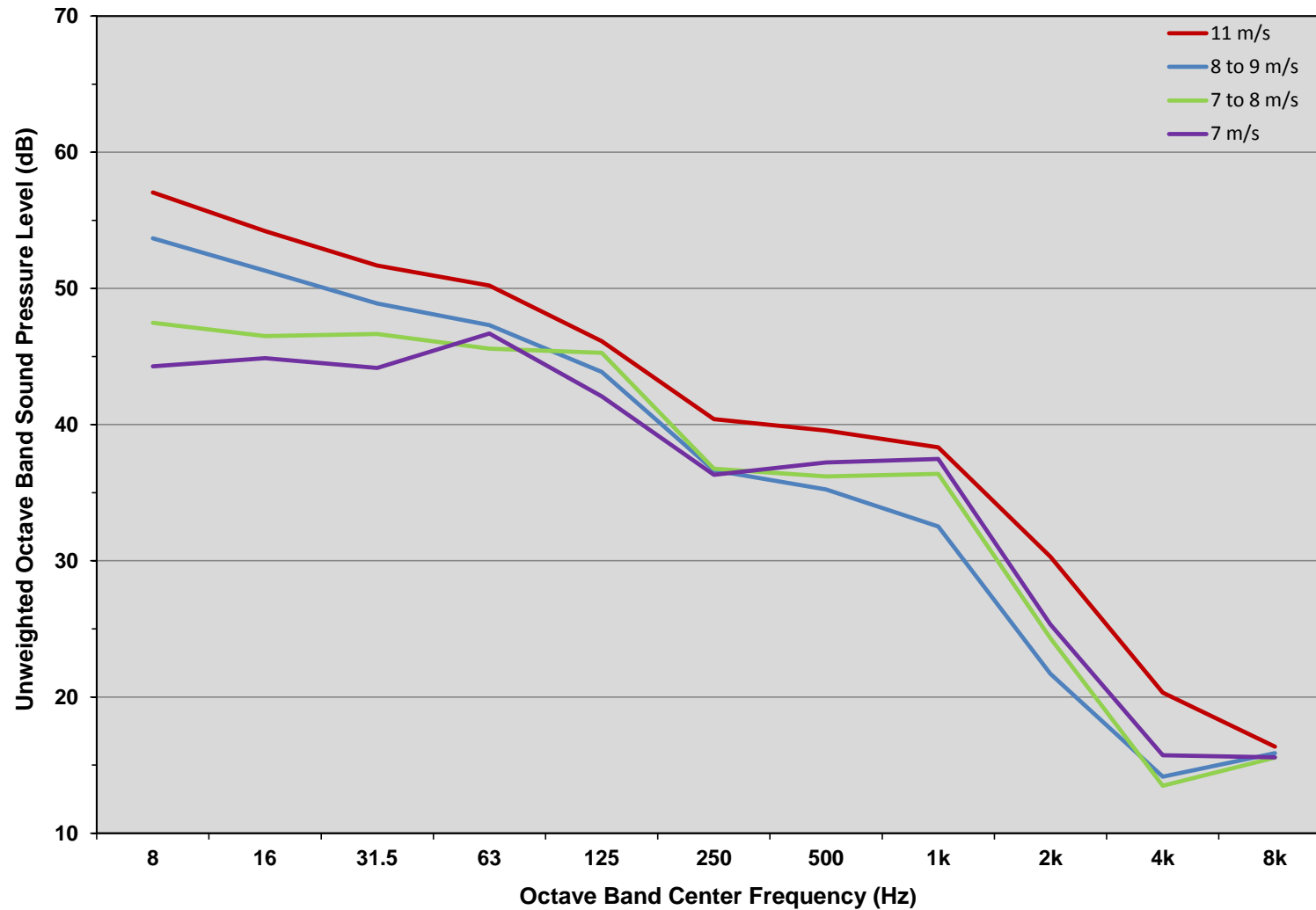
**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from spring peepers removed from data collected on 4/7/2014.
- 3) High frequency sound from cord tapping on a flagpole removed from data collected on 3/15/2014.

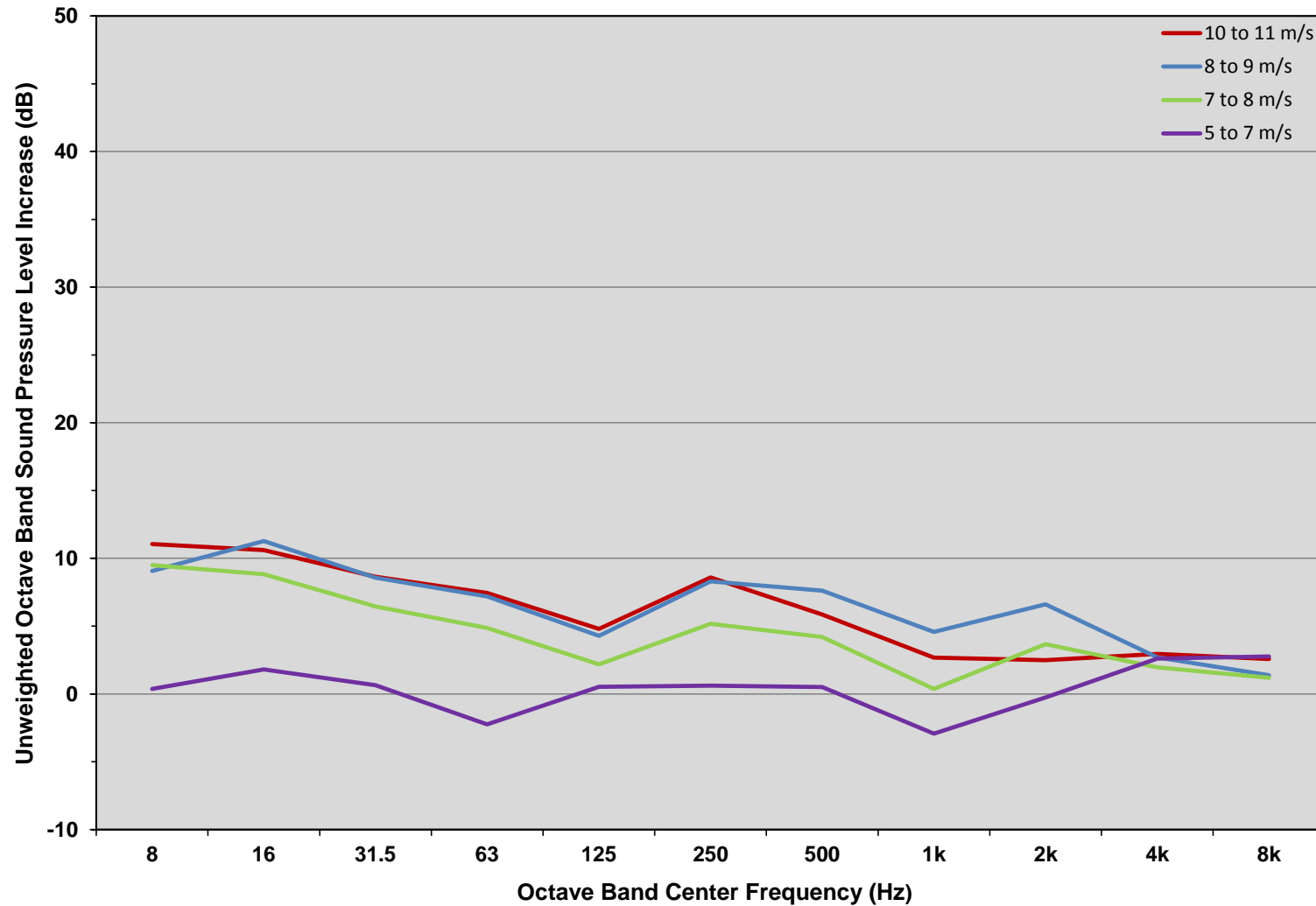
**Figure 13. 20-minute Slow-response Octave Band Equivalent (Leq) Sound Levels**  
**38 Prospect Street - KWI Wind Turbine ONLY (excluding Route 3 traffic)**



**Figure 14. 20-minute Slow-response Octave Band Ambient (L90) Sound Levels**  
**38 Prospect Street - KWI Wind Turbine SHUTDOWN (including Route 3 traffic)**



**Figure 15. Slow-response Octave Band Sound Level Increases  
from Ambient L90 to KWI Wind Turbine ONLY Leq - 38 Prospect Street**



**Table 27. Summary of Low Frequency and Infrasound Monitoring at Kingston Intermediate School**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	L90 to L90 Increase (slow response)			
				20-min L90 with KWI Wind Turbine <b>OPERATING</b> (incl. Route 3 traffic) 20-min Ambient L90 with KWI Wind Turbine <b>SHUTDOWN</b> (incl. Route 3 traffic)			
				dBA	dBC	dBZ	dBG
2/18/2014	6 to 8	East	428 to 690	0.4	1.5	1.8	1.5

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) High frequency sound from heating system exhaust removed from data.
- 3) Increases in aircraft overflights and wind-generated noise contributed to L90 sound level increases.

## 8 Results of Modulation Depth Analysis

A sound level amplitude modulation analysis was conducted in supplement to the acoustical monitoring results detailed in Sections 6 and 7 for broadband and octave band sound level increases.

Amplitude modulation is defined as a periodic variation in sound levels over time. Wind turbines regularly generate broadband amplitude-modulated sound that is often characterized as a “swishing” sound and is associated with the turbine rotational speed and blade passage frequency, typically with a period of around 1 second which is equivalent to a modulation frequency of about 1 Hz and corresponds with one blade on a three-blade turbine passing a point in space each second. Ambient sound sources such as traffic on Route 3 may at times also generate broadband amplitude-modulated sound, though generally ambient sound level variations are somewhat random and only very occasionally periodic.

Modulation depth is a metric used to assess the degree of sound level amplitude modulation associated with an acoustic signal. Sound level modulation depths were calculated for monitoring periods with the KWI turbine operating and compared to the modulations depths computed for ambient conditions. One limitation of this approach is that modulation depth analysis cannot distinguish between random ambient sound level variations that occur briefly within a short time span and periodic sound level modulations associated with the KWI turbine that occur more regularly over a longer timeframe.

For purposes of this study, modulation depth was defined as the maximum fast-response A-weighted sound level difference (peak-to-trough) within 1/2 second of each 1/10th second data sample. This design allowed sound level modulations with frequencies from 0.5 to 5 Hz to be evaluated, an appropriate range for examining wind turbine sound. The individual 1/10-second modulation depth calculations were subsequently analyzed in 5-minute and 20-minute intervals using the same metrics that were utilized for the measured sound level data.

Appendix A provides a detailed description of the sound metrics and terminology used in this report and includes an illustration of modulation depth calculations in Figure A-3.

Tables 28 through 32 present comparisons of modulation depth calculations between the various periods of acoustical monitoring conducted at each measurement site, including with the KWI turbine operating and also shut down and both with and without Route 3 traffic sound. Statistical percentile modulation depth levels are shown in these tables ( $L_n$ , denoting the modulation depth exceeded n-percent of the time), and include the  $L_{01}$ , which represents typical maximum modulation depths, the  $L_{50}$ , which represents the median modulation depth, and the  $L_{90}$ , which represents the modulation depth exceeded 90% of the time.

Figures 16 through 19 provide example fast-response A-weighted sound level time histories that depict varying levels of amplitude modulation measured during periods dominated by wind turbine sound.

Additional detailed modulation depth data are included in Appendix D.

Also, very high frequency sound generated by spring peepers occurred intermittently throughout the acoustical monitoring conducted on April 7, 2014. This sound could not be filtered out of the data used for the modulation depth analysis since the instrumentation could only log broadband A-weighted sound levels at a 1/10-second rate and additional octave band data could not be collected. However, this biogenic sound was only observed to have a significant effect on sound levels at the 38 Prospect Street measurement site. Other high frequency sound events that occurred intermittently during the acoustical monitoring are likewise included in the modulation depth calculations in some instances, such as sound from a cord tapping on a flagpole at 38 Prospect Street and sound from a heating system exhaust vent at the Kingston Intermediate School.



## 8.1 Modulation Depth Calculations

Tables 28 through 32 present comparisons of modulation depth calculations between the various periods of nighttime acoustical monitoring conducted at the 13 Schofield Road, 3 Leland Road, 11 Leland Road, 38 Prospect Street, and Kingston Intermediate School measurement sites, respectively.

The results indicate that sound level modulation depths calculated for periods with the KWI turbine operating at low to moderate wind speeds of 5 to 8 m/s are less than or comparable to the modulation depths calculated for periods with the wind turbine shut down. However, the modulation depths calculated for periods with the KWI turbine operating at moderate to higher wind speeds of 8 to 10 m/s are up to approximately 1 to 3 dBA greater as compared with ambient conditions, a level of increase which is likely noticeable to the average person.

Also, there was no significant difference observed between the sound level modulation depths calculated for periods with the KWI turbine operating and shut down during the daytime acoustical monitoring conducted at the Kingston Intermediate School. This finding is consistent with our experience that Route 3 traffic dominated sound levels throughout the measurement.

## 8.2 Modulation Depth Example Time-histories

Figures 16 through 19 provide example fast-response A-weighted sound level time histories that depict varying levels of amplitude modulation measured at different wind speeds at the 13 Schofield Road, 3 Leland Road, 11 Leland Road, and 38 Prospect Street measurement sites, respectively, during periods dominated by sound from the KWI wind turbine. In addition to illustrating a general increase in modulation depth with increasing wind speed, the fast-response sound level time histories also indicate a modulation frequency of around 1 Hz, which is typical for wind turbine sound.

While a detailed analysis of the frequency of occurrence of sound level amplitude modulation was beyond the scope of this study, it is anticipated that modulations associated with operation of the KWI wind turbine are generally periodic (as illustrated in Figures 16 through 19) and recur on a regular basis, whereas ambient sound level variations are generally more random and only very occasionally periodic.

Also, results from the daytime acoustical monitoring conducted at the Kingston Intermediate School are not included because traffic sound dominated sound levels throughout the measurement and there were not any periods dominated by wind turbine sound.

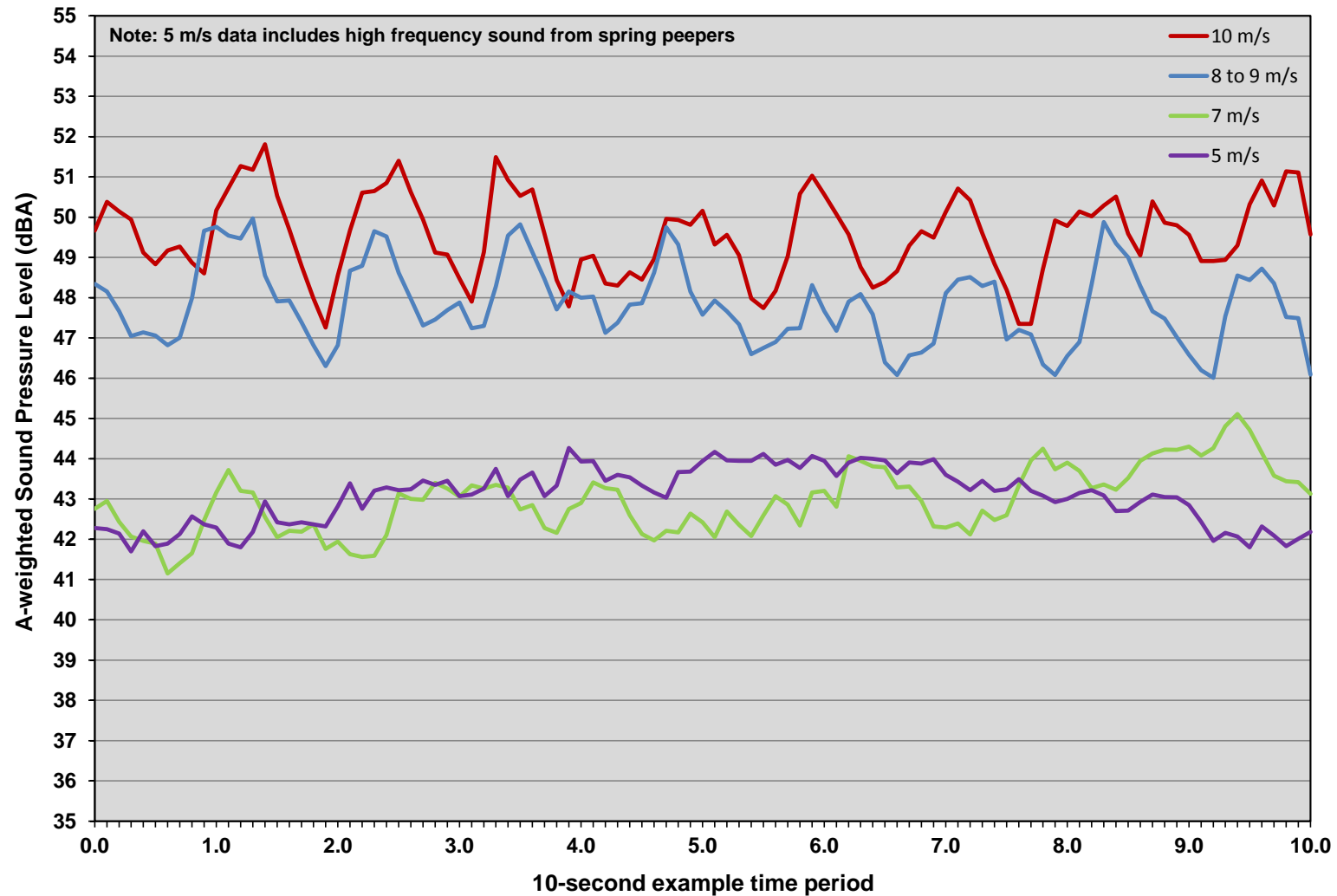
**Table 28. Summary of Modulation Depth Analysis for 13 Schofield Road**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Modulation Depth Acoustical Metric (fast response)	KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (excl. Route 3 traffic)
4/7/2014	5 to 6	SW to WSW	130 to 210	L01	3.0	2.4	3.9	3.0
				L50	0.6	1.0	1.2	1.1
				L90	0.6	0.6	0.7	0.6
3/22/2014	7 to 8	SW	539 to 669	L01	3.0	3.0	3.7	3.6
				L50	0.8	1.5	1.1	1.0
				L90	0.8	0.9	0.6	0.6
3/2/2014	8 to 9	SSW	831 to 1026	L01	4.5	4.9	3.2	2.9
				L50	1.1	2.1	1.1	1.0
				L90	1.1	1.2	0.6	0.6
3/15/2014	10	South	1505 to 1805	L01	5.2	5.4	3.2	2.2
				L50	1.3	2.5	1.0	0.9
				L90	1.2	1.5	0.6	0.6

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Data used for modulation depth analysis on 4/7/2014 includes high frequency sound from spring peepers.
- 3) Modulation depth is maximum fast response A-weighted sound level difference within 1/2 second of each 1/10<sup>th</sup> second data sample.

**Figure 16. Modulation Depth Comparison: Fast-response A-level Time Histories**  
13 Schofield Road - KWI Wind Turbine ONLY (excluding Route 3 traffic)



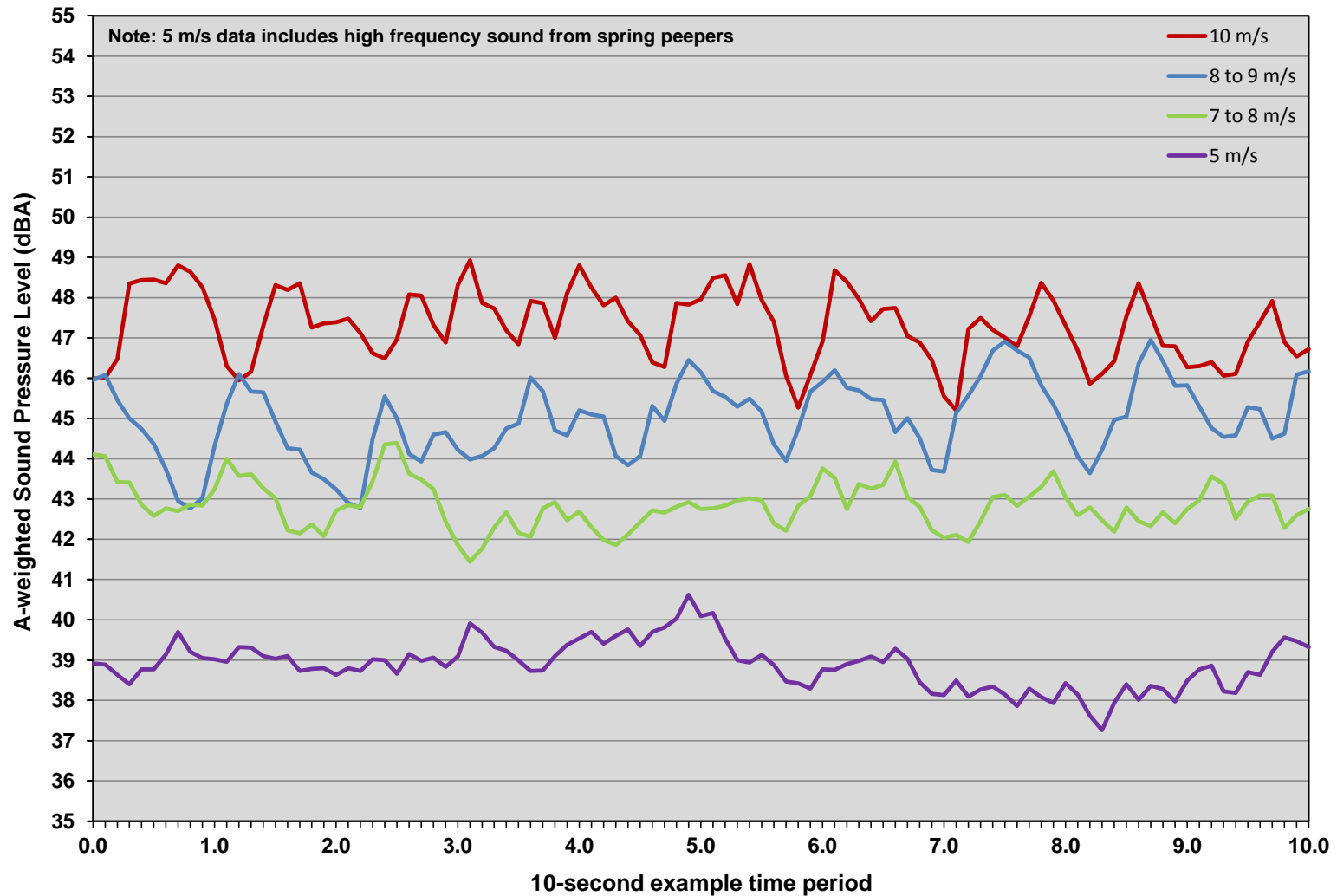
**Table 29. Summary of Modulation Depth Analysis for 3 Leland Road**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Modulation Depth Acoustical Metric (fast response)	KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (excl. Route 3 traffic)
4/7/2014	5 to 7	WSW to W	173 to 189	L01	4.7	2.2	4.6	2.0
				L50	0.7	1.0	1.3	1.0
				L90	0.7	0.6	0.7	0.6
3/22/2014	7 to 8	SW	586 to 819	L01	3.0	3.4	3.6	2.2
				L50	0.8	1.4	1.1	0.8
				L90	0.7	0.8	0.6	0.5
3/2/2014	8 to 9	SSW	827 to 1139	L01	3.6	4.3	3.7	2.4
				L50	0.9	2.2	1.1	0.8
				L90	0.8	1.4	0.6	0.5
3/15/2014	10	South	1505 to 1805	L01	5.2	5.3	2.9	2.0
				L50	1.1	2.6	0.9	0.9
				L90	1.1	1.5	0.5	0.5

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Data used for modulation depth analysis on 4/7/2014 includes high frequency sound from spring peepers.
- 3) Modulation depth is maximum fast response A-weighted sound level difference within 1/2 second of each 1/10<sup>th</sup> second data sample.

**Figure 17. Modulation Depth Comparison: Fast-response A-level Time Histories**  
 3 Leland Road - KWI Wind Turbine ONLY (excluding Route 3 traffic)



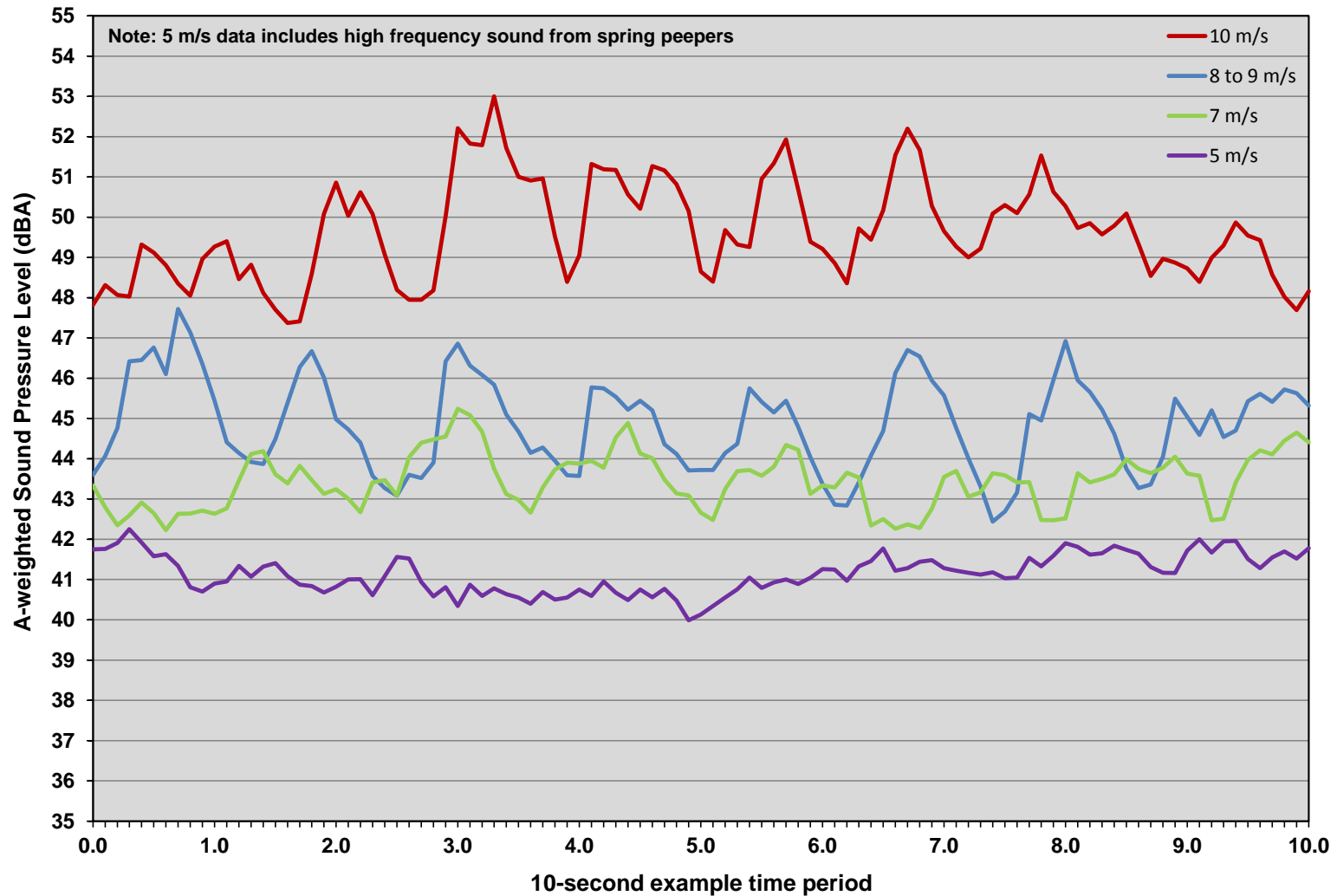
**Table 30. Summary of Modulation Depth Analysis for 11 Leland Road**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Modulation Depth Acoustical Metric (fast response)	KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (excl. Route 3 traffic)
4/7/2014	5 to 6	SW to WSW	130 to 210	L01	4.0	2.0	4.5	2.2
				L50	0.6	0.9	1.2	1.0
				L90	0.6	0.6	0.7	0.6
3/22/2014	7 to 8	SW	539 to 669	L01	3.8	3.7	3.9	2.3
				L50	0.9	1.6	1.1	1.0
				L90	0.9	1.0	0.6	0.6
3/2/2014	8 to 9	SSW	827 to 1139	L01	4.5	4.7	4.1	1.7
				L50	1.0	2.0	1.2	0.8
				L90	0.9	1.2	0.6	0.6
3/15/2014	10 to 11	South	1422 to 1880	L01	5.1	5.0	4.6	1.9
				L50	1.1	2.4	1.1	0.9
				L90	1.1	1.4	0.6	0.5

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Data used for modulation depth analysis on 4/7/2014 includes high frequency sound from spring peepers.
- 3) Modulation depth is maximum fast response A-weighted sound level difference within 1/2 second of each 1/10<sup>th</sup> second data sample.

**Figure 18. Modulation Depth Comparison: Fast-response A-level Time Histories**  
11 Leland Road - KWI Wind Turbine ONLY (excluding Route 3 traffic)



**Table 31. Summary of Modulation Depth Analysis for 38 Prospect Street**

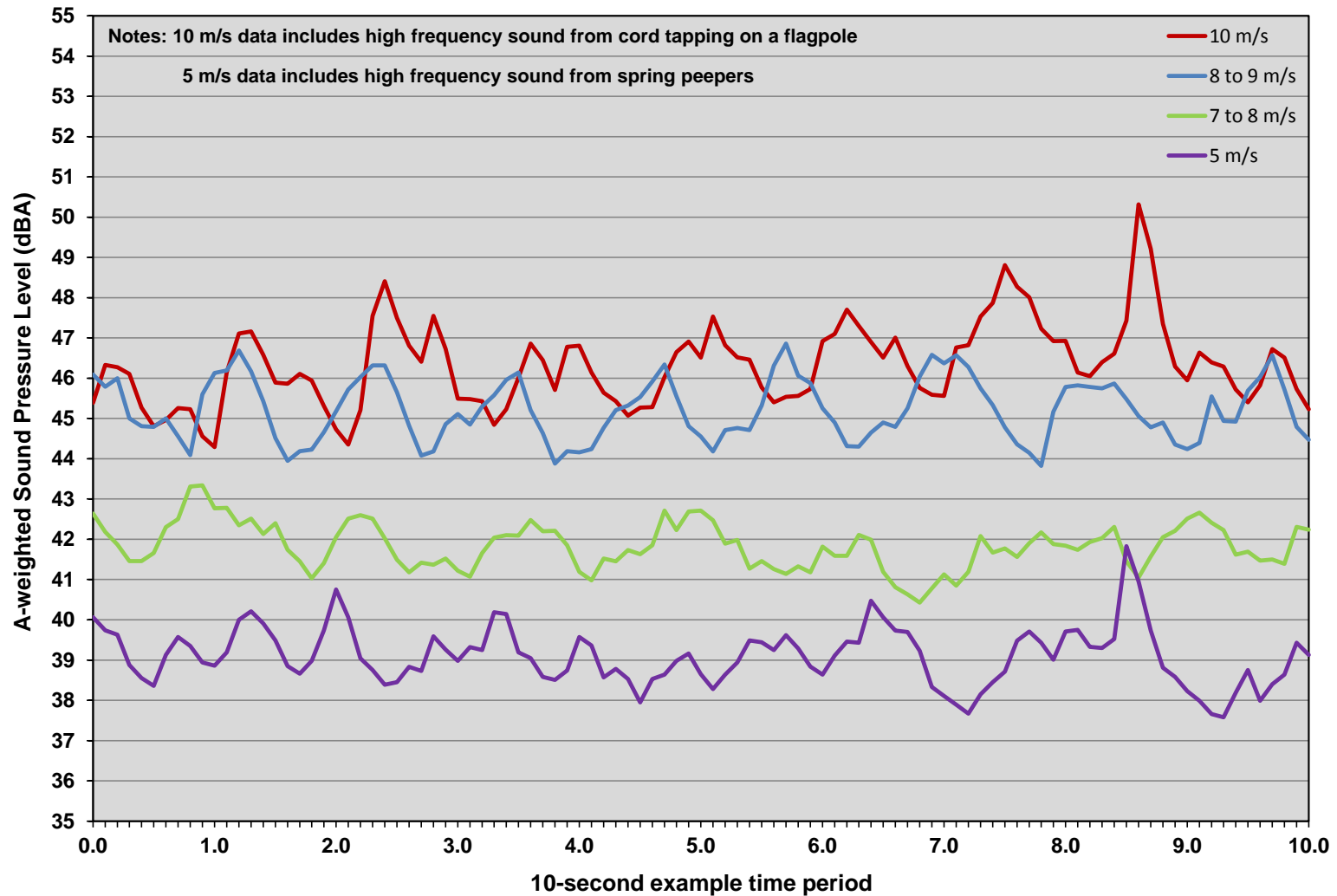
Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Modulation Depth Acoustical Metric (fast response)	KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (excl. Route 3 traffic)
4/7/2014	5 to 7	WSW to W	173 to 189	L01	5.0	3.9	5.8	5.6
				L50	0.8	1.5	1.5	1.6
				L90	0.8	0.8	0.8	0.9
3/22/2014	7 to 8	SW	586 to 819	L01	3.5	2.8	4.2	1.7
				L50	0.8	1.6	1.1	0.9
				L90	0.7	0.9	0.6	0.6
3/2/2014	8 to 9	SSW	831 to 1026	L01	4.5	4.4	3.9	1.7
				L50	1.1	1.9	1.1	0.9
				L90	1.1	1.1	0.6	0.6
3/15/2014	10 to 11	South	1422 to 1880	L01	5.1	5.5	6.0	3.2
				L50	1.1	2.1	1.2	0.9
				L90	1.0	1.2	0.6	0.6

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Data used for modulation depth analysis on 4/7/2014 includes high frequency sound from spring peepers.
- 3) Data used for modulation depth analysis on 3/15/2014 includes high frequency sound from cord tapping on a flagpole.
- 4) Modulation depth is maximum fast response A-weighted sound level difference within 1/2 second of each 1/10<sup>th</sup> second data sample.



**Figure 19. Modulation Depth Comparison: Fast-response A-level Time Histories**  
 38 Prospect Street - KWI Wind Turbine ONLY (excluding Route 3 traffic)



**Table 32. Summary of Modulation Depth Analysis for Kingston Intermediate School**

Date	10-min Avg Wind Speeds (m/s)	10-min Avg Wind Directions	10-min Avg Power Levels (kW)	Modulation Depth Acoustical Metric (fast response)	KWI Wind Turbine <b>OPERATING</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>ONLY</b> (dBA) (excl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (incl. Route 3 traffic)	KWI Wind Turbine <b>SHUTDOWN</b> (dBA) (excl. Route 3 traffic)
2/18/2014	6 to 8	East	428 to 690	L01	5.0	-	5.1	-
				L50	0.6	-	1.0	-
				L90	0.6	-	0.6	-

**Notes:**

- 1) Detailed acoustical monitoring data are provided in **Appendix D**.
- 2) Data used for modulation depth analysis includes high frequency sound from heating system exhaust.
- 3) Modulation depth is maximum fast response A-weighted sound level difference within 1/2 second of each 1/10<sup>th</sup> second data sample.

## 9 Assessment for Copper Beech Drive Neighborhood

HMMH did not have an opportunity to conduct acoustical monitoring of the KWI wind turbine in the Copper Beech Drive neighborhood on a night with southeast winds (downwind, worst case for sound propagation) because this condition is somewhat rare and did not occur during the monitoring program. However, nighttime ambient background sound level data was successfully collected in this community with the wind turbine shut down, in an effort to better understand the local ambient sound environment.

To assess sound level increases due to operation of the KWI wind turbine in the context of MassDEP noise policy, an effort was then made to estimate the impact of the KWI turbine on the Copper Beech neighborhood by combining measured turbine sound levels for sites east of Route 3 with the ambient monitoring data collected at sites along Copper Beech Drive and adjusting for distance from the wind turbine. This approach was used to compute potential increases in sound levels due to downwind operation of the KWI turbine. The turbine-only sound level estimates for the Copper Beech sites were developed by extrapolating the turbine-only sound levels measured at the four residential sites to the east of Route 3 during periods dominated by the turbine (refer to Section 6).

Section 9.1 summarizes the results of the nighttime ambient monitoring conducted at two residential sites along Copper Beech Drive. Section 9.2 provides the turbine-only sound levels measured at several sites/distances to the east of Route 3. Section 9.3 discusses the extrapolation of those sound levels to the Copper Beech Drive monitoring locations and Section 9.4 presents the resulting sound level increase estimates for downwind conditions with the KWI wind turbine operating over a range of wind speeds.

Tables 33 and 34 summarize the slow-response A-weighted  $L_{90}$  sound level results for the nighttime ambient monitoring conducted at the two measurement sites along Copper Beech Drive.

Figures 20 through 23 depict the slow-response A-weighted KWI wind turbine sound levels that were measured at various wind speeds at the four monitoring locations to the east of Route 3. Interpolations of the measurement data to integer average wind speed values are also shown.

Figures 24 and 25 illustrate the sound levels that were extrapolated to each Copper Beech Drive monitoring site using measurement data collected at various distances from the KWI wind turbine at locations to the east of Route 3.

Tables 35 and 36 present estimates of nighttime sound level increase for each Copper Beech Drive site.

The wind speed data shown in these tables and figures were adjusted using a correction factor of +1.5 m/s. (Refer to Sections 2.3 and 5.2 for additional details.)

### 9.1 Ambient Sound Level Monitoring

Ambient sound level monitoring during the quietest nighttime hours was conducted at two residential measurement sites located at 18 Copper Beech Drive and 6 Copper Beech Drive on April 9, 2014 with winds from due west, which is a typical and frequently-occurring wind direction. Measurements were conducted with average hub-height wind speeds ranging from about 7 to 9 m/s.

Since there is a direct line of sight from Copper Beech Drive to the No Fossil Fuel (NFF) wind turbines, acoustical monitoring was conducted with the NFF turbines operating and then shut down to investigate the relative impact on ambient sound levels. Therefore, data were first collected for a period of about 40 minutes with the KWI wind turbine shut down and the three more distant NFF turbines operating normally, then measurements were conducted over an additional 40-minute period with both the KWI and NFF turbines shut down.

The NFF turbines were crosswind to the Copper Beech Drive measurement sites during the monitoring. They were only very occasionally audible when operating and ambient  $L_{90}$  sound levels only decreased about 1 to 2 dBA when shut down. This small decrease in ambient background levels was likely also at least partially attributable to decreased Route 3 traffic volumes as well as slightly lower wind speeds.

Very high frequency sound generated by spring peepers occurred intermittently throughout the acoustical monitoring conducted on April 9, 2014. While this biogenic sound was only observed to have a small effect on ambient  $L_{90}$  sound levels at the 6 Copper Beech Drive measurement site, the data collected at both monitoring sites was adjusted to remove this sound event contribution (refer to Section 5.1 for additional details) to ensure a conservative worst-case assessment representative of winter conditions.

Also, commuter trains that are stored overnight at the MBTA layover facility located beyond the end of Copper Beech Drive were not idling during the ambient monitoring, although other mechanical noise generated at the MTBA facility was at times audible.

Tables 33 and 34 summarize the slow-response A-weighted  $L_{90}$  sound level results measured at each site on Copper Beech Drive during the nighttime ambient monitoring conducted on April 9, 2014. Somewhat higher ambient levels were measured at 6 Copper Beech Drive because this site is much closer to Route 3 and therefore more influenced by traffic sound.

**Table 33. Summary of Ambient Monitoring at 18 Copper Beech Drive on April 9, 2014**

NFF Wind Turbine Operating Condition	Time	10-min Avg Wind Speed (m/s)	10-min Avg Wind Direction (deg)	Slow-response Ambient L90 (dBA) (including Route 3 traffic)
<b>ON</b>	1:00 to 1:10 AM	8.7	265	35.7
	1:10 to 1:20 AM	7.8	260	34.1
	1:20 to 1:30 AM	8.0	264	34.2
	1:30 to 1:40 AM	7.6	264	33.9
<b>OFF</b>	2:00 to 2:10 AM	7.3	269	32.9
	2:10 to 2:20 AM	8.5	271	34.1
	2:20 to 2:30 AM	7.9	268	32.7
	2:30 to 2:40 AM	7.1	268	32.7

**Notes:**

- 1) Winds from the west during monitoring, therefore NFF turbines crosswind to measurement site.
- 2) High frequency sound from spring peepers removed from data.

**Table 34. Summary of Ambient Monitoring at 6 Copper Beech Drive on April 9, 2014**

NFF Wind Turbine Operating Condition	Time	10-min Avg Wind Speed (m/s)	10-min Avg Wind Direction (deg)	Slow-response Ambient L90 (dBA) (including Route 3 traffic)
<b>ON</b>	1:00 to 1:10 AM	8.7	265	39.8
	1:10 to 1:20 AM	7.8	260	40.3
	1:20 to 1:30 AM	8.0	264	39.4
	1:30 to 1:40 AM	7.6	264	37.2
<b>OFF</b>	2:00 to 2:10 AM	7.3	269	35.4
	2:10 to 2:20 AM	8.5	271	38.4
	2:20 to 2:30 AM	7.9	268	35.1
	2:30 to 2:40 AM	7.1	268	36.6

**Notes:**

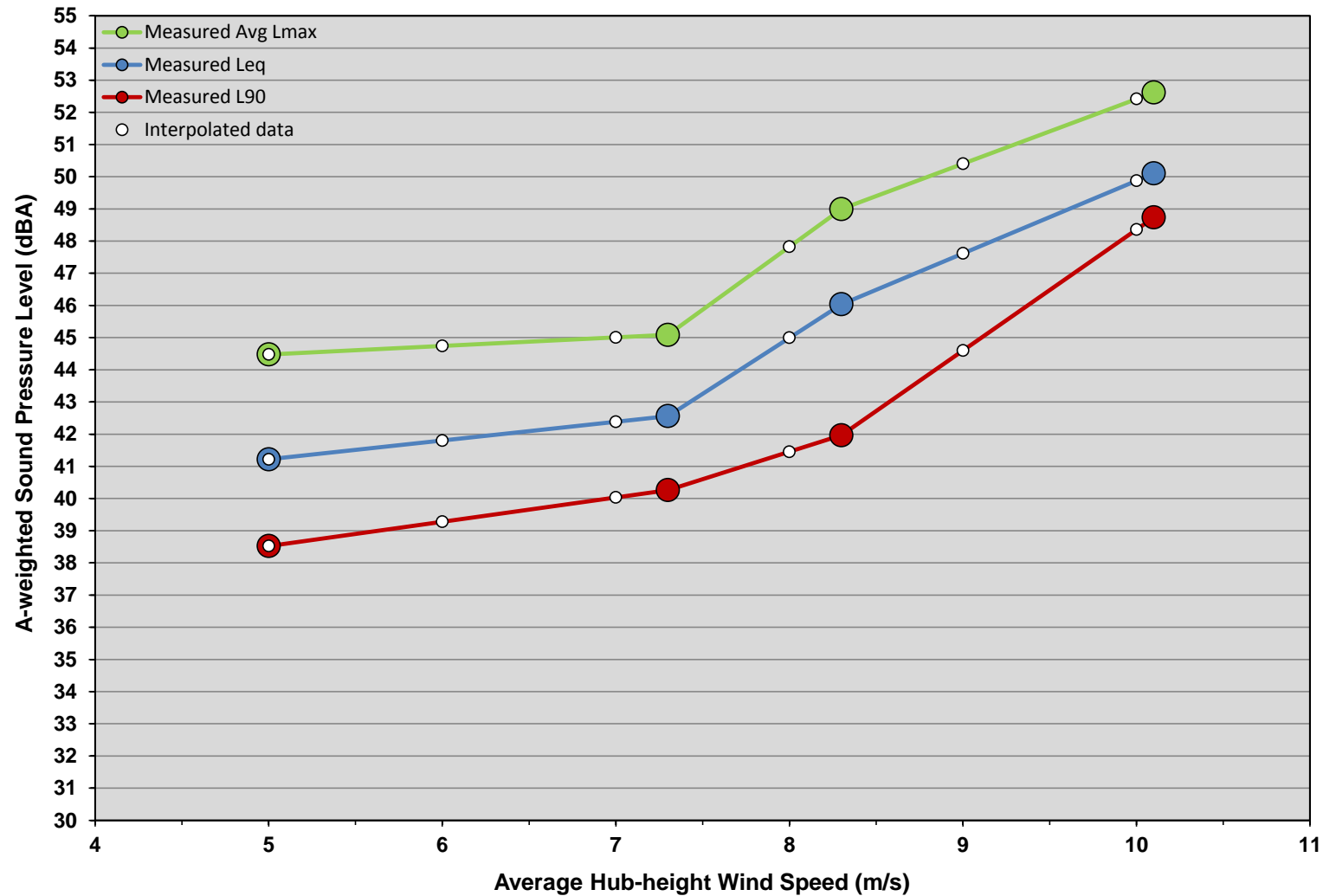
- 1) Winds from the west during monitoring, therefore NFF turbines crosswind to measurement site.
- 2) High frequency sound from spring peepers removed from data.

## 9.2 Measured KWI Turbine Sound Levels by Wind Speed

Figures 20 through 23 depict the slow-response A-weighted KWI turbine-only sound levels that were measured at wind speeds ranging from about 5 to 10 m/s at the 13 Schofield Road, 3 Leland Road, 11 Leland Road, and 38 Prospect Street monitoring sites during periods dominated by sound from the wind turbine. The measured data points are shown with solid color markers for three different sound-level metrics: Avg  $L_{\max}$ ,  $L_{\text{eq}}$  and  $L_{90}$ . Similar data was provided in Section 6 (in tabular form), but those results have been adjusted here to remove the ambient sound level contribution so that the data are cross-comparable and can be accurately assessed against different ambient sound levels. In addition, KWI turbine-only sound levels for each integer wind speed from 5 to 10 m/s were interpolated from the measurement data and are shown along each sound metric curve using white markers. Note that the measured (solid color) and interpolated (white) data markers may directly overlap in some instances.

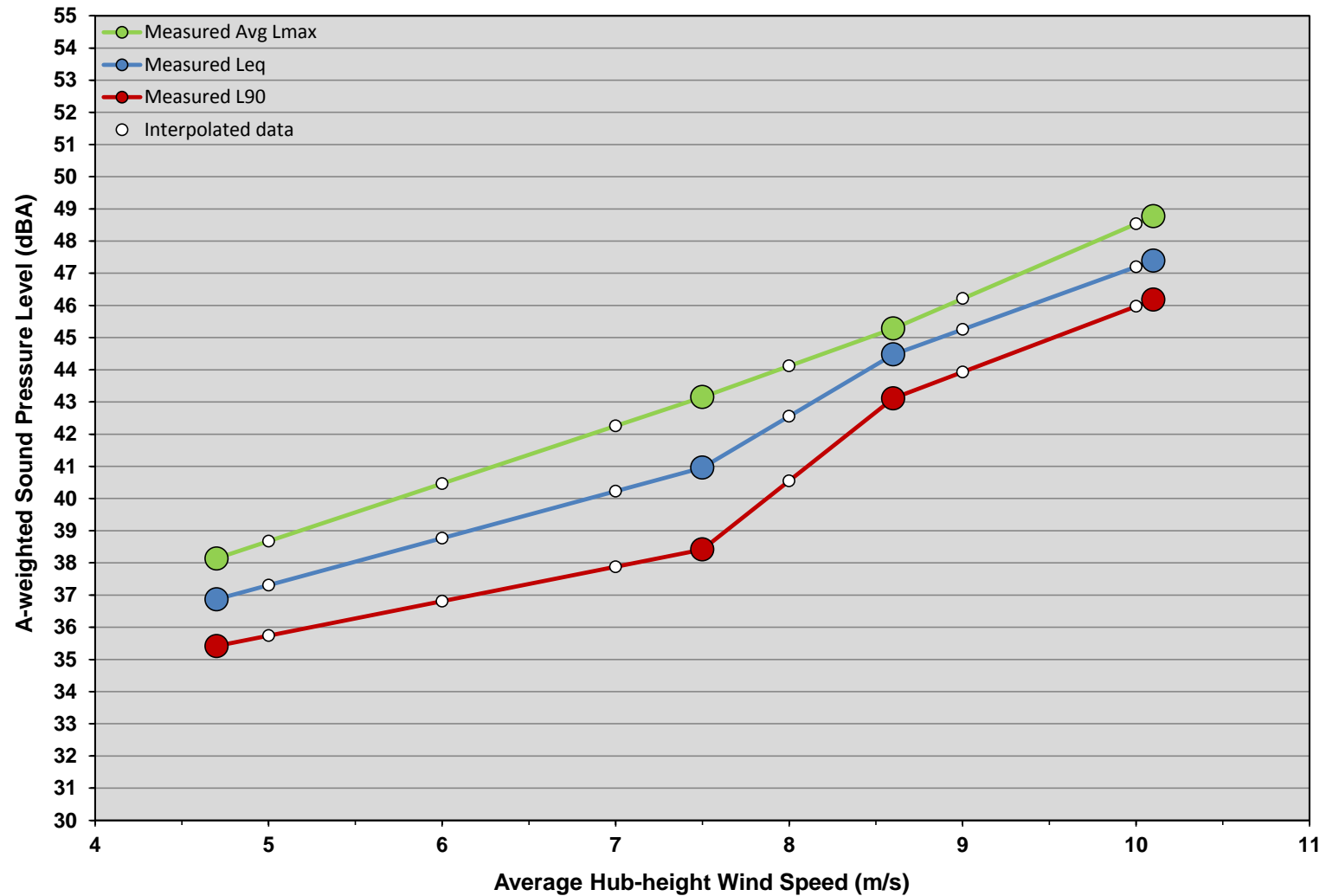
Also, it is notable that the measured turbine-only sound level ranges of approximately 8 to 10 dBA for wind speeds from about 5 to 10 m/s agree well with the KWI turbine sound power data provided in Figure 2. This suggests that although some variability was observed for data collected at moderate wind speeds, the measured turbine-only sound levels are appropriately representative overall.

**Figure 20. Variation in KWI Wind Turbine Slow-response A-levels with Wind Speed**  
13 Schofield Rd (740 feet from KWI) excluding Route 3 traffic & ambient removed

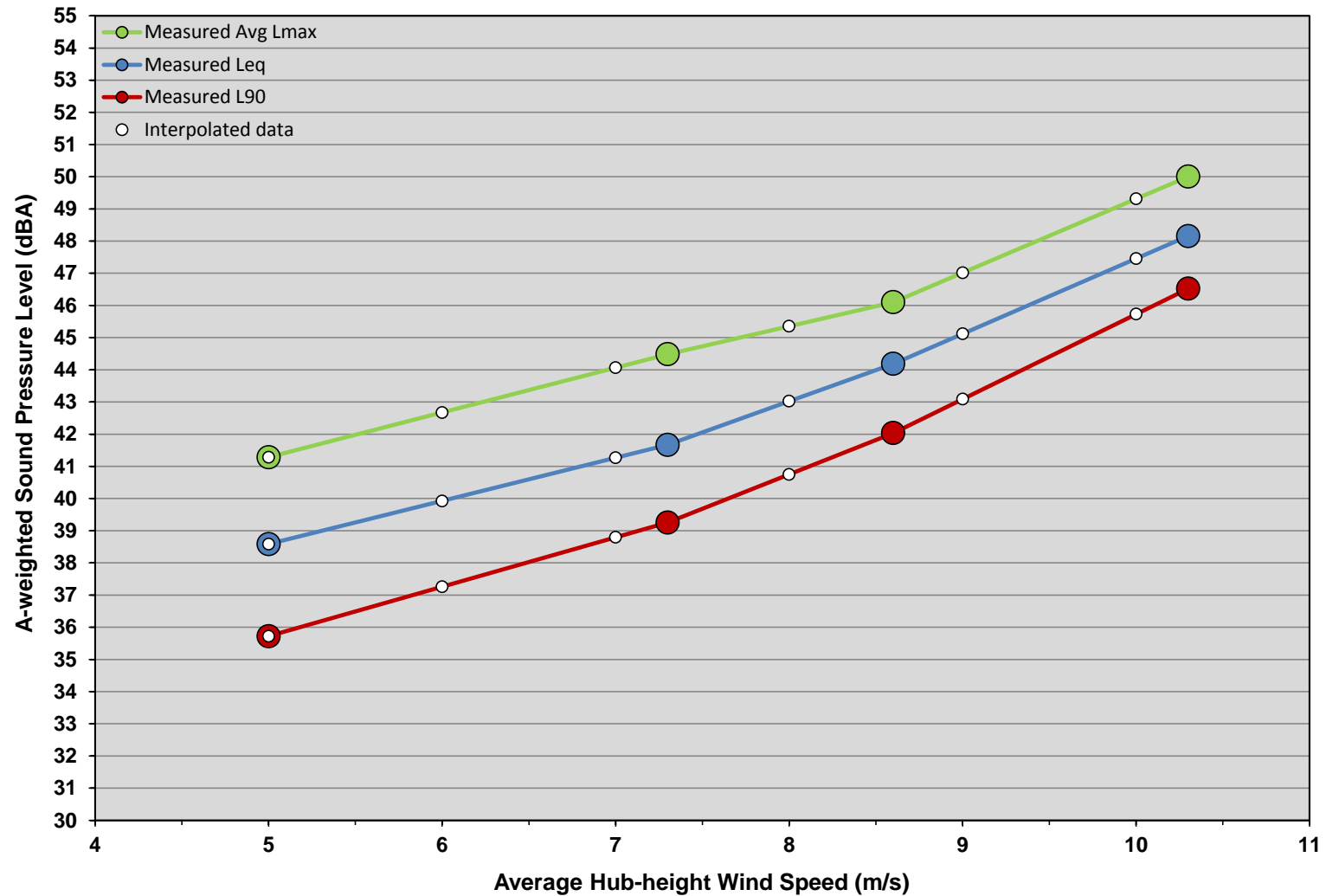




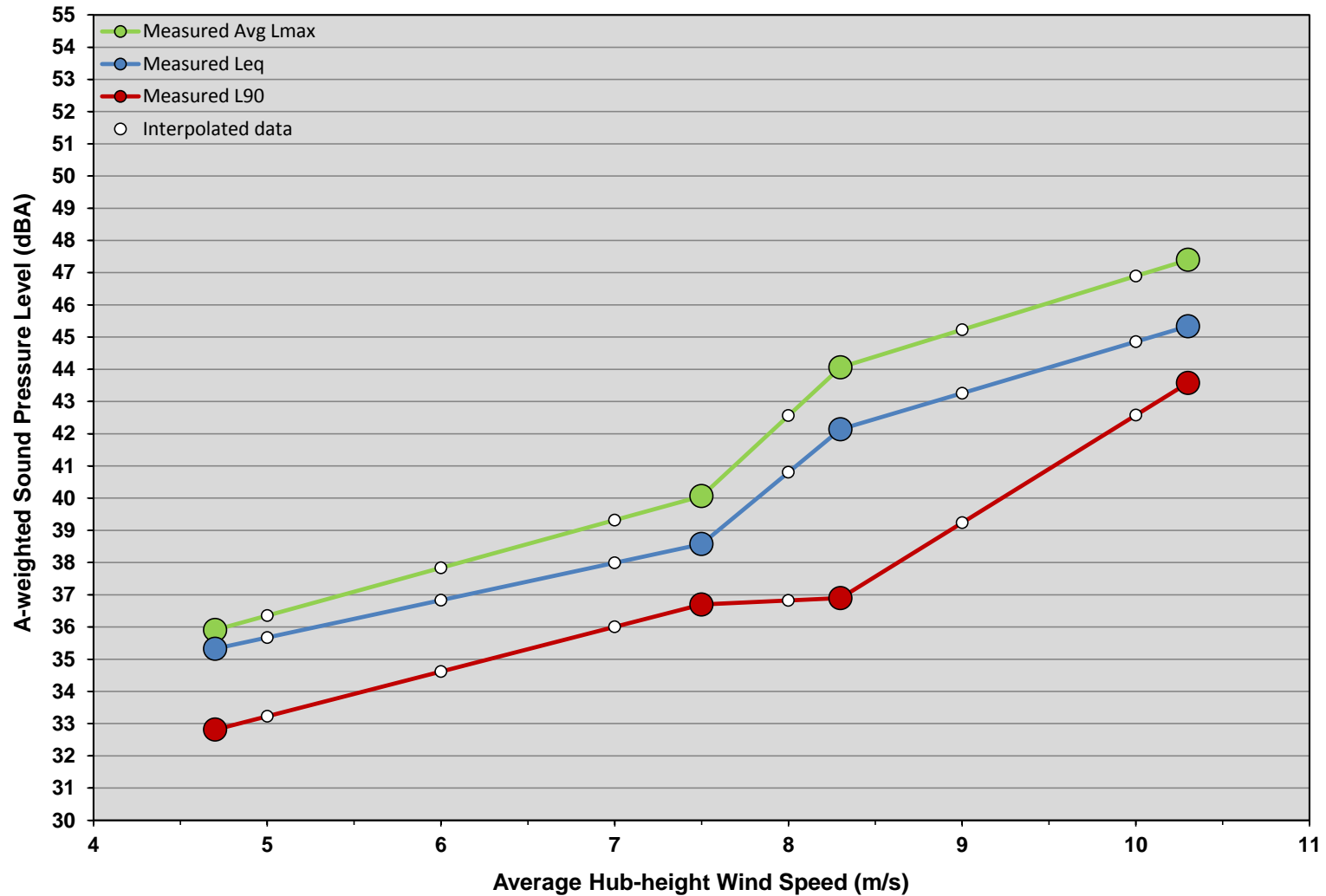
**Figure 21. Variation in KWI Wind Turbine Slow-response A-levels with Wind Speed**  
3 Leland Rd (990 feet from KWI) excluding Route 3 traffic & ambient removed



**Figure 22. Variation in KWI Wind Turbine Slow-response A-levels with Wind Speed**  
11 Leland Rd (1025 feet from KWI) excluding Route 3 traffic & ambient removed



**Figure 23. Variation in KWI Wind Turbine Slow-response A-levels with Wind Speed**  
38 Prospect St (1410 feet from KWI) excluding Route 3 traffic & ambient removed



### 9.3 KWI Turbine Sound Level Estimates for Copper Beech Drive

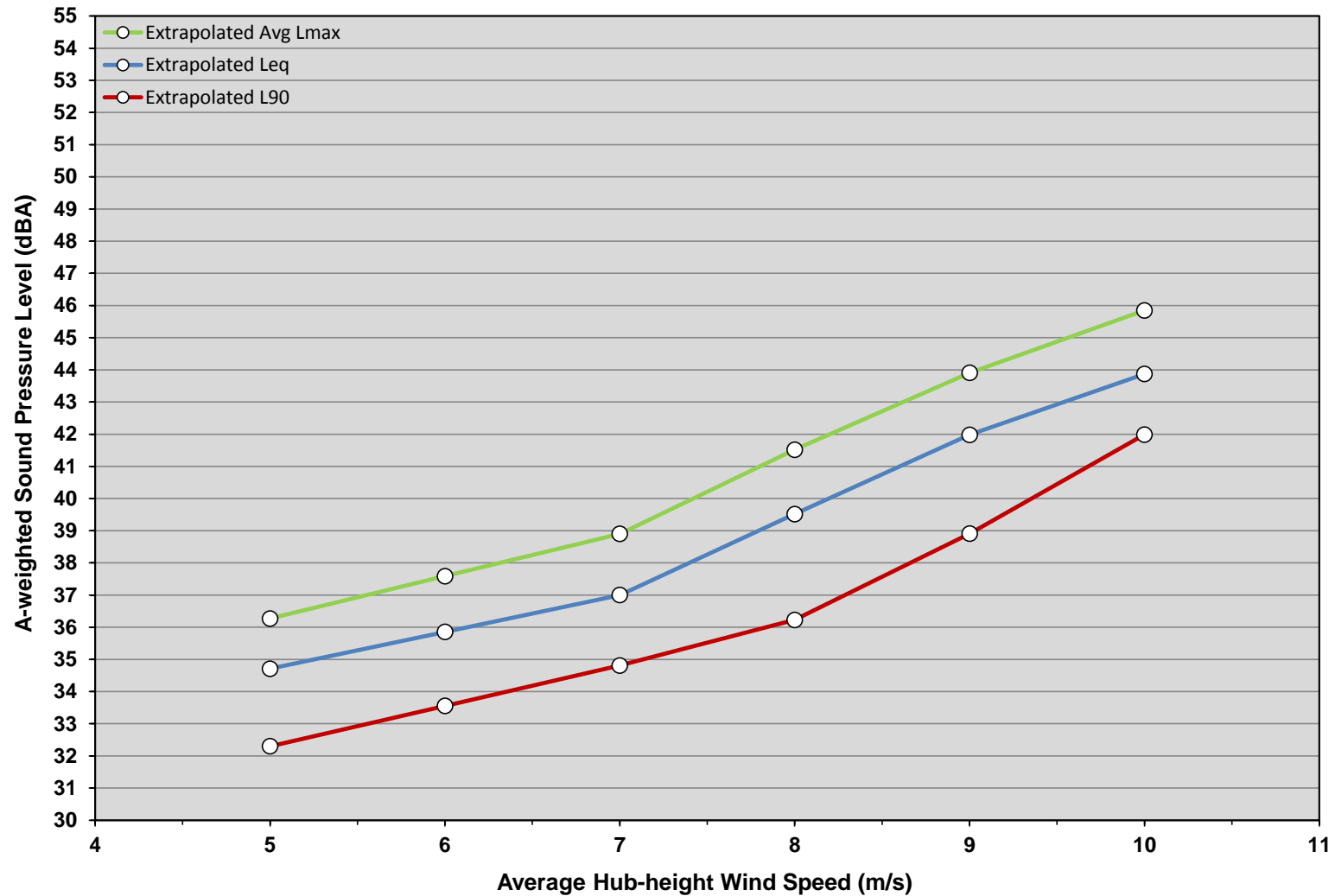
The measured KWI turbine-only sound levels that were interpolated to integer wind speed values for the 13 Schofield Road, 3 Leland Road, 11 Leland Road, and 38 Prospect Street monitoring locations were cross-compared and the overall trend with increasing site distance from the KWI turbine was determined to fit the standard “inverse-square law” (20 times the logarithm of the distance ratio) relationship for sound attenuation with distance from a point source. The distances of the sites from the KWI wind turbine range from 740 feet at 13 Schofield Road to 1410 feet at 38 Prospect Street (refer to Section 4.1).

When the turbine-only sound levels measured at 13 Schofield Road, 3 Leland Road, and 11 Leland Road were extrapolated to the 38 Prospect Street monitoring location using the standard inverse-square law relationship, the estimates were within  $\pm 1$  dBA of the turbine-only sound levels measured at this site.

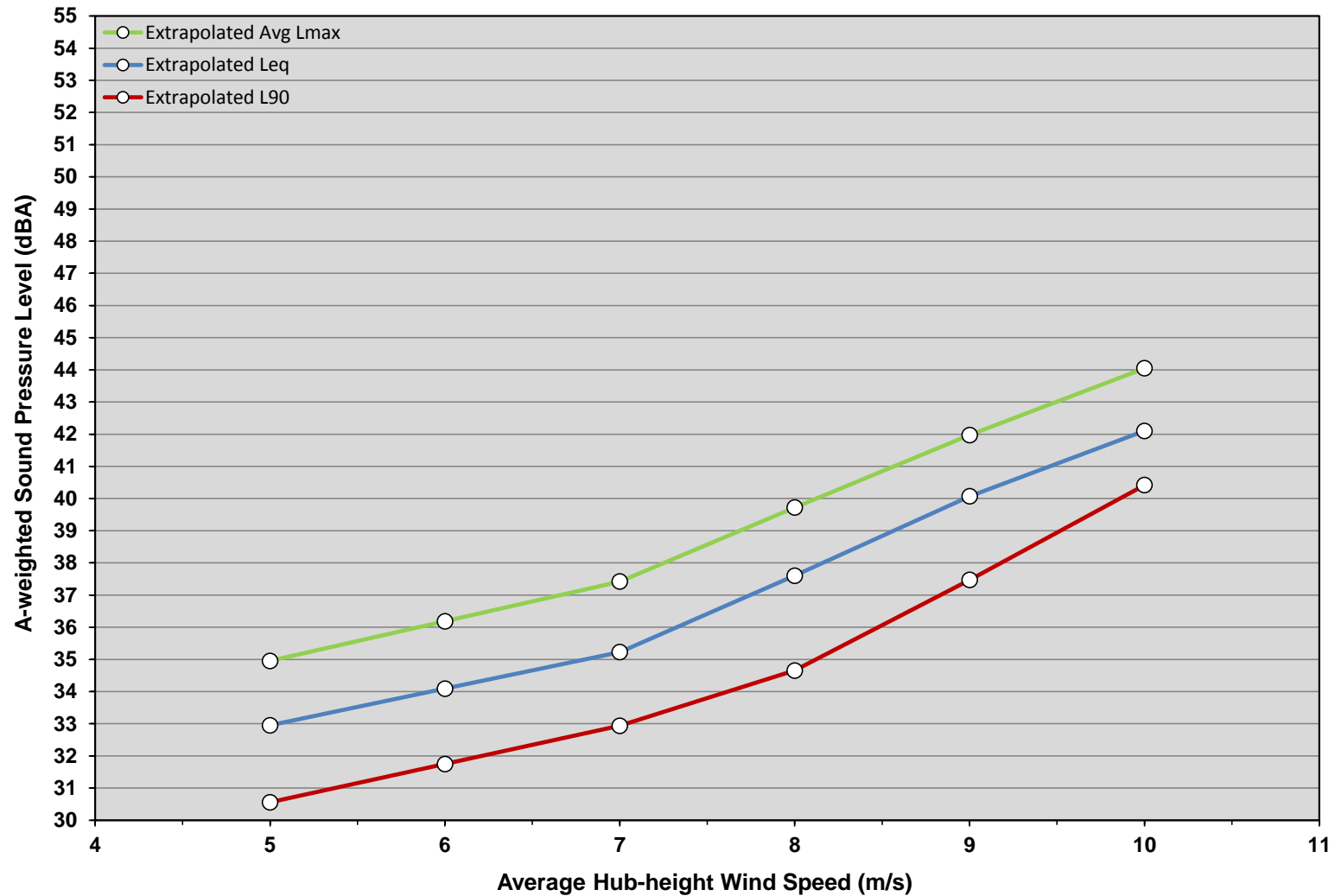
KWI turbine sound levels were then extrapolated using the same inverse-square law to estimate downwind turbine-only sound levels at 18 Copper Beech Drive and 6 Copper Beech Drive. These sites are located at distances from the KWI wind turbine of 1535 feet and 1855 feet, respectively. An additional adjustment for ground cover attenuation was not necessary since the measurement data already included appropriate ground effects. Likewise, terrain shielding attenuation from the nearby MBTA commuter rail embankment was evaluated, but given the height of the KWI turbine an adjustment was not included since most residential locations along Copper Beech Drive have a direct line-of-sight over the embankment to the turbine nacelle and the rotational path of the turbine blades.

Figures 24 and 25 illustrate the extrapolated KWI turbine-only sound level estimates as a function of hub-height wind speed for each of the Copper Beech Drive monitoring locations.

**Figure 24. Variation in KWI Wind Turbine Slow-response A-levels with Wind Speed**  
18 Copper Beech Dr (1535 feet from KWI) - estimates using data for Sites 1 to 4



**Figure 25. Variation in KWI Wind Turbine Slow-response A-levels with Wind Speed**  
6 Copper Beech Dr (1855 feet from KWI) - estimates using data for Sites 1 to 4



## 9.4 Nighttime Sound Level Increase Estimates for Copper Beech Drive

The extrapolated KWI turbine-only sound levels were compared to measured ambient  $L_{90}$  sound levels to determine potential nighttime sound level increases for downwind conditions with the KWI turbine operating over a typical range of wind speeds<sup>10</sup>. Tables 35 and 36 present the resulting sound level increase estimates for each Copper Beech Drive monitoring location. Because the wind speed data measured by the ultrasonic anemometers mounted on the KWI turbine nacelle underestimate actual wind speeds by about 1.5 m/s on average, both corrected wind speed information and corresponding power generation levels are provided in the sound level increase tables for reference.

Also, since KWI turbine-only sound levels could be extrapolated to integer wind speeds from 5 to 10 m/s while ambient background sound level data was only collected with wind speeds of about 7 to 9 m/s, ambient  $L_{90}$  sound levels at slightly higher and lower wind speeds were estimated. Because nighttime ambient sound levels typically either remain about the same or increase somewhat with increasing wind speed, it was assumed that ambient background sound levels at a 10 m/s wind speed would be no lower than measured at about 9 m/s and that ambient sound levels at wind speeds of 5 to 6 m/s would be at least as low as measured around 7 m/s. This approach was also used to select representative minimum ambient  $L_{90}$  values for wind speeds from 7 to 9 m/s.

The results indicate that slow-response A-weighted sound level increases from nighttime ambient conditions due to operation of the KWI wind turbine are not estimated to exceed 10 dBA at 6 Copper Beech Drive under worst-case downwind conditions. The turbine-operating Avg  $L_{max}$  over ambient  $L_{90}$  sound level increases estimated for 18 Copper Beech Drive exceed 10 dBA at higher wind speeds of 9 m/s and above. This result is largely due to the fact that the residence located at 18 Copper Beech Drive is the closest home in this neighborhood to the KWI turbine and also one of the most distant from Route 3, resulting in slightly higher turbine-only sound levels and somewhat lower nighttime ambient sound levels.

---

<sup>10</sup> For example, KWI turbine-only Avg  $L_{max}$  sound levels of 44.7 dBA to 37.8 dBA were interpolated for a 6 m/s average wind speed using the measurement data collected at 13 Schofield Road, 3 Leland Road, 11 Leland Road, and 38 Prospect Street at wind speeds ranging from about 5 to 7 m/s and at distances from the KWI turbine ranging from 740 to 1410 feet. This interpolated data was then extrapolated to the 18 Copper Beech Drive measurement site (located at a distance of 1535 feet from KWI) using the standard inverse-square law (20 times the logarithm of the distance ratio) relationship to generate a turbine-only sound level estimate of 37.6 dBA at 6 m/s. The ambient  $L_{90}$  sound level at 6 m/s was estimated for the 18 Copper Beech Drive site using the minimum nighttime ambient  $L_{90}$  of 32.7 dBA measured in this location at a wind speed of 7.1 m/s. The turbine-only sound level of 37.6 dBA was then combined with the ambient  $L_{90}$  of 32.7 dBA using logarithmic decibel addition to generate a turbine-operating sound level estimate of 38.8 dBA at a 6 m/s average wind speed. This results in a turbine-operating Avg  $L_{max}$  (38.8 dBA) over ambient  $L_{90}$  (32.7 dBA) sound level increase estimate of 6.1 dBA at 6m/s, as shown in Table 35.

**Table 35. Nighttime Sound Level Increase Estimates for 18 Copper Beech Dr (1535 ft from KWI)**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to East	5	169	32.7	36.3	34.7	32.3	37.9	36.8	35.5	5.2	4.1	2.8
	6	318	32.7	37.6	35.9	33.6	38.8	37.6	36.2	6.1	4.9	3.5
	7	529	32.7	38.9	37.0	34.8	39.8	38.4	36.9	7.1	5.7	4.2
	8	812	32.7	41.5	39.5	36.2	42.1	40.3	37.8	9.4	7.6	5.1
	9	1176	34.1	43.9	42.0	38.9	44.3	42.6	40.1	10.2	8.5	6.0
	10	1612	34.1	45.8	43.9	42.0	46.1	44.3	42.6	12.0	10.2	8.5

**Notes:**

1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$

2) Increase from Ambient L90:  $d = c - a$



**Table 36. Nighttime Sound Level Increase Estimates for 6 Copper Beech Dr (1855 ft from KWI)**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to East	5	169	35.1	35.0	33.0	30.6	38.0	37.2	36.4	2.9	2.1	1.3
	6	318	35.1	36.2	34.1	31.7	38.7	37.6	36.7	3.6	2.5	1.6
	7	529	35.1	37.4	35.2	32.9	39.4	38.2	37.2	4.3	3.1	2.1
	8	812	35.1	39.7	37.6	34.7	41.0	39.5	37.9	5.9	4.4	2.8
	9	1176	38.4	42.0	40.1	37.5	43.6	42.3	41.0	5.2	3.9	2.6
	10	1612	38.4	44.0	42.1	40.4	45.1	43.6	42.5	6.7	5.2	4.1

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$

## 10 Supplemental Ambient Monitoring Program

The acoustical monitoring results presented in Sections 6 through 9 of this report represent an assessment of increases in ambient sound levels due to operation of the KWI turbine under worst-case conditions, which were during the quietest nighttime periods in the winter season and with downwind conditions.

Since increases of turbine-operating  $A_{vg} L_{max}$  over nighttime ambient  $L_{90}$  exceeding 10 dBA were identified at some locations during the acoustical monitoring study, and because sound from traffic on Route 3 is very significant at the closest neighborhood locations outside of the quietest nighttime periods, a supplemental ambient monitoring program was conducted in September 2014 (referred to as the “summer” season elsewhere in this report) to investigate daily and seasonal variations in A-weighted ambient  $L_{90}$  sound levels in the affected community.

The ambient  $L_{90}$  sound level data were then assessed against measured KWI turbine sound levels interpolated to integer wind speed values for the Schofield Road and Leland Road monitoring locations (see Section 9.2), as well as additional turbine-only data extrapolated to higher and lower wind speeds not directly measured. Turbine-only sound levels were likewise extrapolated for the 18 Copper Beech Drive site (see Section 9.3) to estimate potential increases in ambient sound levels over a range of wind speeds and during various periods throughout the day. Seasonal variations in ambient sound levels were also examined at each site. This information was used to evaluate potential sound level increases due to operation of the KWI turbine at different times of day and year and with various wind conditions in the context of MassDEP noise policy.

Additional details of the supplemental ambient monitoring program, the ambient  $L_{90}$  sound level results, and the resulting sound level increase predictions are presented in the following report sub-sections.

### 10.1 Monitoring Dates and Locations

The supplemental ambient monitoring was conducted over a 5-day period commencing at 12:00pm on Sunday September 15, 2014 and ending about 12:30pm on Friday September 19, 2014. Hub-height wind speeds over this interval reached above 10 m/s during the day and also at night. The data collection occurred while the KWI wind turbine was undergoing annual maintenance and therefore not operating, however the ultrasonic anemometers remained functional and the KWI turbine SCADA system continued to record 10-minute average wind speed data as usual, except during a few brief periods.

Three of the previous measurement sites were selected for the additional ambient monitoring, located at 13 Schofield Road, 3 Leland Road, and 18 Copper Beech Drive.

### 10.2 Instrumentation

The ambient monitoring was conducted with the same instrumentation used for the acoustical monitoring conducted during February, March, and April 2014 (referred to as the “winter” season elsewhere in this report). These instruments were ANSI Type 1 “Precision” Bruel & Kjaer model 2250 sound level analyzer kits, each including a microphone, pre-amplifier, microphone stand, 7-inch windscreen, and an acoustic calibrator. All of the noise measurement instrumentation is owned by HMMH, conforms to ANSI Standard S1.4 for Type 1 sound level meters, and have current calibrations traceable to the U.S. National Institute of Standards and Technology (NIST). Additional calibration checks were carried out when the instruments were deployed and collected.

The measurements were also conducted in accordance with industry best practices and in general compliance with appropriate professional standards such as ASTM E 1779-96a (Reapproved 2004) “Standard Guide for Preparing a Measurement Plan for Conducting Outdoor Sound Measurements”,

ANSI S12.18 “Procedures for Outdoor Measurement of Sound Pressure Level” and ANSI S12.9 Part 2 “Quantities and Procedures for Description and Measurement of Environmental Sound, Part 2: Measurement of Long-Term, Wide Area Sound”.

Sound measurement microphones were tripod-mounted at a 5-6 foot elevation and placed at least 25 feet from large reflecting surfaces (such as buildings) and at least 5 feet from smaller objects (such as trees and poles). While previous acoustical monitoring utilized short-term attended measurements, during the ambient monitoring program the instrumentation were unattended and collected sound level data continuously over the entire 5-day period. The instruments measured in the frequency range from 5.6 Hz to 20,000 Hz, and were programmed to log slow-response broadband A-weighted sound levels as well as unweighted 1/3-octave band octave band data in 1-second and 10-minute intervals.

Throughout the ambient monitoring, audio recordings were captured in addition to sound metric data. As a result, the sounds heard during the measurements could be listened to subsequently using proprietary software provided by the manufacturer of the sound analyzer instrumentation. This allowed any of the measurements to be reviewed, and more than once if necessary, to identify individual sound sources.

Simultaneous hub-height wind speed and direction data was obtained for each monitoring period in 10-minute intervals from the KWI turbine SCADA system. The wind speed data was adjusted using a correction factor of +1.5 m/s. (Refer to Section 2.3 for additional details.)

### 10.3 Analysis of Ambient Monitoring Data

The slow-response A-weighted  $L_{90}$  ambient background sound level data collected at each of the three monitoring sites were evaluated against corresponding time of day and average hub-height wind speed information. The hours from 12:00am to 4:00am were identified as a key time period for subsequent analyses because the quietest ambient sound levels measured among the various sites were observed to occur within this time interval. The ambient sound level data were also compared against average hub-height wind direction data, however no direct correlation was observed and measured ambient sound levels were about the same overall regardless of wind direction.

Since ambient sound level data was only collected with wind speeds up to about 10 to 11 m/s, ambient  $L_{90}$  sound levels at higher wind speeds were estimated. Because ambient sound levels typically either remain about the same or increase somewhat with increasing wind speed, it was assumed that ambient background sound levels at wind speeds above 11 m/s would be no lower than measured at wind speeds right around 10 to 11 m/s. This approach was also used to select representative minimum ambient  $L_{90}$  values for wind speeds from turbine cut-in (3.5 m/s) up to 11 m/s.

Very high frequency sound generated by insects was audible throughout the supplemental ambient monitoring. However, the nighttime ambient  $L_{90}$  sound levels measured at 13 Schofield Road and 3 Leland Road during this period with intermittent insect noise were very comparable with the ambient data previously collected at these sites during the winter with no insect noise. Overall, seasonal variation in nighttime ambient  $L_{90}$  sound levels due to insects or other factors was not observed in these locations.

At 18 Copper Beech Drive, the nighttime ambient  $L_{90}$  sound levels measured during the summer season were somewhat higher than the ambient data previously collected during the winter season. However, when the summertime ambient data was adjusted to remove the contribution from insect noise, the resulting sound levels were approximately 4 to 5 dBA lower on average and now approached the ambient data measured at this site during the wintertime. Therefore, seasonal variability in ambient  $L_{90}$  sound levels due to insects was found to be important factor at this location. For this reason, sound level increases associated with operation of the KWI wind turbine were calculated using both the ambient

monitoring data that included insect noise (representative of summer conditions) and also ambient data that did not include insect noise (generally representative of winter conditions).

## 10.4 Estimated KWI Turbine Sound Levels

The ambient  $L_{90}$  sound level data were then assessed against measured KWI turbine sound levels interpolated to integer wind speed values for the Schofield Road and Leland Road monitoring locations (see Section 9.2), as well as additional turbine-only data extrapolated to wind speeds not directly measured. Turbine-only sound levels were likewise extrapolated for the 18 Copper Beech Drive site (see Section 9.3) to estimate potential increases in ambient sound levels over a range of wind speeds and during various periods throughout the day.

Since measured turbine sound levels could only be interpolated to wind speeds from 5 to 10 m/s, KWI turbine-only sound levels at higher wind speeds above 10 m/s and lower wind speeds down to turbine cut-in (3.5 m/s) were estimated. Because the measured turbine-only sound level ranges of approximately 8 to 10 dBA for wind speeds from about 5 to 10 m/s shown in Figures 20 through 23 agree well with the KWI turbine sound power data provided in Figure 2 (refer to Sections 2.2 and 9.2), it is appropriate to use the sound power curve to estimate the relative increase/decrease in turbine sound levels at the highest and lowest wind speeds. The sound power data provided in Figure 2 indicates that KWI turbine sound levels increase by up to approximately 0.9 dBA at wind speeds from 10 m/s to above 14 m/s and decrease by up to approximately 4.3 dBA at wind speeds from 5 m/s down to 3.5 m/s.

Furthermore, recent research on wind turbine sound directivity and current best practices<sup>11</sup> for acoustical modeling of wind turbine sound propagation indicate that utility-scale turbine sound levels are typically about the same for any wind direction and generally only vary by at most about 2 decibels directly at the crosswind direction (given site distances within approximately 2000 feet of the wind turbine).

## 10.5 Sound Level Increase Predictions

The supplemental ambient monitoring results and corresponding sound level increase predictions are presented in the following report sub-sections. Note that diurnal trends in ambient  $L_{90}$  sound levels were observed to differ slightly on each day of monitoring. The sound level increase predictions incorporate this variability to appropriately establish periods when exceedances of the MassDEP noise policy have the potential to occur and times when sound level increases of less than 10 dBA are anticipated.

Figures 26, 28, 30, and 32 illustrate the slow-response A-weighted  $L_{90}$  sound levels measured over time at each ambient monitoring site. The data collected at 18 Copper Beech is provided with insect noise included and also with the contribution from insect noise removed.

Figures 27, 29, 31, and 33 depict the same ambient  $L_{90}$  sound levels now plotted against corresponding wind speed data (above turbine cut-in) and also highlighted to indicate various time periods. Additional ambient data previously collected during March and April of 2014 is also included for reference and in supplement to the September 2014 data set in order to include all available information on ambient conditions in subsequent sound level increase predictions. (Refer to ambient  $L_{90}$  data provided in Appendix D for 5-minute and 20-minute monitoring intervals.)

Tables 37 through 49 present ambient sound level increase predictions for each monitoring location during various periods throughout the day. Because the wind speed data measured by the ultrasonic

---

<sup>11</sup> Institute of Acoustics, “A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise” May 2013.

anemometers mounted on the KWI turbine nacelle underestimate actual wind speeds by about 1.5 m/s on average, both corrected wind speed information and corresponding power generation levels are provided in the sound level increase tables for reference (Refer to Section 2.3 for additional explanation.)

### 10.5.1 Schofield Road

The ambient  $L_{90}$  sound levels measured at 13 Schofield Road are shown in Figure 26. Time periods selected for subsequent consideration are identified at the top of this figure. Note that observed diurnal sound level variations correlate well with typical daily traffic patterns on nearby Route 3.

The measured ambient sound data are plotted against corresponding wind speed data in Figure 27 and are also highlighted to indicate the different time periods of interest. Additional nighttime ambient data previously collected during March and April 2014 is also included in this figure.

Ambient background sound levels were assessed against measured KWI turbine sound levels interpolated to integer wind speed values for 13 Schofield Road (see Section 9.2) as well as additional turbine-only data extrapolated to higher and lower wind speeds not measured (refer to Section 10.4) to compute the sound level increase predictions presented in Tables 37 through 39.

Ambient sound levels were highest between about 4:30am and 11:00pm, which includes times with peak traffic on Route 3 and adjacent shoulder periods. This data is shown in Figure 27 with red markers for data collected on weekdays and yellow markers for data collected on Sunday. Ambient  $L_{90}$  sound levels varied between approximately 46 and 59 dBA during this interval. The sound level increase predictions shown in Table 37 indicate that worst-case turbine-operating  $Avg L_{max}$  over ambient  $L_{90}$  increases in this time period are at most about 8 dBA. Therefore, exceedances of the MassDEP noise policy due to daytime operation of the KWI turbine are not predicted to occur on Schofield Road between 4:30am and 11:00pm on any day during the week or weekend.

Ambient sound levels were lowest between about 12:00am and 4:00am, though still somewhat variable due to changing traffic volumes on Route 3. This data is shown in Figure 27 with blue markers for data collected in September 2014 and purple markers for data collected in March and April 2014. Ambient  $L_{90}$  sound levels varied between approximately 32 and 46 dBA during this interval and comparable minimum levels were measured during the summer and winter seasons. The sound level increase predictions shown in Table 38 indicate that worst-case turbine-operating  $Avg L_{max}$  over ambient  $L_{90}$  increases in this time period exceed 10 dBA at most wind speeds. Consequently, exceedances of the MassDEP noise policy due to nighttime operation of the KWI turbine during downwind conditions (winds from south to west) are predicted to have the potential to occur on Schofield Road throughout the year between 12:00am and 4:00am at wind speeds of 4 m/s and above.

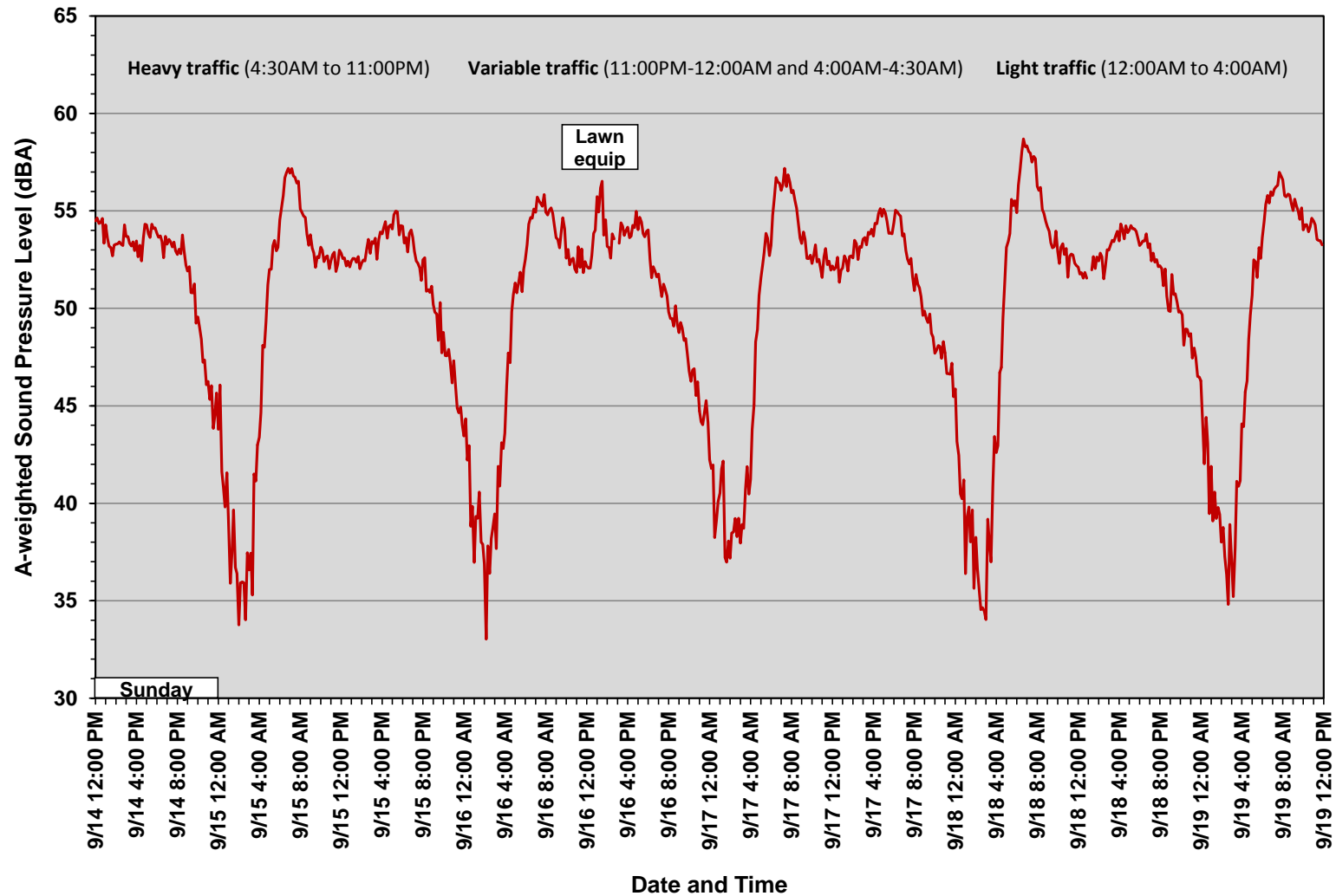
Ambient sound levels transitioned between higher and lower values due to decreasing or increasing traffic volumes on Route 3 from about 11:00pm to 12:00am and also from 4:00am to 4:30am. This data is shown in Figure 27 with green markers. Ambient  $L_{90}$  sound levels varied between approximately 41 dBA and 49 dBA during this interval. The sound level increase predictions shown in Table 39 indicate that worst-case turbine-operating  $Avg L_{max}$  over ambient  $L_{90}$  increases in this time period are greater than 10 dBA at higher wind speeds. Thus, exceedances of the MassDEP noise policy due to nighttime operation of the KWI turbine during downwind conditions (winds from south to west) are predicted to have the potential to occur on Schofield Road throughout the year at wind speeds above 9 m/s between 11:00pm and 12:00am and also from 4:00am to 4:30am.

In summary, sound level increases of less than 10 dBA are predicted during daytime operation of the KWI wind turbine from 4:30am to 11:00pm throughout the week and weekend regardless of season.

Exceedances of the 10 dBA maximum increase MassDEP noise policy due to nighttime operation of the KWI turbine during downwind conditions (winds from south to west) are predicted to have the potential to occur on Schofield Road throughout the year between 12:00am and 4:00am at wind speeds of 4 m/s and above and between 11:00pm and 4:30am for wind speeds above 9 m/s.

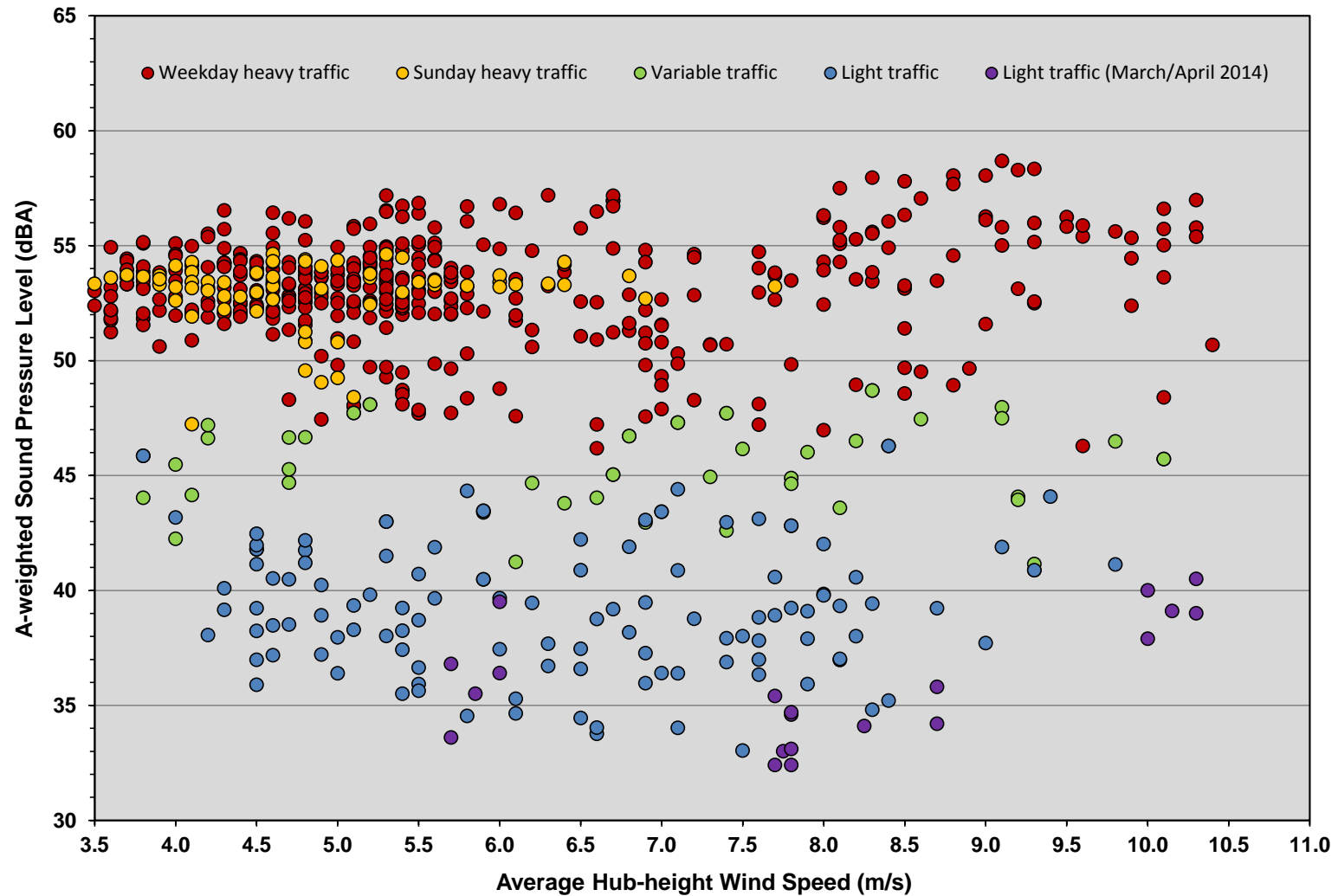
While these conclusions are based only on monitoring conducted during downwind conditions, comparable results are also anticipated with other wind directions given that turbine sound levels are likely about the same for most wind directions at the distance of this neighborhood from the KWI turbine (refer to Section 10.4) and since measured ambient sound levels were about the same overall regardless of wind direction (see Section 10.3).

**Figure 26. Slow-response A-weighted Ambient (L90) Sound Level Measurement**  
 13 Schofield Road - 12pm on Sunday 9/14 through 12pm on Friday 9/19/2014





**Figure 27. Variation in Slow-response A-weighted Ambient (L90) Sound Levels with Average Hub-height Wind Speed - 13 Schofield Road - September 2014**





**Table 37. Daytime Sound Level Increase Predictions for 13 Schofield Road with Heavy Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	46.2	40.2	36.9	34.2	47.2	46.7	46.5	1.0	0.5	0.3
	4	67	46.2	42.1	38.8	36.1	47.6	46.9	46.6	1.4	0.7	0.4
	5	169	46.2	44.5	41.2	38.5	48.4	47.4	46.9	2.2	1.2	0.7
	6	318	46.2	44.7	41.8	39.3	48.5	47.5	47.0	2.3	1.3	0.8
	7	529	46.2	45.0	42.4	40.0	48.7	47.7	47.1	2.5	1.5	0.9
	8	812	46.3	47.8	45.0	41.5	50.1	48.7	47.5	3.8	2.4	1.2
	9	1176	46.3	50.4	47.6	44.6	51.8	50.0	48.5	5.5	3.7	2.2
	10	1612	46.3	52.4	49.9	48.4	53.4	51.5	50.5	7.1	5.2	4.2
	11	1984	46.3	52.8	50.3	48.8	53.7	51.7	50.7	7.4	5.4	4.4
	12	2000	46.3	53.0	50.5	49.0	53.9	51.9	50.8	7.6	5.6	4.5
	13	2000	46.3	53.2	50.7	49.2	54.0	52.0	51.0	7.7	5.7	4.7
	14 and above	2000	46.3	53.3	50.8	49.3	54.1	52.1	51.0	7.8	5.8	4.7

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 4:30AM to 11:00PM
- 4) Minimum ambient L90 values dominated by traffic noise at all wind speeds

**Table 38. Nighttime Sound Level Increase Predictions for 13 Schofield Road with Light Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	32.4	40.2	36.9	34.2	40.8	38.2	36.4	8.4	5.8	4.0
	4	67	32.4	42.1	38.8	36.1	42.5	39.7	37.7	10.1	7.3	5.3
	5	169	32.4	44.5	41.2	38.5	44.7	41.8	39.5	12.3	9.4	7.1
	6	318	32.4	44.7	41.8	39.3	45.0	42.3	40.1	12.6	9.9	7.7
	7	529	32.4	45.0	42.4	40.0	45.2	42.8	40.7	12.8	10.4	8.3
	8	812	32.4	47.8	45.0	41.5	47.9	45.2	42.0	15.5	12.8	9.6
	9	1176	34.2	50.4	47.6	44.6	50.5	47.8	45.0	16.3	13.6	10.8
	10	1612	37.9	52.4	49.9	48.4	52.6	50.1	48.7	14.7	12.2	10.8
	11	1984	37.9	52.8	50.3	48.8	53.0	50.5	49.1	15.1	12.6	11.2
	12	2000	37.9	53.0	50.5	49.0	53.1	50.7	49.3	15.2	12.8	11.4
	13	2000	37.9	53.2	50.7	49.2	53.3	50.9	49.5	15.4	13.0	11.6
	14 and above	2000	37.9	53.3	50.8	49.3	53.4	51.0	49.6	15.5	13.1	11.7

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 12:00AM to 4:00AM

**Table 39. Nighttime Sound Level Increase Predictions for 13 Schofield Road with Variable Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	41.2	40.2	36.9	34.2	43.7	42.6	42.0	2.5	1.4	0.8
	4	67	41.2	42.1	38.8	36.1	44.7	43.2	42.4	3.5	2.0	1.2
	5	169	41.2	44.5	41.2	38.5	46.2	44.2	43.1	5.0	3.0	1.9
	6	318	41.2	44.7	41.8	39.3	46.3	44.5	43.4	5.1	3.3	2.2
	7	529	41.2	45.0	42.4	40.0	46.5	44.8	43.7	5.3	3.6	2.5
	8	812	41.2	47.8	45.0	41.5	48.7	46.5	44.3	7.5	5.3	3.1
	9	1176	41.2	50.4	47.6	44.6	50.9	48.5	46.2	9.7	7.3	5.0
	10	1612	41.2	52.4	49.9	48.4	52.7	50.4	49.1	11.5	9.2	7.9
	11	1984	41.2	52.8	50.3	48.8	53.1	50.8	49.5	11.9	9.6	8.3
	12	2000	41.2	53.0	50.5	49.0	53.3	51.0	49.6	12.1	9.8	8.4
	13	2000	41.2	53.2	50.7	49.2	53.5	51.1	49.8	12.3	9.9	8.6
	14 and above	2000	41.2	53.3	50.8	49.3	53.6	51.2	49.9	12.4	10.0	8.7

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 11:00PM to 12:00AM and from 4:00AM to 4:30AM
- 4) Minimum ambient L90 values dominated by traffic noise at all wind speeds

## 10.5.2 Leland Road

The ambient  $L_{90}$  sound levels measured at 3 Leland Road are shown in Figure 28. Time periods selected for subsequent consideration are identified at the top of this figure. Note that observed diurnal sound level variations correlate well with typical daily traffic patterns on nearby Route 3.

The measured ambient sound data are plotted against corresponding wind speed data in Figure 29 and are also highlighted to indicate the different time periods of interest. Additional nighttime ambient data previously collected during March and April 2014 is also included in this figure and measurements at 3 Leland Road and directly adjacent at 11 Leland Road have both been included in an effort to utilize as much useful information as possible. Note that on March 2, 2014 when monitoring was conducted simultaneously at these two sites, ambient levels were found to be nearly the same (as observed in Figure 29 for wind speeds of about 8.5 to 9 m/s). Taken together, the additional ambient data agrees well overall with the September 2014 nighttime data.

Ambient background sound levels were assessed against measured KWI turbine sound levels interpolated to integer wind speed values for 3 Leland Road and 11 Leland Road (see Section 9.2) as well as additional turbine-only data extrapolated to other wind speeds not measured (refer to Section 10.4) to compute the sound level increase predictions presented in Tables 40 through 45.

Ambient sound levels were highest between about 4:30am and 11:00pm, which includes times with peak traffic on Route 3 and adjacent shoulder periods. This data is shown in Figure 29 with red markers for data collected on weekdays and yellow markers for data collected on Sunday. Ambient  $L_{90}$  sound levels varied between approximately 44 and 58 dBA during this interval. The sound level increase predictions shown in Tables 40 and 41 indicate worst-case turbine-operating Avg  $L_{max}$  over ambient  $L_{90}$  increases in this time period of at most 4 to 5 dBA. Therefore, exceedances of the MassDEP noise policy due to daytime operation of the KWI turbine are not predicted to occur on Leland Road between 4:30am and 11:00pm on any day during the week or weekend.

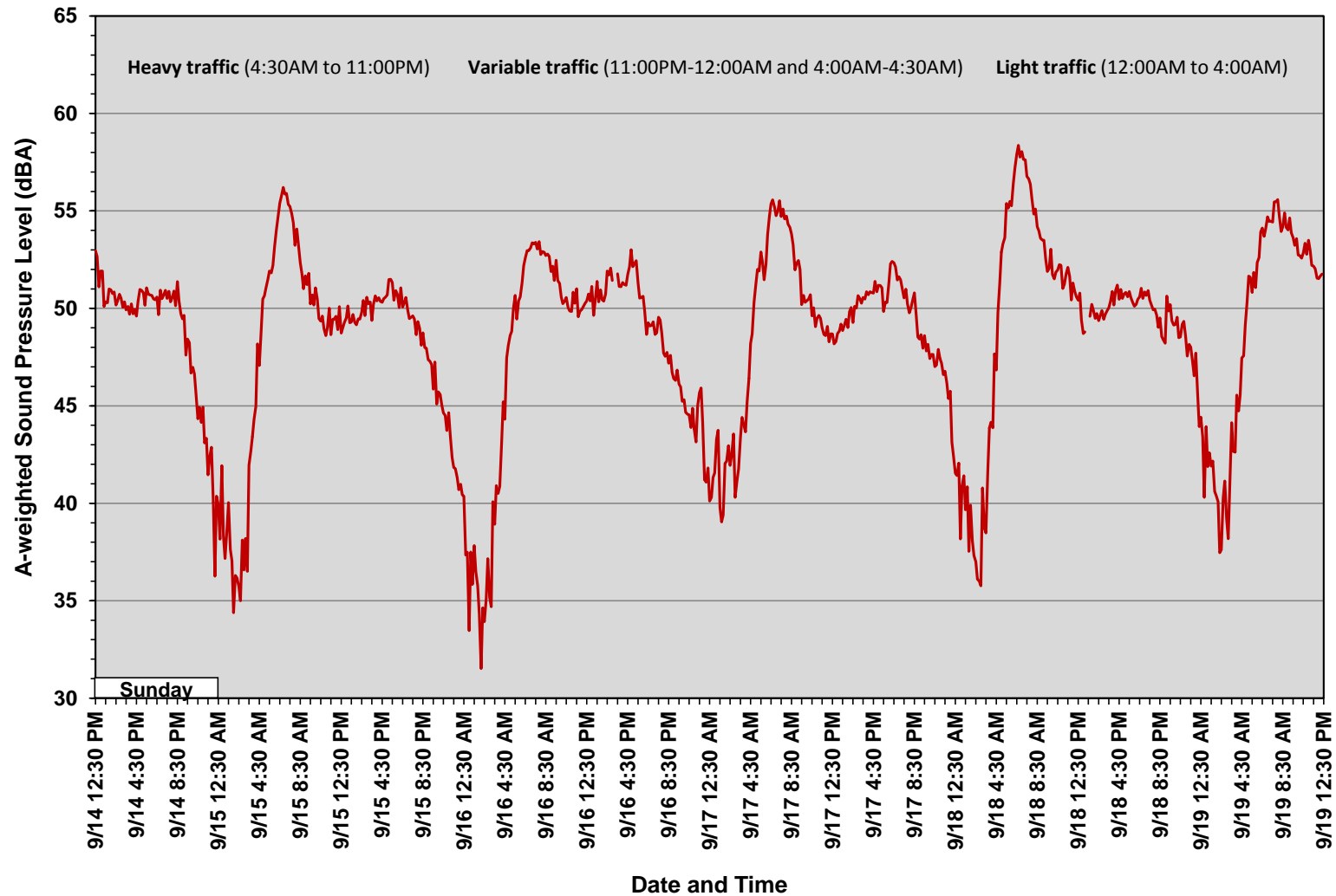
Ambient sound levels were lowest between about 12:00am and 4:00am, though still somewhat variable due to changing traffic volumes on Route 3. This data is shown in Figure 29 with blue markers for data collected in September 2014 at 3 Leland Road, purple markers for data collected in March/April 2014 at 3 Leland Road, and pink markers for data collected in March/April 2014 at 11 Leland Road. Ambient  $L_{90}$  sound levels generally varied between approximately 33 and 48 dBA during this interval and comparable levels were measured during the summer and winter seasons. The sound level increase predictions shown in Tables 42 and 43 indicate that worst-case turbine-operating Avg  $L_{max}$  over ambient  $L_{90}$  increases in this time period exceed 10 dBA at moderate to higher wind speeds. Consequently, exceedances of the MassDEP noise policy due to nighttime operation of the KWI turbine during downwind conditions (winds from south to west) are predicted to have the potential to occur on Leland Road throughout the year between 12:00am and 4:00am at wind speeds from about 6 to 10 m/s.

Ambient sound levels transitioned between higher and lower values due to decreasing or increasing traffic volumes on Route 3 from about 11:00pm to 12:00am and also from 4:00am to 4:30am. This data is shown in Figure 29 with green markers. Ambient  $L_{90}$  sound levels varied between approximately 41 dBA and 49 dBA during this interval. The sound level increase predictions shown in Table 44 and Table 45 indicate that worst-case turbine-operating Avg  $L_{max}$  over ambient  $L_{90}$  increases in this time period are at most about 5 to 6 dBA. Thus, exceedances of the MassDEP noise policy due to nighttime operation of the KWI turbine are not predicted to occur on Leland Road between 11:00pm and 12:00am or between 4:00am and 4:30am.

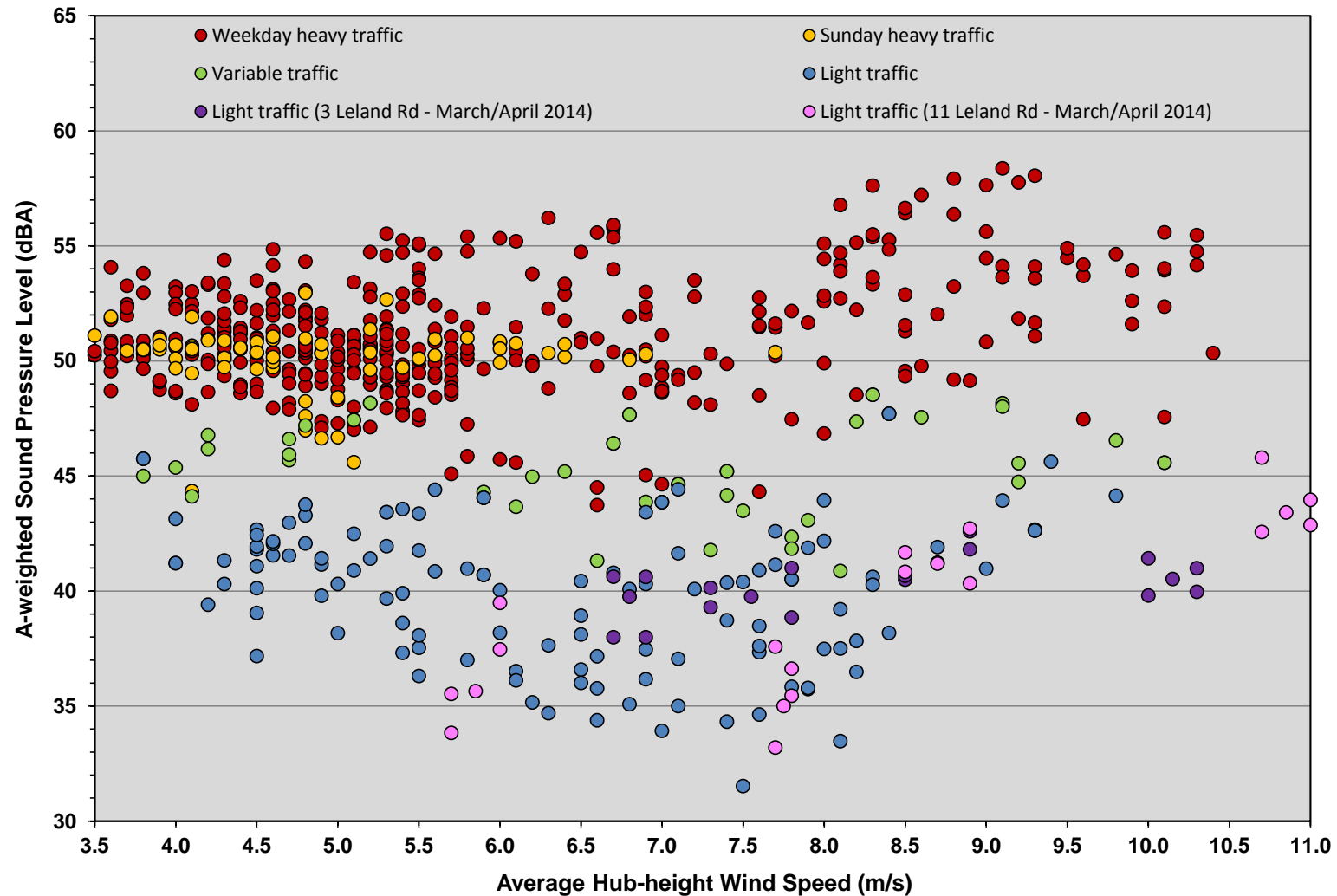
In summary, sound level increases of less than 10 dBA are predicted during daytime operation of the KWI wind turbine from 4:00am to 12:00am throughout the week and weekend. Exceedances of the 10 dBA maximum increase MassDEP noise policy due to nighttime operation of the KWI turbine during downwind conditions (winds from south to west) are predicted to have the potential to occur on Leland Road throughout the year between 12:00am and 4:00am at wind speeds from about 6 to 10 m/s.

While these conclusions are based only on monitoring conducted during downwind conditions, comparable results are also anticipated with other wind directions given that turbine sound levels are likely about the same for most wind directions at the distance of this neighborhood from the KWI turbine (refer to Section 10.4) and since measured ambient sound levels were about the same overall regardless of wind direction (see Section 10.3).

**Figure 28. Slow-response A-weighted Ambient (L90) Sound Level Measurement**  
3 Leland Road - 12:30pm on Sunday 9/14 through 12:30pm on Friday 9/19/2014



**Figure 29. Variation in Slow-response A-weighted Ambient (L90) Sound Levels with Average Hub-height Wind Speed - 3 Leland Road - September 2014**



**Table 40. Daytime Sound Level Increase Predictions for 3 Leland Road with Heavy Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	43.7	34.4	33.0	31.4	44.2	44.1	44.0	0.5	0.4	0.3
	4	67	43.7	36.3	34.9	33.3	44.4	44.2	44.1	0.7	0.5	0.4
	5	169	43.7	38.7	37.3	35.7	44.9	44.6	44.3	1.2	0.9	0.6
	6	318	43.7	40.5	38.8	36.8	45.4	44.9	44.5	1.7	1.2	0.8
	7	529	44.3	42.3	40.2	37.9	46.4	45.7	45.2	2.1	1.4	0.9
	8	812	46.8	44.1	42.6	40.5	48.7	48.2	47.7	1.9	1.4	0.9
	9	1176	47.5	46.2	45.3	43.9	49.9	49.5	49.1	2.4	2.0	1.6
	10	1612	47.6	48.5	47.2	46.0	51.1	50.4	49.9	3.5	2.8	2.3
	11	1984	47.6	48.9	47.6	46.4	51.3	50.6	50.0	3.7	3.0	2.4
	12	2000	47.6	49.1	47.8	46.6	51.4	50.7	50.1	3.8	3.1	2.5
	13	2000	47.6	49.3	48.0	46.8	51.6	50.8	50.2	4.0	3.2	2.6
	14 and above	2000	47.6	49.4	48.1	46.9	51.6	50.9	50.3	4.0	3.3	2.7

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log \left( 10^{(b/10)} + 10^{(a/10)} \right)$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 4:30AM to 11:00PM



**Table 41. Daytime Sound Level Increase Predictions for 11 Leland Road with Heavy Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	43.7	37.0	34.3	31.4	44.5	44.2	43.9	0.8	0.5	0.2
	4	67	43.7	38.9	36.2	33.3	44.9	44.4	44.1	1.2	0.7	0.4
	5	169	43.7	41.3	38.6	35.7	45.7	44.9	44.3	2.0	1.2	0.6
	6	318	43.7	42.7	39.9	37.3	46.2	45.2	44.6	2.5	1.5	0.9
	7	529	44.3	44.1	41.3	38.8	47.2	46.1	45.4	2.9	1.8	1.1
	8	812	46.8	45.4	43.0	40.8	49.1	48.3	47.8	2.3	1.5	1.0
	9	1176	47.5	47.0	45.1	43.1	50.3	49.5	48.8	2.8	2.0	1.3
	10	1612	47.6	49.3	47.5	45.7	51.6	50.5	49.8	4.0	2.9	2.2
	11	1984	47.6	49.7	47.9	46.1	51.8	50.7	49.9	4.2	3.1	2.3
	12	2000	47.6	49.9	48.1	46.3	51.9	50.8	50.0	4.3	3.2	2.4
	13	2000	47.6	50.1	48.3	46.5	52.0	50.9	50.1	4.4	3.3	2.5
	14 and above	2000	47.6	50.2	48.4	46.6	52.1	51.0	50.2	4.5	3.4	2.6

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log \left( 10^{(b/10)} + 10^{(a/10)} \right)$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 4:30AM to 11:00PM

**Table 42. Nighttime Sound Level Increase Predictions for 3 Leland Road with Light Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	33.2	34.4	33.0	31.4	36.8	36.1	35.4	3.6	2.9	2.2
	4	67	33.2	36.3	34.9	33.3	38.0	37.1	36.3	4.8	3.9	3.1
	5	169	33.2	38.7	37.3	35.7	39.8	38.7	37.7	6.6	5.5	4.5
	6	318	33.2	40.5	38.8	36.8	41.2	39.8	38.4	8.0	6.6	5.2
	7	529	33.2	42.3	40.2	37.9	42.8	41.0	39.2	9.6	7.8	6.0
	8	812	33.2	44.1	42.6	40.5	44.5	43.0	41.3	11.3	9.8	8.1
	9	1176	36.5	46.2	45.3	43.9	46.7	45.8	44.7	10.2	9.3	8.2
	10	1612	39.8	48.5	47.2	46.0	49.1	47.9	46.9	9.3	8.1	7.1
	11	1984	42.6	48.9	47.6	46.4	49.8	48.8	47.9	7.2	6.2	5.3
	12	2000	42.6	49.1	47.8	46.6	50.0	48.9	48.0	7.4	6.3	5.4
	13	2000	42.6	49.3	48.0	46.8	50.2	49.1	48.2	7.6	6.5	5.6
	14 and above	2000	42.6	49.4	48.1	46.9	50.3	49.2	48.3	7.7	6.6	5.7

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log \left( 10^{(b/10)} + 10^{(a/10)} \right)$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 12:00AM to 4:00AM

**Table 43. Nighttime Sound Level Increase Predictions for 11 Leland Road with Light Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	33.2	37.0	34.3	31.4	38.5	36.8	35.4	5.3	3.6	2.2
	4	67	33.2	38.9	36.2	33.3	39.9	38.0	36.3	6.7	4.8	3.1
	5	169	33.2	41.3	38.6	35.7	41.9	39.7	37.7	8.7	6.5	4.5
	6	318	33.2	42.7	39.9	37.3	43.1	40.8	38.7	9.9	7.6	5.5
	7	529	33.2	44.1	41.3	38.8	44.4	41.9	39.9	11.2	8.7	6.7
	8	812	33.2	45.4	43.0	40.8	45.6	43.5	41.5	12.4	10.3	8.3
	9	1176	36.5	47.0	45.1	43.1	47.4	45.7	44.0	10.9	9.2	7.5
	10	1612	39.8	49.3	47.5	45.7	49.8	48.1	46.7	10.0	8.3	6.9
	11	1984	42.6	49.7	47.9	46.1	50.5	49.0	47.7	7.9	6.4	5.1
	12	2000	42.6	49.9	48.1	46.3	50.7	49.1	47.9	8.1	6.5	5.3
	13	2000	42.6	50.1	48.3	46.5	50.8	49.3	48.0	8.2	6.7	5.4
	14 and above	2000	42.6	50.2	48.4	46.6	50.9	49.4	48.1	8.3	6.8	5.5

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 12:00AM to 4:00AM

**Table 44. Nighttime Sound Level Increase Predictions for 3 Leland Road with Variable Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	40.9	34.4	33.0	31.4	41.8	41.6	41.4	0.9	0.7	0.5
	4	67	40.9	36.3	34.9	33.3	42.2	41.9	41.6	1.3	1.0	0.7
	5	169	40.9	38.7	37.3	35.7	42.9	42.5	42.1	2.0	1.6	1.2
	6	318	40.9	40.5	38.8	36.8	43.7	43.0	42.3	2.8	2.1	1.4
	7	529	40.9	42.3	40.2	37.9	44.6	43.6	42.7	3.7	2.7	1.8
	8	812	40.9	44.1	42.6	40.5	45.8	44.8	43.7	4.9	3.9	2.8
	9	1176	44.7	46.2	45.3	43.9	48.5	48.0	47.3	3.8	3.3	2.6
	10	1612	45.6	48.5	47.2	46.0	50.3	49.5	48.8	4.7	3.9	3.2
	11	1984	45.6	48.9	47.6	46.4	50.6	49.7	49.0	5.0	4.1	3.4
	12	2000	45.6	49.1	47.8	46.6	50.7	49.8	49.1	5.1	4.2	3.5
	13	2000	45.6	49.3	48.0	46.8	50.9	50.0	49.2	5.3	4.4	3.6
	14 and above	2000	45.6	49.4	48.1	46.9	50.9	50.0	49.3	5.3	4.4	3.7

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 11:00PM to 12:00AM and from 4:00AM to 4:30AM

**Table 45. Nighttime Sound Level Increase Predictions for 11 Leland Road with Variable Traffic**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Interpolated / Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to West	3.5	30	40.9	37.0	34.3	31.4	42.4	41.8	41.4	1.5	0.9	0.5
	4	67	40.9	38.9	36.2	33.3	43.0	42.2	41.6	2.1	1.3	0.7
	5	169	40.9	41.3	38.6	35.7	44.1	42.9	42.1	3.2	2.0	1.2
	6	318	40.9	42.7	39.9	37.3	44.9	43.4	42.5	4.0	2.5	1.6
	7	529	40.9	44.1	41.3	38.8	45.8	44.1	43.0	4.9	3.2	2.1
	8	812	40.9	45.4	43.0	40.8	46.7	45.1	43.8	5.8	4.2	2.9
	9	1176	44.7	47.0	45.1	43.1	49.0	47.9	47.0	4.3	3.2	2.3
	10	1612	45.6	49.3	47.5	45.7	50.9	49.6	48.7	5.3	4.0	3.1
	11	1984	45.6	49.7	47.9	46.1	51.1	49.9	48.9	5.5	4.3	3.3
	12	2000	45.6	49.9	48.1	46.3	51.3	50.0	49.0	5.7	4.4	3.4
	13	2000	45.6	50.1	48.3	46.5	51.4	50.1	49.1	5.8	4.5	3.5
	14 and above	2000	45.6	50.2	48.4	46.6	51.5	50.2	49.2	5.9	4.6	3.6

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 11:00PM to 12:00AM and from 4:00AM to 4:30AM

### 10.5.3 Copper Beech Drive

The ambient  $L_{90}$  sound levels measured at 18 Copper Beech Drive are shown in Figure 30 with insect noise removed and in Figure 32 with insect noise included. Time periods selected for subsequent consideration are identified at the top of this figure. Note that the observed diurnal sound level variations are somewhat erratic but correlate at times with increased activity at the nearby MTBA parking lot which may occur between the early morning and mid-afternoon commuting period or from mid-afternoon into the evening as commuters return home. Ambient sound levels at this site were not observed to follow daily traffic patterns on Route 3.

The measured ambient sound data are plotted against corresponding wind speed data in Figures 31 and 33 (with and without insect noise, respectively) and are also highlighted to indicate the different time periods of interest. Figure 31 includes additional nighttime ambient data previously collected in April 2014. The nighttime ambient  $L_{90}$  sound levels that exclude insect noise are observed to increase somewhat at wind speeds above about 8 to 9 m/s. This is consistent with the trend in ambient sound levels observed with increasing wind speed for the acoustical monitoring sites located on Schofield Road and Leland Road (refer to Figures 27 and 29). Overall, nighttime ambient levels are found to be slightly higher at wind speeds of about 10 m/s than were initially estimated for 18 Copper Beech Drive (refer to Section 9.4).

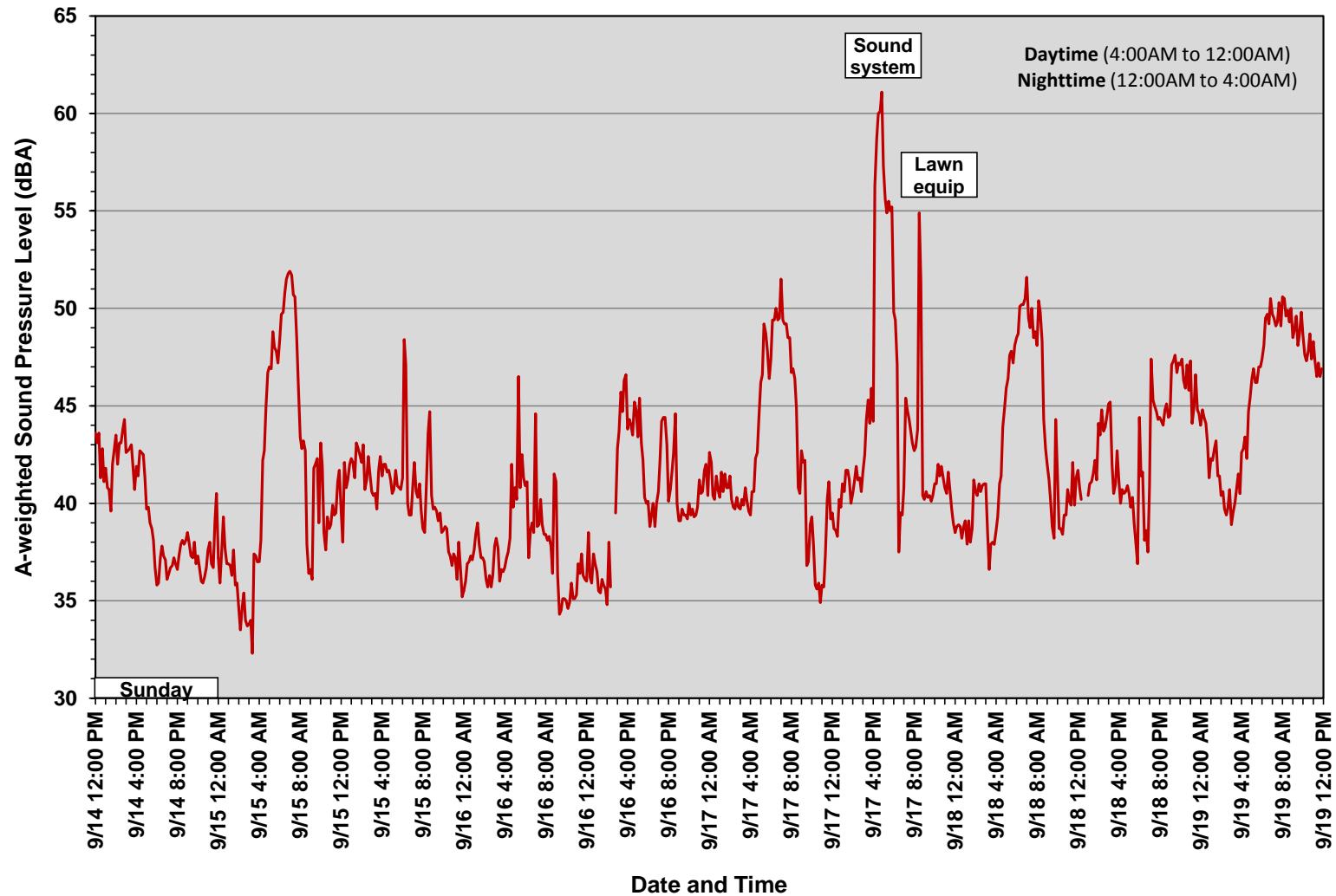
The ambient background sound level measurements were assessed against extrapolated KWI turbine-only sound levels estimated for 18 Copper Beech Drive (see Section 9.3) as well as additional extrapolations of the turbine-only levels to higher and lower wind speeds (refer to Section 10.4) to compute the sound level increase predictions presented in Tables 46 through 49.

Ambient sound levels were highest between about 4:00am and 12:00am, which includes times with peak traffic on Route 3 and peak activity at the nearby MBTA commuter rail parking lot. This data is shown in Figures 31 and 33 with red markers for data collected on weekdays and yellow markers for data collected on Sunday. Ambient  $L_{90}$  sound levels varied between about 34 and 61 dBA during this interval. The sound level increase predictions shown in Tables 46 and 48 indicate that worst-case turbine-operating  $Avg L_{max}$  over ambient  $L_{90}$  increases in this time period are at most about 6 to 7 dBA. Therefore, exceedances of the MassDEP noise policy due to daytime operation of the KWI turbine are not predicted to occur on Copper Beech Drive between 4:00am and 12:00am on any day of the week or weekend.

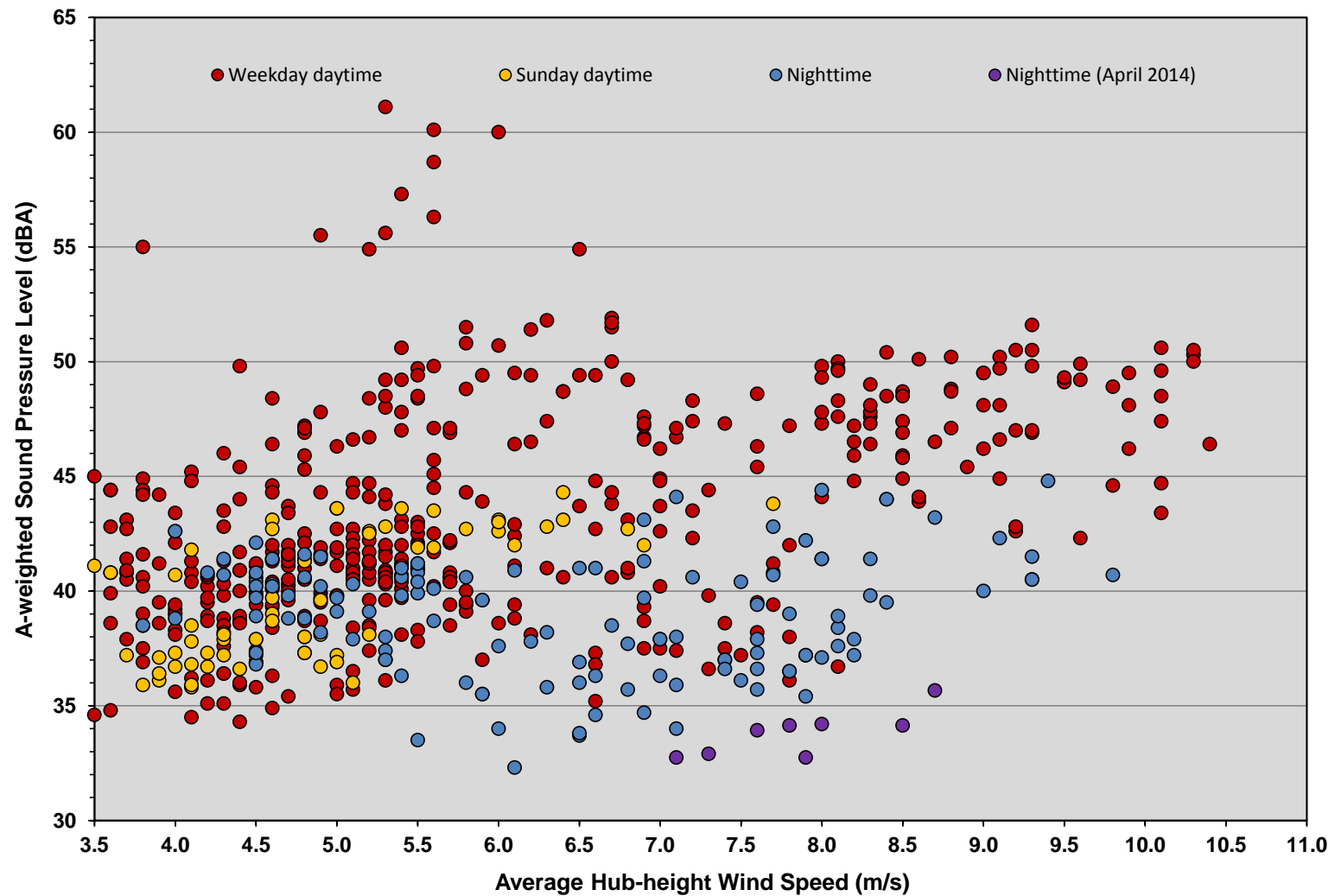
Ambient levels were lower between about 12:00am and 4:00am when traffic volumes on Route 3 are reduced and there is no activity at the nearby MBTA parking lot. This data is shown in Figures 31 and 33 with blue markers for data collected in September 2014 and in Figure 31 with purple markers for data collected in March and April 2014. Ambient  $L_{90}$  sound levels varied between about 32 and 47 dBA during this interval. The sound level increase predictions shown in Tables 47 and 49 indicate that worst-case turbine-operating  $Avg L_{max}$  over ambient  $L_{90}$  increases in this time period approach or slightly exceed 10 dBA at wind speeds of about 9 m/s only when insect noise is not included in ambient sound levels. Consequently, exceedances of the MassDEP noise policy due to nighttime operation of the KWI turbine during downwind conditions (winds from south to east) are predicted to have the potential to occur on Copper Beech Drive during the winter season between 12:00am and 4:00am at wind speeds around 9 m/s.

While these conclusions are based only on monitoring conducted during downwind conditions, comparable results are also anticipated with other wind directions given that turbine sound levels are likely about the same for most wind directions at the distance of this neighborhood from the KWI turbine (refer to Section 10.4) and since measured ambient sound levels were about the same overall regardless of wind direction (see Section 10.3).

**Figure 30. Slow-response A-weighted Ambient (L90) Sound Level Measurement**  
 18 Copper Beech Drive - 12pm on Sunday 9/14 to 12pm on Friday 9/19/2014 (no insects)



**Figure 31. Variation in Slow-response A-weighted Ambient (L90) Sound Levels  
with Avg Hub-height Wind Speed - 18 Copper Beech Drive - Sept 2014 (no insects)**





**Table 46. Daytime Sound Level Increase Predictions for 18 Copper Beech Drive (no insect noise)**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 / MBTA) (a)	Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 / MBTA) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to East	3.5	30	34.3	32.0	30.4	28.0	36.3	35.8	35.2	2.0	1.5	0.9
	4	67	34.3	33.9	32.3	29.9	37.1	36.4	35.6	2.8	2.1	1.3
	5	169	34.9	36.3	34.7	32.3	38.6	37.8	36.8	3.7	2.9	1.9
	6	318	35.2	37.6	35.9	33.6	39.6	38.5	37.5	4.4	3.3	2.3
	7	529	35.2	38.9	37.0	34.8	40.4	39.2	38.0	5.2	4.0	2.8
	8	812	36.1	41.5	39.5	36.2	42.6	41.1	39.2	6.5	5.0	3.1
	9	1176	39.2	43.9	42.0	38.9	45.2	43.8	42.1	6.0	4.6	2.9
	10	1612	42.3	45.8	43.9	42.0	47.4	46.2	45.2	5.1	3.9	2.9
	11	1984	43.6	46.2	44.3	42.4	48.1	47.0	46.0	4.5	3.4	2.4
	12	2000	43.6	46.4	44.5	42.6	48.3	47.1	46.1	4.7	3.5	2.5
	13	2000	43.6	46.6	44.7	42.8	48.4	47.2	46.2	4.8	3.6	2.6
	14 and above	2000	43.6	46.7	44.8	42.9	48.5	47.2	46.3	4.9	3.6	2.7

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 4:00AM to 12:00AM
- 4) High frequency sound from insects removed from data.

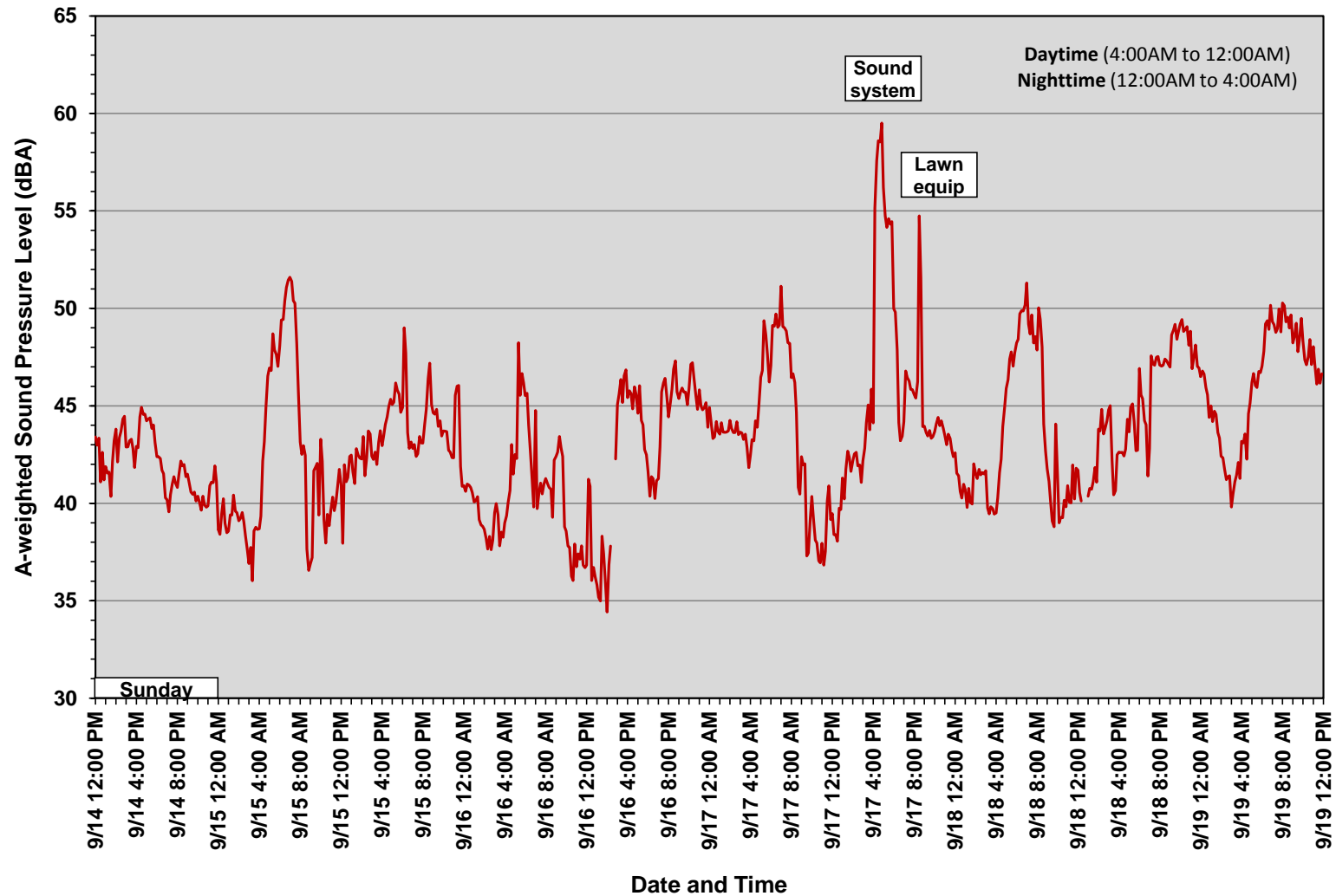
**Table 47. Nighttime Sound Level Increase Predictions for 18 Copper Beech Drive (no insect noise)**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to East	3.5	30	32.3	32.0	30.4	28.0	35.1	34.5	33.7	2.8	2.2	1.4
	4	67	32.3	33.9	32.3	29.9	36.2	35.3	34.3	3.9	3.0	2.0
	5	169	32.3	36.3	34.7	32.3	37.7	36.7	35.3	5.4	4.4	3.0
	6	318	32.3	37.6	35.9	33.6	38.7	37.4	36.0	6.4	5.1	3.7
	7	529	32.7	38.9	37.0	34.8	39.8	38.4	36.9	7.1	5.7	4.2
	8	812	32.7	41.5	39.5	36.2	42.1	40.3	37.8	9.4	7.6	5.1
	9	1176	34.1	43.9	42.0	38.9	44.3	42.6	40.1	10.2	8.5	6.0
	10	1612	40.7	45.8	43.9	42.0	47.0	45.6	44.4	6.3	4.9	3.7
	11	1984	40.7	46.2	44.3	42.4	47.3	45.9	44.6	6.6	5.2	3.9
	12	2000	40.7	46.4	44.5	42.6	47.5	46.0	44.8	6.8	5.3	4.1
	13	2000	40.7	46.6	44.7	42.8	47.6	46.1	44.9	6.9	5.4	4.2
	14 and above	2000	40.7	46.7	44.8	42.9	47.7	46.2	44.9	7.0	5.5	4.2

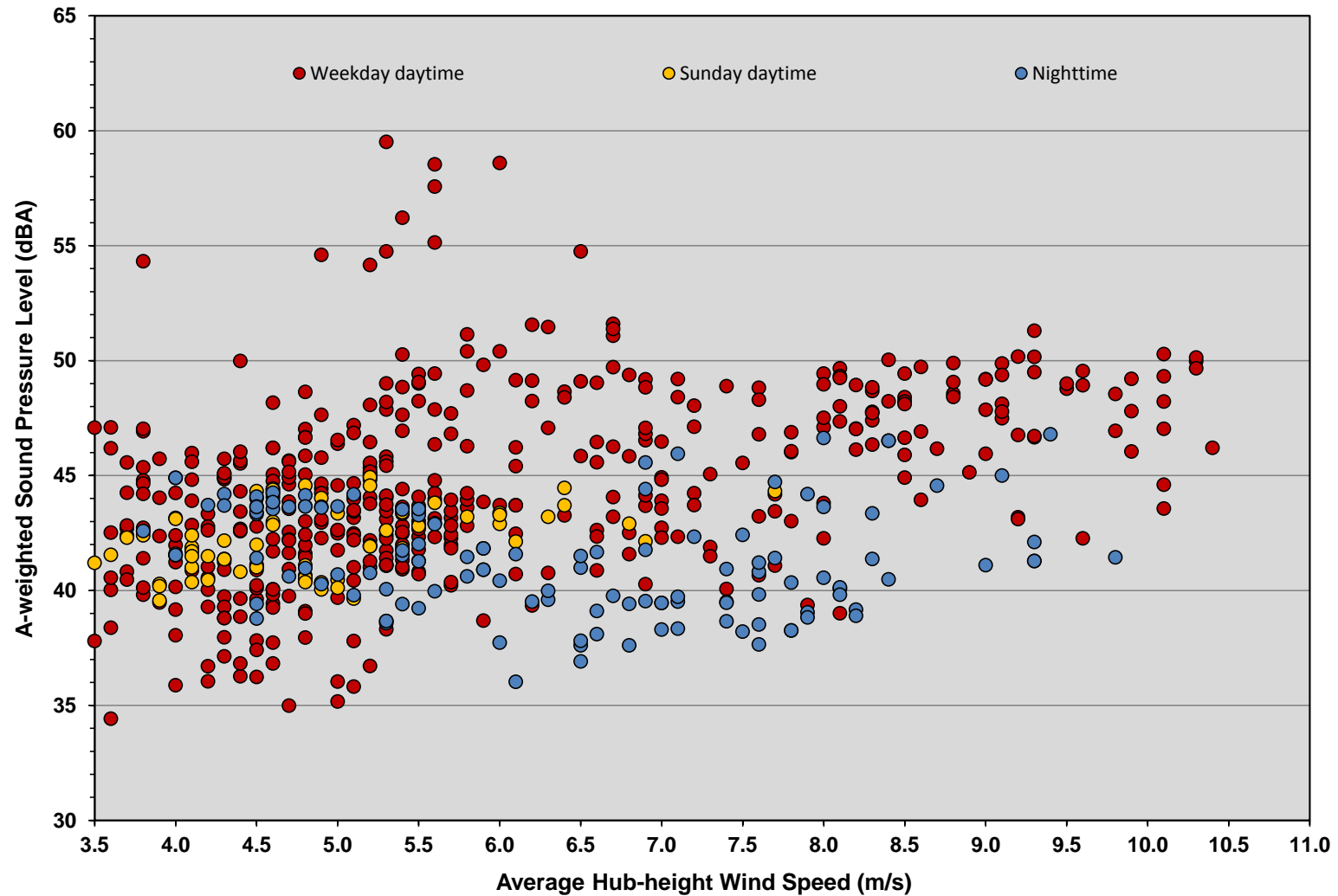
**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 12:00AM to 4:00AM
- 4) High frequency sound from insects removed from data.

**Figure 32. Slow-response A-weighted Ambient (L90) Sound Level Measurement**  
18 Copper Beech Dr - 12pm on Sunday 9/14 to 12pm on Friday 9/19/2014 (with insects)



**Figure 33. Variation in Slow-response A-weighted Ambient (L90) Sound Levels  
with Avg Hub-height Wind Speed - 18 Copper Beech Drive - Sept 2014 (with insects)**



**Table 48. Daytime Sound Level Increase Predictions for 18 Copper Beech Drive (with insect noise)**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 / MBTA) (a)	Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 / MBTA) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to East	3.5	30	34.4	32.0	30.4	28.0	36.4	35.9	35.3	2.0	1.5	0.9
	4	67	35.0	33.9	32.3	29.9	37.5	36.9	36.2	2.5	1.9	1.2
	5	169	35.0	36.3	34.7	32.3	38.7	37.9	36.9	3.7	2.9	1.9
	6	318	38.7	37.6	35.9	33.6	41.2	40.5	39.9	2.5	1.8	1.2
	7	529	39.0	38.9	37.0	34.8	42.0	41.1	40.4	3.0	2.1	1.4
	8	812	39.0	41.5	39.5	36.2	43.4	42.3	40.8	4.4	3.3	1.8
	9	1176	42.3	43.9	42.0	38.9	46.2	45.2	43.9	3.9	2.9	1.6
	10	1612	42.3	45.8	43.9	42.0	47.4	46.2	45.2	5.1	3.9	2.9
	11	1984	42.3	46.2	44.3	42.4	47.7	46.4	45.4	5.4	4.1	3.1
	12	2000	42.3	46.4	44.5	42.6	47.9	46.5	45.5	5.6	4.2	3.2
	13	2000	42.3	46.6	44.7	42.8	48.0	46.7	45.6	5.7	4.4	3.3
	14 and above	2000	42.3	46.7	44.8	42.9	48.1	46.7	45.6	5.8	4.4	3.3

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 4:00AM to 12:00AM

**Table 49. Nighttime Sound Level Increase Predictions for 18 Copper Beech Drive (with insect noise)**

Downwind Direction	Average Wind Speed (m/s)	KWI Turbine Power Level (kW)	Minimum Slow-response Ambient L90 (dBA) (incl. Rt. 3 traffic) (a)	Extrapolated KWI Turbine Slow-response Sound Levels (dBA) (excl. Route 3 traffic) (ambient removed) (b)			KWI Wind Turbine + Ambient L90 (dBA) (c)			Sound Level Increase from Ambient L90 (dBA) (d)		
				Avg Lmax	Leq	L90	Avg Lmax	Leq	L90	Avg Lmax	Leq	L90
South to East	3.5	30	34.4	32.0	30.4	28.0	36.4	35.9	35.3	2.0	1.5	0.9
	4	67	35.0	33.9	32.3	29.9	37.5	36.9	36.2	2.5	1.9	1.2
	5	169	35.0	36.3	34.7	32.3	38.7	37.9	36.9	3.7	2.9	1.9
	6	318	36.0	37.6	35.9	33.6	39.9	38.9	38.0	3.9	2.9	2.0
	7	529	36.9	38.9	37.0	34.8	41.0	40.0	39.0	4.1	3.1	2.1
	8	812	37.7	41.5	39.5	36.2	43.0	41.7	40.0	5.3	4.0	2.3
	9	1176	41.1	43.9	42.0	38.9	45.7	44.6	43.2	4.6	3.5	2.1
	10	1612	41.4	45.8	43.9	42.0	47.2	45.8	44.7	5.8	4.4	3.3
	11	1984	41.4	46.2	44.3	42.4	47.5	46.1	44.9	6.1	4.7	3.5
	12	2000	41.4	46.4	44.5	42.6	47.6	46.2	45.0	6.2	4.8	3.6
	13	2000	41.4	46.6	44.7	42.8	47.8	46.3	45.2	6.4	4.9	3.8
	14 and above	2000	41.4	46.7	44.8	42.9	47.9	46.4	45.2	6.5	5.0	3.8

**Notes:**

- 1) KWI Wind Turbine + Ambient L90:  $c = 10 \log(10^{(b/10)} + 10^{(a/10)})$
- 2) Increase from Ambient L90:  $d = c - a$
- 3) Analysis includes period from 12:00AM to 4:00AM

## 11 Conclusions

This technical report includes and expands upon the acoustical monitoring results presented in the June 13, 2014 “Interim Report for Kingston Wind Independence Turbine Acoustical Study”. The report incorporates the results of data analysis conducted subsequent to publication of the interim study report, and includes measurements and predictions of additional exceedances of MassDEP noise policy on Schofield Road, Leland Road, and Copper Beech Drive.

The findings presented in this technical report are based upon two separate acoustical monitoring campaigns – attended monitoring of turbine on and turbine off sound levels at the quietest times of night between December 2013 and April 2014, and continuous unattended monitoring of background ambient sound levels with the KWI turbine off for a five day period in September 2014.

The **initial acoustical monitoring** was conducted between December 2013 and April 2014. The design of the study was to conduct measurements at some of the closest community locations with the KWI turbine shut down and also with the wind turbine in operation under worst-case conditions, which were during the quietest nighttime periods in the winter season and with downwind conditions. The monitoring data was then analyzed to determine baseline ambient sound levels and the relative increase in A-weighted sound levels due to nighttime operation of the KWI wind turbine, particularly in the context of MassDEP noise policy. Broadband sound level increases were likewise investigated for other sound level weightings (C, G, and Z) that include larger contributions from low frequency audible sound as well as from sound below the lower limit of human audibility (approximately 20 Hz) known as infrasound. A sound level modulation depth analysis was also conducted.

The monitoring conducted on Schofield Road during contiguous periods with the KWI turbine shut down and then operating revealed increases of slow-response A-weighted  $A_{\text{vg}} L_{\text{max}}$  sound levels during turbine operation over nighttime ambient  $L_{90}$  sound levels of up to approximately 15 dBA. The broadband sound level increases measured at this location were also very comparable using other sound level weightings (C, G, and Z) that include a greater contribution from the lowest frequencies of sound. Likewise, octave band sound level increases were found to be similar across most frequencies of sound.

Acoustical monitoring conducted at additional sites to the east of Route 3 and farther from the turbine showed increases of turbine-operating  $A_{\text{vg}} L_{\text{max}}$  over ambient  $L_{90}$  of up to approximately 9 to 10 dBA on Leland Road and up to about 8 dBA along Prospect Street. Sound level increases at these distances from the KWI turbine were generally somewhat greater in the lower frequency octave bands, indicating that higher frequency sound generated by the turbine attenuates at a greater rate with distance. For this reason, the A-weighted sound level increases measured in these locations were typically several decibels lower than the increases observed on Schofield Road during comparable periods, while broadband sound level increases calculated using other sound level weightings were somewhat higher and closer to the Schofield Road monitoring results.

Overall, increases of turbine-operating  $A_{\text{vg}} L_{\text{max}}$  over ambient  $L_{90}$  exceeding 10 dBA were identified in the Schofield Road, Leland Road, and Prospect Street community for nighttime operation of the KWI turbine during downwind conditions with wind speeds above 7 m/s (as summarized in Table 50). Analysis of the octave band sound levels measured with the turbine operating showed that it does not create a “pure tone condition”, which is an additional component of the MassDEP noise policy.

Also, the turbine-operating  $A_{\text{vg}} L_{\text{max}}$  over ambient  $L_{90}$  sound level increases measured at locations on Schofield Road, Leland Road, and Prospect Street using a slow-response sound level meter setting were about 1 to 2 dBA greater when data was collected using a fast-response setting. This difference is largely due to higher  $L_{\text{max}}$  values;  $L_{90}$  values are more comparable between the two meter response settings.

In addition, the sound level modulation depths calculated for periods with the KWI wind turbine operating at low to moderate wind speeds were less than or comparable to the modulation depths computed for periods with the turbine shut down. Modulation depths calculated over intervals with the wind turbine operating at moderate to higher wind speeds were up to approximately 1 to 3 dBA greater as compared with ambient conditions. A modulation frequency of around 1 Hz was observed with the turbine operating, typical for wind turbine sound. Ambient sound level variations with the KWI turbine shut down are generally somewhat random and only very occasionally periodic.

Daytime acoustical monitoring was conducted at the Kingston Intermediate School in the late morning with moderate wind speeds. A-weighted  $L_{90}$  sound levels measured with the KWI turbine operating increased from ambient background  $L_{90}$  sound levels by less than 1 dBA. Broadband sound level increases calculated using other sound level weightings (C, G, and Z) were less than 2 dB. No difference was found between the sound level modulation depths calculated for contiguous periods with the KWI turbine shut down and then operating. Traffic dominated the ambient sound levels throughout the monitoring and the wind turbine was not audible at any time.

Turbine-operating Avg  $L_{max}$  over ambient  $L_{90}$  sound level increases exceeding 10 dBA were also estimated in the Copper Beech Drive community for nighttime operation of the KWI turbine during downwind conditions with wind speeds of 9 m/s and above (as summarized in Table 51). This estimate was based on comparison of nighttime ambient (KWI turbine off) sound level monitoring data to extrapolations of turbine-only sound level data collected during attended monitoring at other locations.

**Table 50. Summary of Measured Conditions for Sound Level Increases Exceeding 10 dBA due to Operation of the KWI Wind Turbine**

Community	Time of Year	Time of Day	Power Level (kW)	Wind Speed (m/s)	Wind Direction
Schofield Rd / Leland Rd / Prospect St	Winter	approx. 1 to 3 AM	above 529 kW	above 7 m/s	South to Southwest

**Table 51. Summary of Initial Estimated Conditions for Sound Level Increases Exceeding 10 dBA due to Operation of the KWI Wind Turbine**

Community	Time of Year	Time of Day	Power Level (kW)	Wind Speed (m/s)	Wind Direction
Copper Beech Drive	Winter	approx. 1 to 3 AM	1176 kW and above	9 m/s and above	South to East

Since increases of turbine-operating Avg  $L_{max}$  over nighttime ambient  $L_{90}$  exceeding 10 dBA were identified at some locations during the acoustical monitoring study, and because sound from traffic on Route 3 is very significant at the closest neighborhood locations outside of the quietest nighttime periods, a **supplemental ambient monitoring program** was conducted in September 2014 to investigate daily and seasonal variations in A-weighted ambient  $L_{90}$  sound levels in the affected community.

The ambient  $L_{90}$  sound level data were then assessed against measured KWI turbine sound levels interpolated to integer wind speed values for the Schofield Road and Leland Road monitoring locations, as well as additional turbine-only data extrapolated to higher and lower wind speeds not directly measured. KWI turbine-only sound levels were likewise extrapolated for the 18 Copper Beech Drive site to estimate potential increases in ambient background sound levels over a range of wind speeds and



during various periods throughout the day. This information was used to evaluate potential sound level increases associated with operation of the KWI wind turbine at different times of day and year and with various wind conditions in the context of MassDEP noise policy.

In the Schofield Road, Leland Road, and Prospect Street community, sound level increases of less than 10 dBA are predicted during daytime operation of the KWI wind turbine from 4:30am to 11:00pm throughout the week and weekend. Exceedances of the 10 dBA maximum increase MassDEP noise policy due to nighttime operation of the KWI turbine are predicted to have the potential to occur throughout the year between 12:00am and 4:00am for wind speeds of 4 m/s and above and between 11:00pm and 4:30am for wind speeds above 9 m/s, regardless of wind direction (as summarized in Table 52).

In the Copper Beech Drive community, sound level increases of less than 10 dBA are predicted from 4:00am to 12:00am throughout the week and weekend regardless of the season. Exceedances of the MassDEP noise policy due to nighttime operation of the KWI turbine are predicted to have the potential to occur during the winter season only (no insect noise) between 12:00am and 4:00am for wind speeds around 9 m/s, regardless of wind direction (as summarized in Table 52).

Community	Time of Year	Time of Day	Power Level (kW)	Wind Speed (m/s)	Wind Direction
Schofield Rd / Leland Rd / Prospect St	All Seasons	12 AM to 4 AM	67 kW and above	4 m/s and above	All
		11 PM to 12 AM	above 1176 kW	above 9 m/s	
		4 AM to 4:30 AM			
Copper Beech Drive	Winter	12 AM to 4 AM	around 1176 kW	around 9 m/s	All

Finally, any noise abatement orders resulting from the findings of this acoustical study that are to be evaluated based on data logs from the KWI turbine SCADA system are recommended to either directly reference power generation levels or otherwise refer to wind speed data that is adjusted using a +1.5 m/s correction factor since the wind speeds measured by the ultrasonic anemometers mounted on the KWI turbine nacelle underestimate actual wind speeds by about 1.5 m/s on average.

## Appendix A Description of Sound Metrics

This Appendix describes the terminology and sound metrics used in this report.

### A.1 Decibels (dB), Frequency and Sound Level Weightings

Loudness is a subjective quantity that enables a listener to order the magnitude of different sounds on a scale from quiet to loud. Although the perceived loudness of a sound is based somewhat on its frequency and duration, chiefly it depends upon the sound pressure level. This is a measure of the sound pressure at a point relative to a standard reference value; sound pressure level is always expressed in decibels (dB).

Decibels are logarithmic quantities, so combining decibels is unlike common arithmetic. For example, if two sound sources each produce 100 dB operating individually and they are then operated together, they produce 103 dB. Each doubling of the number of sources produces another three decibels of sound. A tenfold increase in the number of sources makes the sound pressure level go up 10 dB, and a hundredfold increase makes the level go up 20 dB. If two sources differ in sound pressure level by more than 10 decibels, then operating together, the total level will approximately equal the level of the louder source as the quieter source doesn't contribute significantly to the total.

People hear changes in sound level according to the following rules of thumb: 1) a change of 1 decibel or less in a given sound's level is generally not readily perceptible except in a laboratory setting; 2) a 5-dB change in a sound is considered to be generally noticeable in a community setting; and 3) it takes approximately a 10-dB change to be heard as a doubling or halving of a sound's loudness.

Another important characteristic of sound is its frequency, or "pitch." This is the rate of repetition of sound pressure oscillations as they reach our ears. Frequency is expressed in units known as Hertz (abbreviated "Hz" and equivalent to one cycle per second). Sounds heard in the environment usually consist of a range of frequencies. The distribution of sound energy as a function of frequency is termed the "frequency spectrum."

The human ear does not respond equally to identical sound levels at different frequencies. Although the normal frequency range of hearing for most people extends from a low of approximately 20 Hz to a high of around 10,000 Hz to 20,000 Hz, people are generally most sensitive to sounds in the voice range, between about 500 Hz to 2,000 Hz. Therefore, to correlate the amplitude of a sound with its level as perceived by people, the sound energy spectrum is adjusted, or "weighted."

#### A.1.1 A-weighting Network

The weighting system most commonly used to correlate with human response to sound is "A-weighting" (or the "A-filter") and the resultant sound level is called the "A-weighted sound level" (dBA). A-weighting significantly de-emphasizes those parts of the frequency spectrum from a sound source that occurs both at lower frequencies (those below about 500 Hz) and at very high frequencies (above 10,000 Hz) where we do not hear as well. The filter has very little effect, or is nearly "flat," in the middle range of frequencies between 500 and 10,000 Hz. In addition to representing human hearing sensitivity, A-weighted sound levels have been found to correlate better than other weighting networks with human perception of "noisiness." One of the primary reasons for this is that the A-weighting network emphasizes the frequency range where human speech occurs, and sound in this range interferes with speech communication. Another reason is that the increased hearing sensitivity makes sound more annoying in this frequency range.

### A.1.2 Other Broadband Sound Level Weightings

Another commonly-used weighting network is “C-weighting,” originally developed to mimic the human ear’s frequency response at a level of approximately 100 dB. C-weighting is flat (has no weighting) throughout most of the audible range, but tapers with small amounts of attenuation at the very highest and lowest frequency regions (above about 8000 Hz and below about 32 Hz). In recent years, C-weighted sound levels have sometimes been used for comparison with the A-weighted sound levels measured during the same time period as an indicator of the prominence of low frequency sound. The A- and C-weightings are similar at the highest frequencies, but A-weighting filters out much more of the low-frequency sound below about 500 Hz.

G-weighting is a more recently-developed weighting network that is intended to isolate and measure only very low frequency sound, including sounds below the lower limit of human audibility (approximately 20 Hz) commonly known as infrasound. G-weighting actually incorporates 9 dB of amplification (gain) in the sound level signal at 20 Hz, with a steep taper at higher and lower frequencies, such that the weighting is 20 dB lower at approximately 5 Hz and 40 Hz.

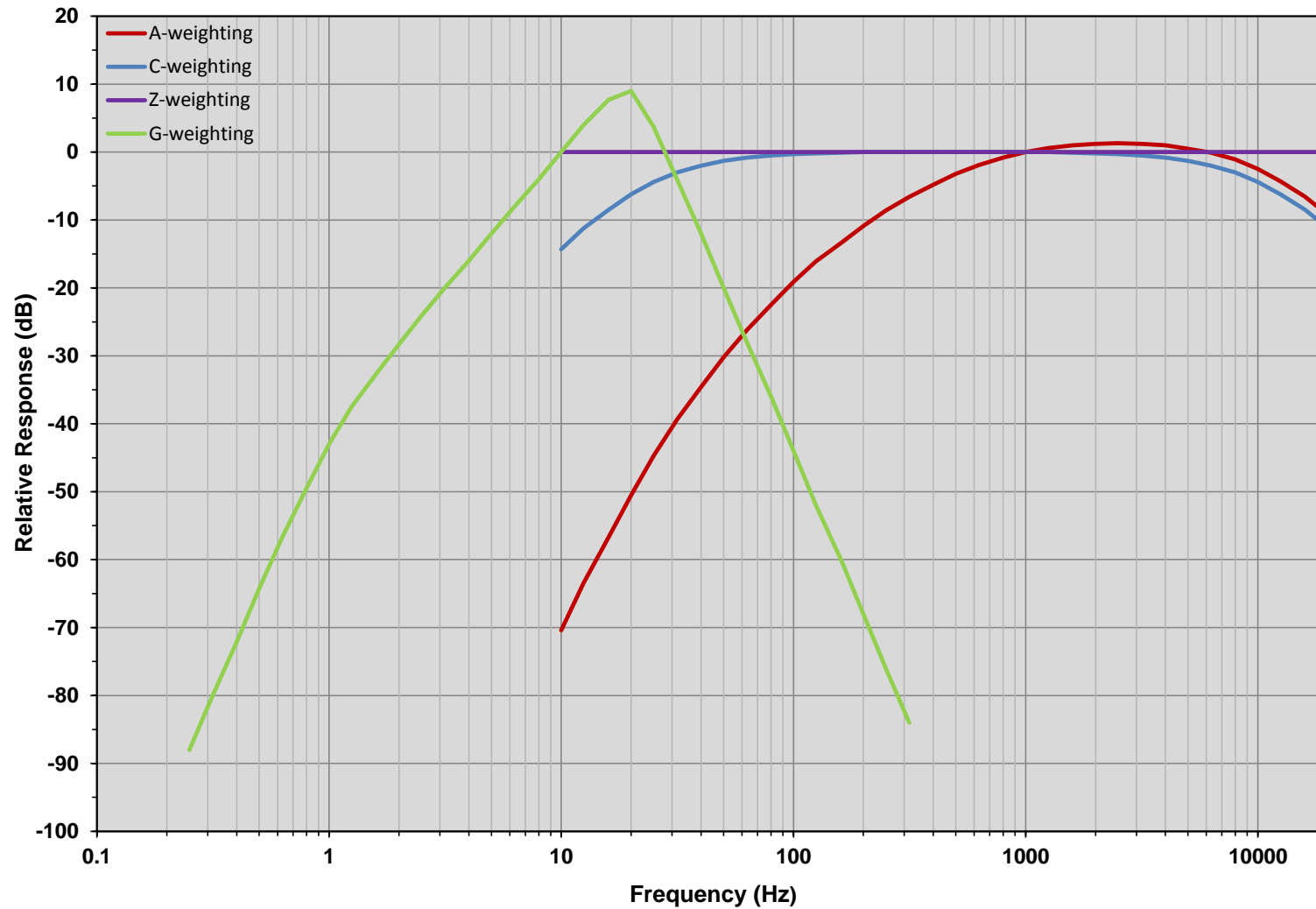
An unweighted sound level is commonly called “Z-weighted,” although technically there is no weighting.

Figure A-1 presents a graph comparing the various broadband sound level weighting networks. As shown in this figure, the A-weighting, C-weighting, and Z-weighting networks comprise the frequency range from 10 Hz to 20,000 Hz, while the G-weighting network includes the frequency range from 0.25 Hz to 315 Hz.

### A.1.3 Octave Band and 1/3-Octave Band Sound Levels

For analysis purposes, sound is also often broken down into different frequency divisions, or bands. The most common division is the standard octave band. An octave is a band of frequencies whose lower frequency limit is half of the upper frequency limit. An octave band is identified by its center frequency. For example the 1000 Hz octave band contains all the frequencies between 720 Hz and 1440 Hz. The next octave band higher would have values twice these, and the next octave lower would have values half of these. The range of human hearing is commonly divided into 10 standard octave bands that encompass the range from 20 Hz to 20,000 Hz: 31.5 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, and 16 kHz. For analyses that require even further frequency detail, each octave-band is often broken down into parts, such as 1/3 octave-bands.

**Figure A-1. Broadband Sound Level Weighting Networks**



## A.2 Metrics that Describe Sound Levels over Time

Figure A-2 illustrates the different sound metrics that are calculated from a sound level that varies by several decibels over a period of time. A description of each metric is provided in the subsections below.

### A.2.1 Maximum Sound Level ( $L_{\max}$ )

The variation in sound level over time often makes it convenient to describe a particular sound "event" by its maximum sound level, abbreviated as  $L_{\max}$ . The maximum level describes only one dimension of an event; it provides no information on the cumulative sound exposure. In fact, two events with identical maxima may produce very different total exposures. One may be of very short duration, while the other may continue for an extended period and be judged more annoying.

### A.2.2 Minimum Sound Level ( $L_{\min}$ )

The lowest sound level measured over a period of time is called the minimum sound level, and is abbreviated  $L_{\min}$ .

### A.2.3 Equivalent Sound Level ( $L_{\text{eq}}$ )

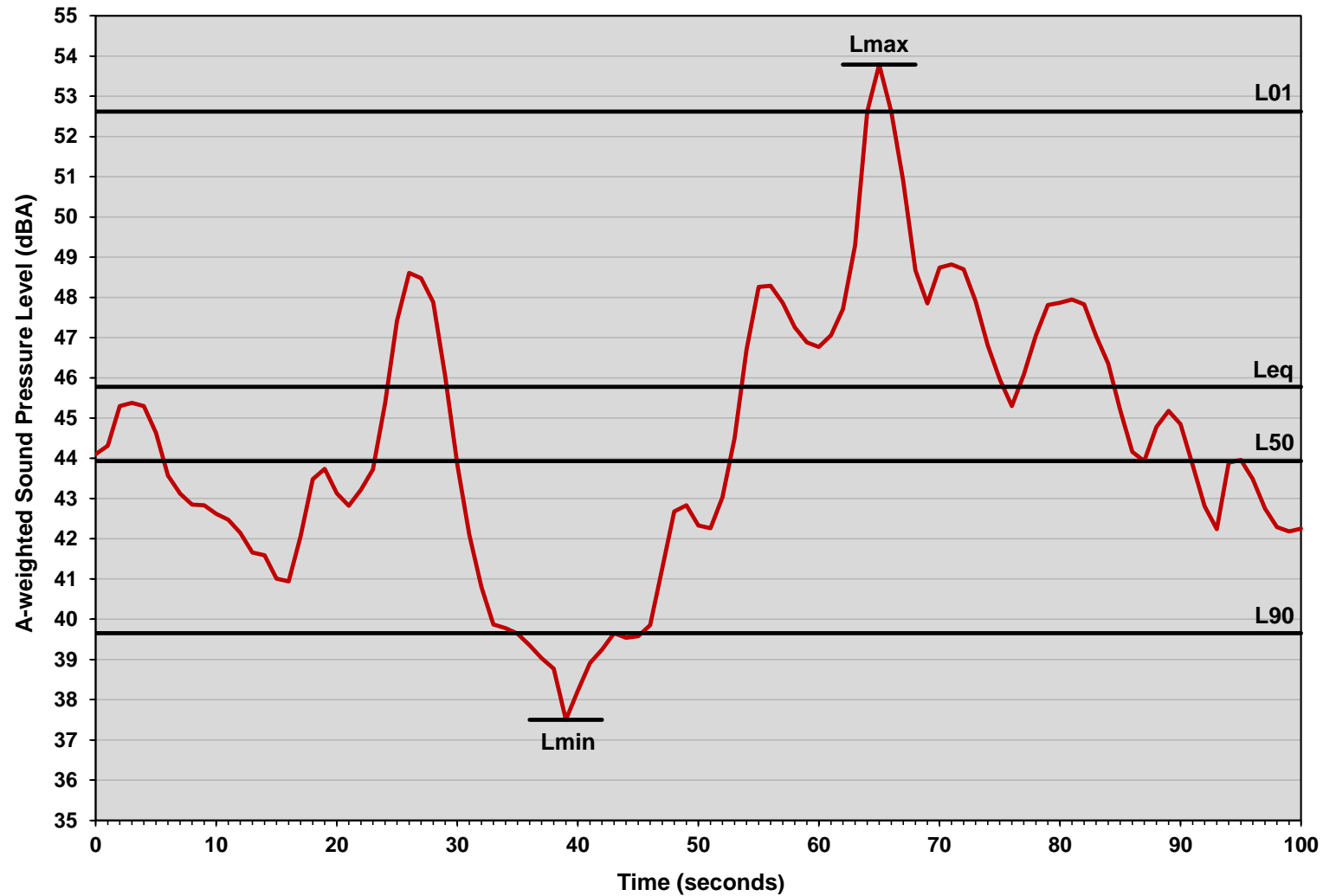
The Equivalent Sound Level, abbreviated  $L_{\text{eq}}$ , is a measure of the total exposure resulting from the accumulation of A-weighted sound levels over a particular period of interest -- for example, an hour, an 8-hour school day, nighttime, or a full 24-hour day. However, because the length of the period can be different depending on the time frame of interest, the applicable period should always be identified or clearly understood when discussing the metric.

$L_{\text{eq}}$  may be thought of as a constant sound level over the period of interest that contains as much sound energy as (is "equivalent" to) the actual time-varying sound level with its normal peaks and valleys. It is important to recognize, however, that the two signals (the constant one and the time-varying one) would sound very different from each other. Also, the "average" sound level suggested by  $L_{\text{eq}}$  is not an arithmetic value, but a logarithmic, or "energy-averaged" sound level. Thus, the loudest events may dominate the sound environment described by the metric, depending on the relative loudness of the events.

### A.2.4 Statistical Sound Level Descriptors

Statistical descriptors of the time-varying sound level are often used to provide more information about how the sound level varied during the time period of interest. The descriptor includes a subscript that indicates the percentage of time the sound level is exceeded during the period. The  $L_{50}$  is an example, which represents the sound level exceeded 50 percent of the time, and equals the median sound level. Another commonly used descriptor is the  $L_{01}$ , which represents the sound level exceeded 1 percent of the measurement period and describes the sound level during the loudest portions of the period. The  $L_{90}$  is often used to describe the quieter background sound levels that occurred, since it represents the level exceeded 90 percent of the period. The Massachusetts Department of Environmental Protection's noise policy specifies the  $L_{90}$  metric as the appropriate sound level metric to describe the "ambient" background sound level.

Figure A-2. Sound Metric Calculations for an A-weighted Sound Level Time History



### **A.3 Sound Level Meter Response Time**

Sound level meters have a few response times available to measure rapidly-varying sound levels, so that one can read the meter and determine sound levels reliably. The electronic response networks use “exponential” time averaging of the sound signal to provide the readings. “Slow” response is most commonly used for measurements of environmental sound, and has an averaging time of one second. “Fast” response is also commonly used; its response time is comparable to that of the human ear, and has an averaging time of 1/8 second (125 milliseconds). The sound metrics for a time-varying sound level can be quite different depending on whether a slow or fast meter response is used to establish the values.

### **A.4 Sound Level Amplitude Modulation**

Amplitude modulation is defined as a periodic variation in sound levels over time.

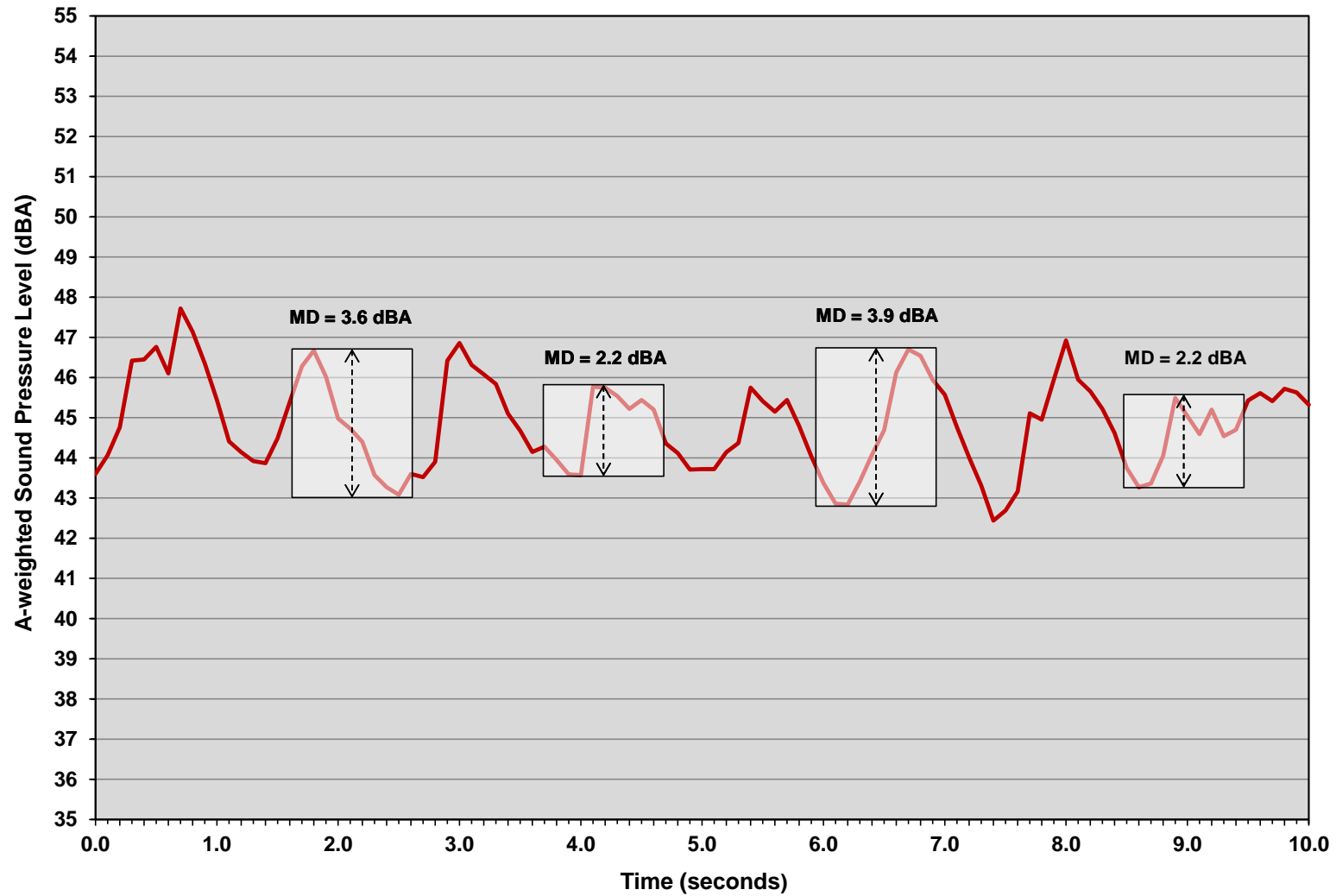
#### **A.4.1 Modulation Depth**

Modulation depth is a metric used to assess the degree of sound level amplitude modulation associated with an acoustic signal. One limitation of modulation depth analysis is that this approach cannot distinguish between random sound level variations that occur briefly within a short time span and periodic sound level modulations that occur more regularly over a longer timeframe.

For purposes of this study, modulation depth was defined as the maximum fast-response A-weighted sound level difference (peak-to-trough) within 1/2 second of each 1/10th second data sample. This design allowed sound level modulations with frequencies from 0.5 to 5 Hz to be evaluated.

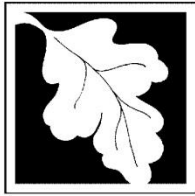
Figure A-3 illustrates modulation depth calculations for an amplitude-modulated acoustic signal that periodically varies in sound level by several decibels over time.

**Figure A-3. Modulation Depth Calculations for an Amplitude-Modulated Signal**





## Appendix B MassDEP Noise Policy



Massachusetts  
Department  
of  
ENVIRONMENTAL  
PROTECTION

Massachusetts Department of  
Environmental Protection  
One Winter Street  
Boston, MA 02108-4746

Commonwealth of  
Massachusetts  
Mitt Romney, Governor

Executive Office of  
Environmental Affairs  
Ellen Roy Herzfelder, Secretary

Department of  
Environmental Protection  
Edward P. Kunce,  
Acting Commissioner

Produced by the  
Bureau of Waste Prevention  
February 2003.  
Printed on recycled paper.

This information is available in  
alternate format by calling our  
ADA Coordinator at  
(617) 574-6872.

### f a c t s h e e t

#### Noise

##### **Background**

Noise is a type of air pollution that results from sounds that cause a nuisance, are or could injure public health, or unreasonably interfere with the comfortable enjoyment of life, property, or the conduct of business.

Types of sounds that may cause noise include:

- “Loud” continuous sounds from industrial or commercial activity, demolition, or highly amplified music;
- Sounds in narrow frequency ranges such as “squealing” fans or other rotary equipment; and
- Intermittent or “impact” sounds such as those from pile drivers, jackhammers, slamming truck tailgates, public address systems, etc.

##### **Policy**

A noise source will be considered to be violating the Department’s noise regulation (310 CMR 7.10) if the source:

1. Increases the broadband sound level by more than 10 dB(A) above ambient, or
2. Produce a “pure tone” condition – when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more.

These criteria are measured both at the property line and at the nearest inhabited residence. “Ambient” is defined as the background A-weighted sound level that is exceeded 90% of the time, measured during equipment operating hours. “Ambient” may also be established by other means with consent of the Department.

##### **For more information:**

For complaints about specific noise sources, call the Board of Health for the municipality in which the noise source is located.

To learn more about responding to noise, odor and dust complaints or to request state assistance or support, please contact the service center in the nearest DEP regional office.

- Central Region, Worcester: (508) 792-7683
- Northeast Region, Wilmington: (978) 661-7677
- Southeast Region, Lakeville: (508) 946-2714
- Western Region, Springfield: (413) 755-2214

*This Policy was originally adopted by the MA Department of Public Health in the early 1970's. It was reaffirmed by DEP's Division of Air Quality Control on February 1, 1990, and has remained in effect.*

## **Appendix C      Acoustical Monitoring Site Photographs**

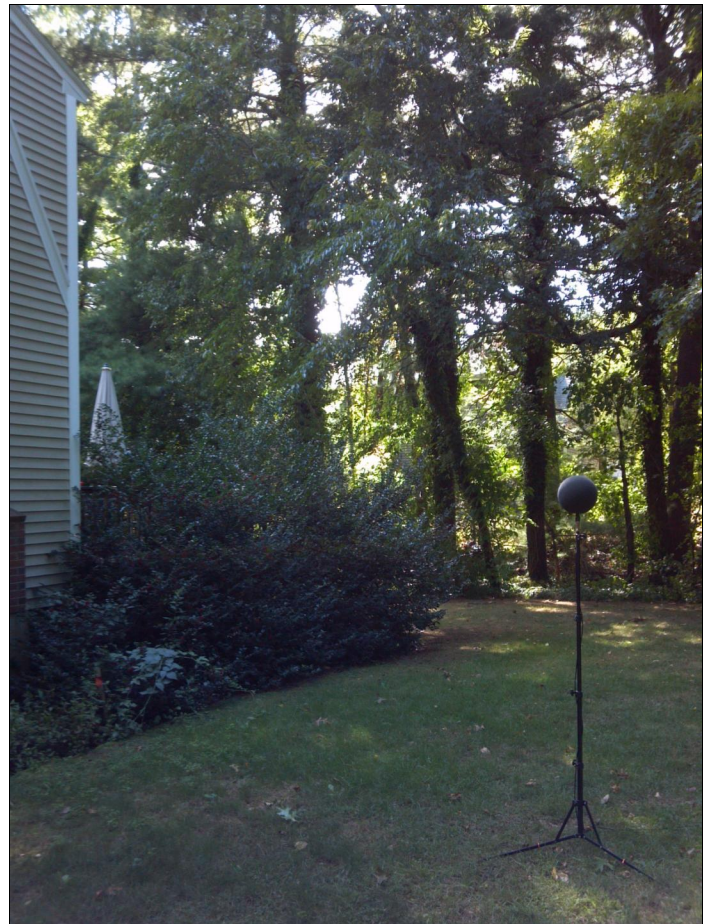


## Page C-2: Monitoring Site #1 at 13 Schofield Road





## Page C-3: Monitoring Site #2 at 3 Leland Road





## Page C-4: Monitoring Site #3 at 11 Leland Road



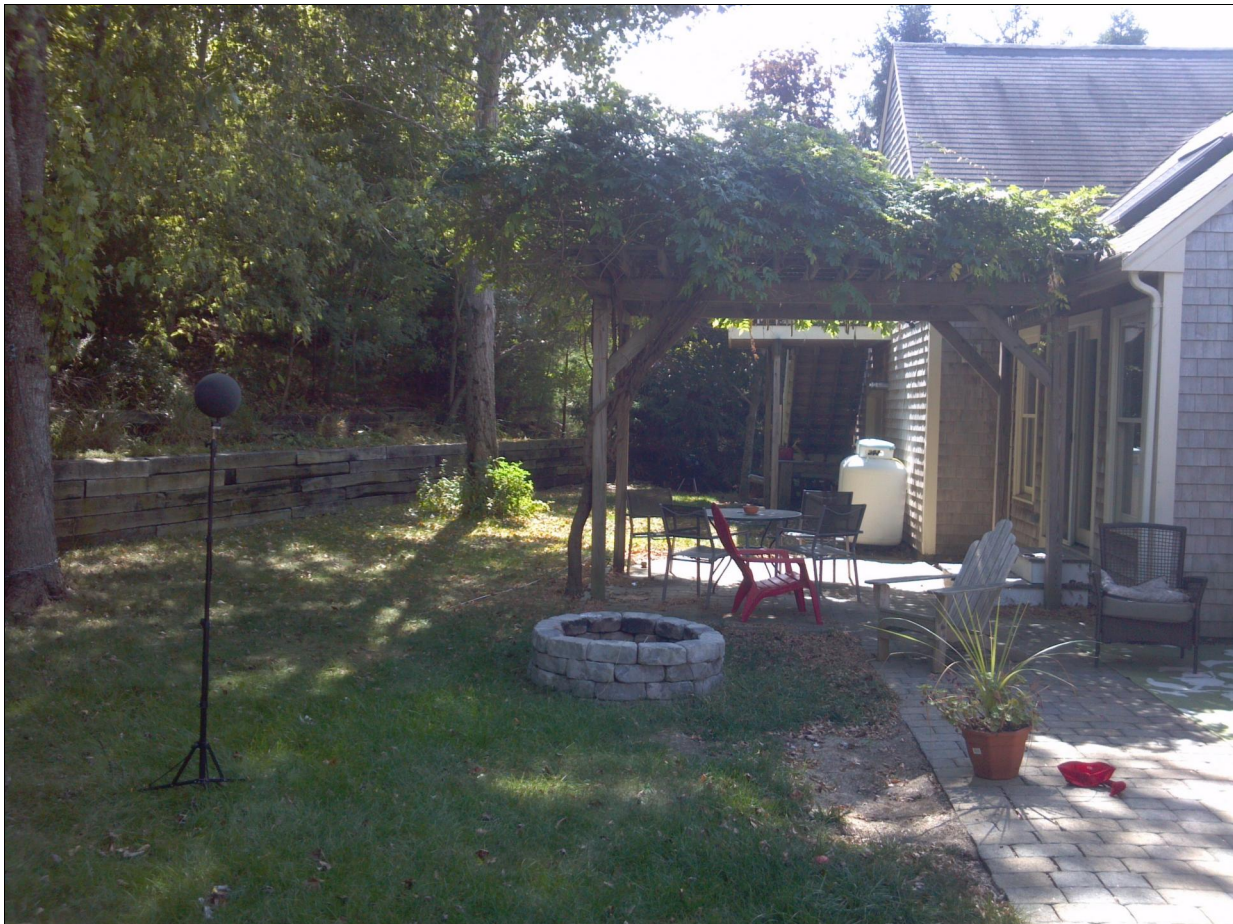


## Page C-5: Monitoring Site #4 at 38 Prospect Street





## Page C-6: Monitoring Site #5 at 18 Copper Beech Drive





## Page C-7: Monitoring Site #6 at 6 Copper Beech Drive





## Page C-8: Monitoring Site #7 at Intermediate School



## Appendix D Detailed Acoustical Monitoring Data

Each twelve-page set of data presents information for a specific monitoring location on a specific date.

For example, pages D-3 through D-14 present the following information for the acoustical monitoring conducted at 13 Schofield Road on April 7, 2014:

### **Data collected using a slow-response sound level meter setting:**

- **Page D-3:** Summary of 20-minute sound level metrics for acoustical monitoring conducted with the wind turbine operating and shut down. Metrics are calculated both including and excluding periods of sound generated by Route 3 traffic.
- **Page D-4:** Summary of A-weighted and octave-band sound level comparisons between 20-minute acoustical metrics calculated over periods with the wind turbine operating and shut down.
- **Page D-5:** Summary of C-weighted and Z-weighted sound level comparisons between 20-minute acoustical metrics calculated over periods with the wind turbine operating and shut down.
- **Page D-6:** Summary of G-weighted sound level and A-weighted modulation depth comparisons between 20-minute metrics calculated over periods with the wind turbine operating and shut down.
- **Page D-7:** Detailed acoustical monitoring report for measurements conducted with the wind turbine operating which includes both 5-minute and 20-minute sound level metrics and both graphical and numerical presentation of acoustical data.
- **Page D-8:** Detailed acoustical monitoring report for measurements conducted with the wind turbine shut down which includes both 5-minute and 20-minute sound level metrics and both graphical and numerical presentation of acoustical data.

### **Data collected using a fast-response sound level meter setting:**

- **Pages D-9 to D-14:** Same as pages D-3 through D-8, but presenting fast-response acoustical data.

# **Detailed Acoustical Monitoring Data**

## **13 Schofield Road**

### **April 7, 2014**

Slow-response data: Pages D-3 to D-8

Fast-response data: Pages D-9 to D-14

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-3: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 1: 13 Schofield Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 5.2 m/s	Wind Direction: 256°	Average Power Level: 210 kW	Air Temperature: 52 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 4.8 m/s	Wind Direction: 252°	Average Power Level: 189 kW	Air Temperature: 52 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 4.9 m/s	Wind Direction: 233°	Average Power Level: 130 kW	Air Temperature: 49 °F

**20-minute Acoustical Metrics (including traffic on Route 3)**

**20-minute Acoustical Metrics (excluding traffic on Route 3)**

**KWI Turbine OPERATING (wind turbine plus traffic)**

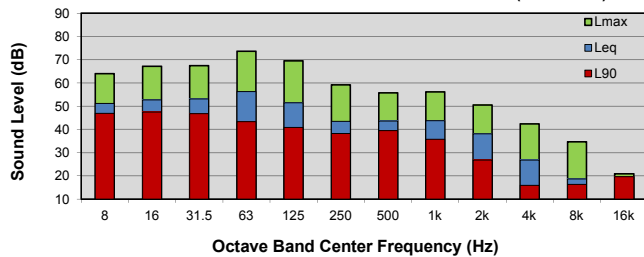
**KWI Turbine OPERATING (wind turbine only)**

**2:50 to 3:10 AM (100% included)**

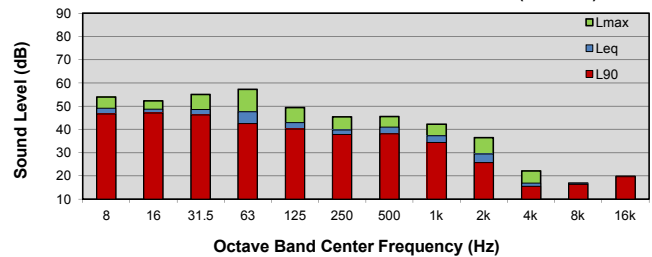
**2:50 to 3:10 AM (35% included)**

SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.9	69.4	71.0	71.5	4.2	Avg Lmax	44.8	54.6	58.0	60.2	2.8
L01	56.9	70.5	72.1	71.0	3.0	L01	45.5	57.0	58.8	59.8	2.4
Leq	47.1	58.5	60.7	61.2	1.2	Leq	41.9	51.5	55.2	57.4	1.1
L50	44.6	53.1	56.5	57.9	0.6	L50	41.4	50.2	54.7	57.2	1.0
L90	40.7	49.6	53.9	56.2	0.6	L90	39.7	49.2	53.4	55.8	0.6
Lmin	38.0	48.1	52.6	54.3	0.2	Lmin	38.0	48.1	52.6	54.3	0.3

**Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)**



**Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)**



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 6.0 m/s	Wind Direction: 248°	Average Power Level: 000 kW	Air Temperature: 51 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 5.7 m/s	Wind Direction: 258°	Average Power Level: 000 kW	Air Temperature: 52 °F

**20-minute Acoustical Metrics (including traffic on Route 3)**

**20-minute Acoustical Metrics (excluding traffic on Route 3)**

**KWI Turbine SHUTDOWN (ambient - with traffic)**

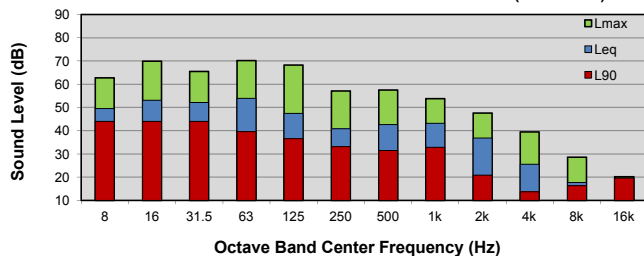
**KWI Turbine SHUTDOWN (ambient - no traffic)**

**2:20 to 2:40 AM (100% included)**

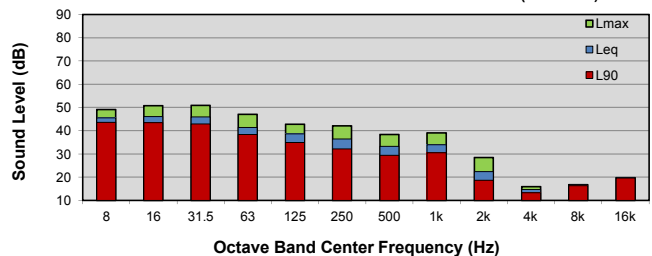
**2:20 to 2:40 AM (20% included)**

SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	54.8	67.0	68.8	72.7	5.6	Avg Lmax	39.1	49.6	54.1	58.3	3.3
L01	55.0	68.6	70.3	73.2	3.9	L01	40.0	51.0	54.5	58.8	3.0
Leq	46.0	56.4	59.1	61.7	1.4	Leq	36.4	47.2	51.6	54.8	1.2
L50	41.4	50.3	53.7	56.0	1.2	L50	35.9	47.0	51.3	54.0	1.1
L90	35.5	46.0	50.4	52.7	0.7	L90	33.3	44.3	49.3	52.2	0.6
Lmin	31.6	43.2	48.3	51.2	0.2	Lmin	31.6	43.2	48.6	51.2	0.2

**Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)**



**Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)**





Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-4: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.1	1.0	9.9	14.5	20.4	24.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	5.7	4.8	8.4	8.9	11.5	13.2
	L01	2.1	1.9	10.9	15.5	21.4	25.3		L01	6.4	5.5	9.1	9.7	12.2	13.9
	Leq	-7.6	-7.8	1.1	5.7	11.6	15.5		Leq	2.7	1.9	5.5	6.0	8.5	10.3
	L50	-10.2	-10.4	-1.4	3.1	9.1	13.0		L50	2.3	1.4	5.0	5.6	8.1	9.8
	L90	-14.1	-14.3	-5.3	-0.7	5.2	9.1		L90	0.5	-0.3	3.3	3.8	6.3	8.1
	Lmin	-16.7	-16.9	-7.9	-3.4	2.5	6.4		Lmin	-1.1	-2.0	1.6	2.2	4.7	6.4
Operating - Shutdown Differences: Overall Comparison															
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Octave Band Sound Level Comparison: Pure-tone Check							
		Avg Lmax	L01	Leq	L50	L90	Lmin	Including traffic on Route 3:							
KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.0	-10.2	-1.2	3.4	9.3	13.2	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
	L01	-9.3	-9.5	-0.5	4.1	10.0	13.9	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	Leq	-12.9	-13.1	-4.1	0.4	6.4	10.3	Excluding traffic on Route 3:							
	L50	-13.3	-13.5	-4.5	0.0	5.9	9.8	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L90	-15.1	-15.3	-6.3	-1.8	4.2	8.1	Leq Pure-tone?	NO		Leq Pure-tone?	NO			
	Lmin	-16.7	-16.9	-7.9	-3.4	2.5	6.4	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
L90 Pure-tone?	NO	L90 Pure-tone?	NO												

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-5: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **4/7/2014** between **2:20 AM** and **3:10 AM** with KWI Turbine **OPERATING** and **SHUTDOWN**

Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine <b>OPERATING</b> (wind turbine plus traffic) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)								Vertical: KWI Turbine <b>OPERATING</b> (wind turbine plus traffic) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)							
<b>SLOW Response C-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>SLOW Response Z-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	2.4	0.8	13.1	19.1	23.4	26.3	KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	2.1	0.6	11.8	17.2	20.5	22.7
	L01	3.4	1.9	14.1	20.2	24.5	27.3		L01	3.2	1.8	13.0	18.3	21.7	23.8
	Leq	-8.5	-10.1	2.1	8.2	12.5	15.3		Leq	-8.2	-9.6	1.6	6.9	10.3	12.4
	L50	-14.0	-15.5	-3.3	2.8	7.1	9.9		L50	-12.4	-13.9	-2.7	2.7	6.0	8.2
	L90	-17.4	-19.0	-6.7	-0.7	3.6	6.5		L90	-14.9	-16.4	-5.2	0.2	3.5	5.7
	Lmin	-18.9	-20.5	-8.3	-2.2	2.1	4.9		Lmin	-16.3	-17.7	-6.5	-1.2	2.2	4.3
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine <b>OPERATING</b> (wind turbine only) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)								Vertical: KWI Turbine <b>OPERATING</b> (wind turbine only) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)							
<b>SLOW Response C-levels</b>		KWI Turbine <b>SHUTDOWN</b> (no traffic)						<b>SLOW Response Z-levels</b>		KWI Turbine <b>SHUTDOWN</b> (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	5.0	3.6	7.4	7.6	10.3	11.4	KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	3.9	3.5	6.3	6.7	8.7	9.4
	L01	7.4	6.0	9.8	10.0	12.7	13.8		L01	4.7	4.3	7.2	7.5	9.5	10.2
	Leq	1.9	0.5	4.3	4.5	7.2	8.3		Leq	1.1	0.7	3.6	3.9	5.9	6.6
	L50	0.6	-0.8	2.9	3.2	5.9	7.0		L50	0.6	0.2	3.1	3.4	5.4	6.2
	L90	-0.4	-1.8	2.0	2.2	4.9	6.0		L90	-0.7	-1.1	1.8	2.1	4.1	4.9
	Lmin	-1.5	-2.9	0.9	1.1	3.8	4.9		Lmin	-1.5	-1.9	0.9	1.3	3.3	4.0
Operating - Shutdown Differences: <b>Overall Comparison</b>								Operating - Shutdown Differences: <b>Overall Comparison</b>							
Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)								Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)							
<b>SLOW Response C-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>SLOW Response Z-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	-12.4	-14.0	-1.8	4.3	8.6	11.4	KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	-10.9	-12.3	-1.1	4.2	7.6	9.7
	L01	-10.1	-11.6	0.6	6.7	11.0	13.8		L01	-10.0	-11.5	-0.3	5.1	8.4	10.5
	Leq	-15.5	-17.1	-4.9	1.2	5.5	8.3		Leq	-13.6	-15.1	-3.9	1.5	4.8	7.0
	L50	-16.9	-18.4	-6.2	-0.1	4.2	7.0		L50	-14.1	-15.6	-4.4	1.0	4.3	6.5
	L90	-17.9	-19.4	-7.2	-1.1	3.2	6.0		L90	-15.4	-16.9	-5.7	-0.3	3.0	5.2
	Lmin	-18.9	-20.5	-8.3	-2.2	2.1	4.9		Lmin	-16.3	-17.7	-6.5	-1.2	2.2	4.3

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-6: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.2	-1.7	9.8	15.5	18.7	20.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.4	0.3	2.8	2.9	3.5	4.0
	L01	-1.7	-2.2	9.3	15.0	18.2	19.8		L01	-2.6	-0.9	1.6	1.7	2.3	2.8
	Leq	-11.5	-12.0	-0.5	5.2	8.4	10.0		Leq	-4.4	-2.7	-0.2	-0.1	0.5	1.0
	L50	-14.8	-15.3	-3.8	1.9	5.1	6.7		L50	-4.9	-3.2	-0.8	-0.6	0.0	0.4
	L90	-16.5	-17.0	-5.5	0.2	3.4	5.0		L90	-4.9	-3.2	-0.8	-0.6	-0.1	0.4
	Lmin	-18.4	-18.9	-7.4	-1.7	1.5	3.1		Lmin	-5.3	-3.6	-1.2	-1.0	-0.5	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	1.8	1.4	5.4	6.2	8.0	9.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.5	-0.2	1.6	1.7	2.2	2.6
	L01	1.5	1.1	5.1	5.9	7.7	8.6		L01	-0.9	-0.6	1.2	1.3	1.8	2.2
	Leq	-1.0	-1.4	2.6	3.4	5.2	6.2		Leq	-2.2	-1.9	-0.1	0.0	0.5	0.9
	L50	-1.1	-1.6	2.4	3.2	5.0	6.0		L50	-2.3	-1.9	-0.2	-0.1	0.4	0.8
	L90	-2.5	-3.0	1.0	1.8	3.6	4.6		L90	-2.7	-2.3	-0.6	-0.5	0.0	0.4
	Lmin	-4.0	-4.5	-0.5	0.3	2.1	3.1		Lmin	-3.0	-2.7	-0.9	-0.8	-0.3	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-12.5	-13.0	-1.6	4.2	7.4	9.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.8	-1.1	1.4	1.6	2.1	2.6
	L01	-12.9	-13.3	-1.9	3.8	7.1	8.6		L01	-3.1	-1.5	1.0	1.2	1.7	2.2
	Leq	-15.3	-15.8	-4.4	1.4	4.6	6.2		Leq	-4.5	-2.8	-0.3	-0.1	0.4	0.9
	L50	-15.5	-16.0	-4.6	1.2	4.4	6.0		L50	-4.5	-2.8	-0.4	-0.2	0.3	0.8
	L90	-16.9	-17.4	-5.9	-0.2	3.0	4.6		L90	-4.9	-3.2	-0.8	-0.6	-0.1	0.4
	Lmin	-18.4	-18.9	-7.4	-1.7	1.5	3.1		Lmin	-5.3	-3.6	-1.1	-0.9	-0.4	0.1

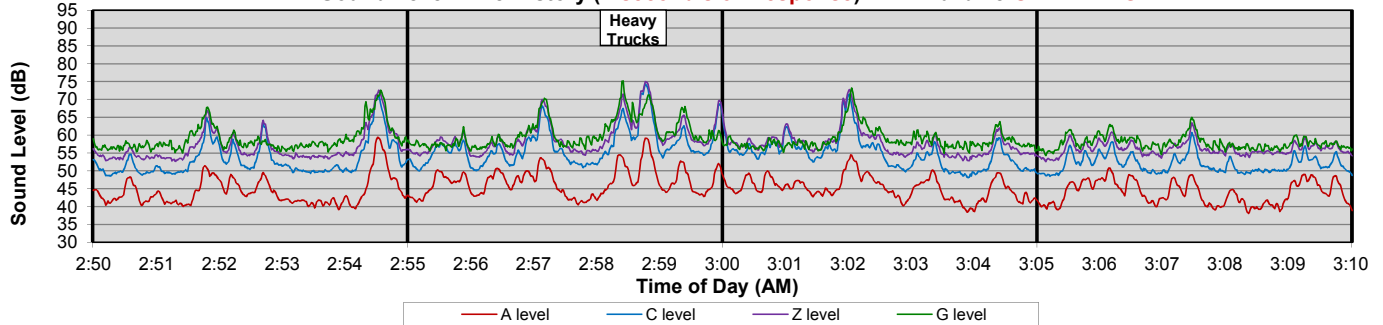


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-7: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 1: 13 Schofield Rd. on 4/7/2014 from 2:50 to 3:10 AM with KWI Turbine **OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data					
Distance from KWI: 740 ft	Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 5.2 m/s	Wind Direction: 256°	Avg Power Level: 210 kW	Air Temperature: 52 °F		
Wind Speed Range: 0 m/s	Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 4.8 m/s	Wind Direction: 252°	Avg Power Level: 189 kW	Air Temperature: 52 °F		
	Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 4.9 m/s	Wind Direction: 233°	Avg Power Level: 130 kW	Air Temperature: 49 °F		

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**



**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**

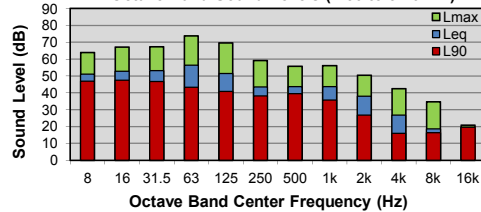
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)						3:05 to 3:10 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	59.4	71.2	72.5	72.6	4.5	Lmax	59.1	74.3	75.0	75.2	5.2	Lmax	54.4	71.5	72.8	73.2	3.4	Lmax	50.8	60.7	63.5	64.9	3.6
L01	58.8	70.2	71.4	71.1	2.9	L01	58.8	72.8	74.2	71.2	3.5	L01	53.4	69.8	71.6	70.2	2.7	L01	50.2	59.0	61.8	64.1	2.7
Leq	47.2	57.6	60.0	61.3	1.2	Leq	49.0	61.4	63.3	63.2	1.2	Leq	46.4	58.3	60.3	60.5	1.1	Leq	45.0	52.7	56.5	58.3	1.1
L50	42.8	51.4	54.7	57.7	1.1	L50	46.6	55.6	58.3	59.0	1.1	L50	45.0	54.7	57.1	57.8	1.0	L50	43.6	51.3	55.9	57.5	1.1
L90	40.5	49.4	53.5	56.1	0.6	L90	42.2	51.6	54.9	56.8	0.7	L90	41.3	49.7	54.3	56.4	0.6	L90	39.8	49.4	54.2	55.8	0.6
Lmin	39.1	48.6	52.7	55.0	0.3	Lmin	40.5	50.0	53.8	55.5	0.3	Lmin	38.4	48.1	52.8	54.9	0.2	Lmin	38.0	48.5	52.6	54.3	0.3

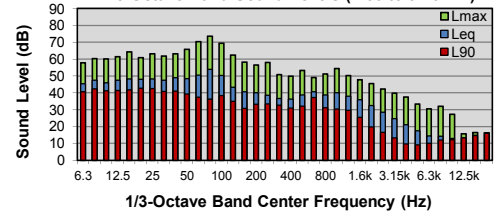
**2:50 to 3:10 AM (100% included)**

Avg	A	C	Z	G	MD
Lmax	55.9	69.4	71.0	71.5	4.2
L01	56.9	70.5	72.1	71.0	3.0
Leq	47.1	58.5	60.7	61.2	1.2
L50	44.6	53.1	56.5	57.9	0.6
L90	40.7	49.6	53.9	56.2	0.6
Lmin	38.0	48.1	52.6	54.3	0.2

**Octave Band Sound Levels (2:50 to 3:10 AM)**



**1/3-Octave Band Sound Levels (2:50 to 3:10 AM)**



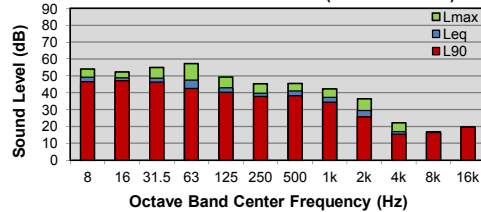
**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (42% included)						2:50 to 3:00 AM (23% included)						3:00 to 3:05 AM (38% included)						3:05 to 3:10 AM (39% included)					
5.1 m/s	A	C	Z	G	MD	4.9 m/s	A	C	Z	G	MD	4.8 m/s	A	C	Z	G	MD	4.9 m/s	A	C	Z	G	MD
Lmax	43.1	52.9	56.7	60.8	3.0	Lmax	45.4	56.0	58.9	60.9	2.3	Lmax	46.4	58.1	59.3	59.8	2.8	Lmax	44.3	51.4	57.1	59.1	3.0
L01	43.1	52.4	56.0	60.1	2.4	L01	45.0	55.9	58.7	60.6	2.0	L01	46.0	57.8	59.3	59.6	2.4	L01	44.0	51.3	56.6	58.8	2.4
Leq	41.3	50.2	54.2	57.4	1.2	Leq	42.8	53.1	56.3	58.1	1.0	Leq	42.8	52.8	55.8	57.5	1.1	Leq	40.8	49.9	54.9	56.7	1.1
L50	41.2	49.9	54.0	57.1	1.1	L50	42.5	52.2	55.7	57.9	1.0	L50	42.4	50.5	54.9	57.4	1.0	L50	40.4	49.9	55.0	56.5	1.0
L90	40.2	49.2	53.3	56.0	0.7	L90	41.2	50.5	54.4	56.8	0.7	L90	39.7	49.2	53.8	56.1	0.6	L90	39.3	49.0	53.4	55.6	0.6
Lmin	39.1	48.6	52.7	55.0	0.3	Lmin	40.5	50.0	53.9	55.5	0.3	Lmin	38.4	48.1	52.8	54.9	0.3	Lmin	38.0	48.5	52.6	54.3	0.3

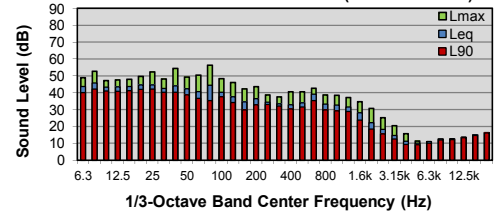
**2:50 to 3:10 AM (35% included)**

Avg	A	C	Z	G	MD
Lmax	44.8	54.6	58.0	60.2	2.8
L01	45.5	57.0	58.8	59.8	2.4
Leq	41.9	51.5	55.2	57.4	1.1
L50	41.4	50.2	54.7	57.2	1.0
L90	39.7	49.2	53.4	55.8	0.6
Lmin	38.0	48.1	52.6	54.3	0.3

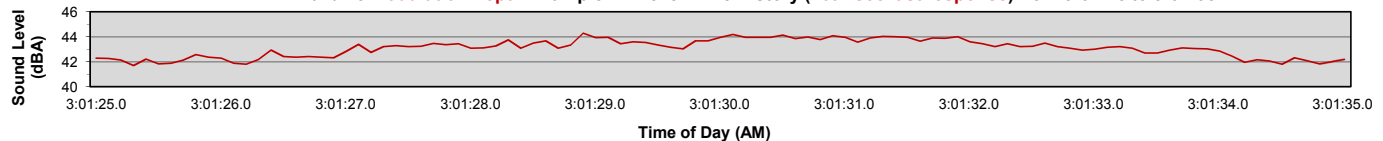
**Octave Band Sound Levels (2:50 to 3:10 AM)**



**1/3-Octave Band Sound Levels (2:50 to 3:10 AM)**



**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:01:25 to 3:01:35**

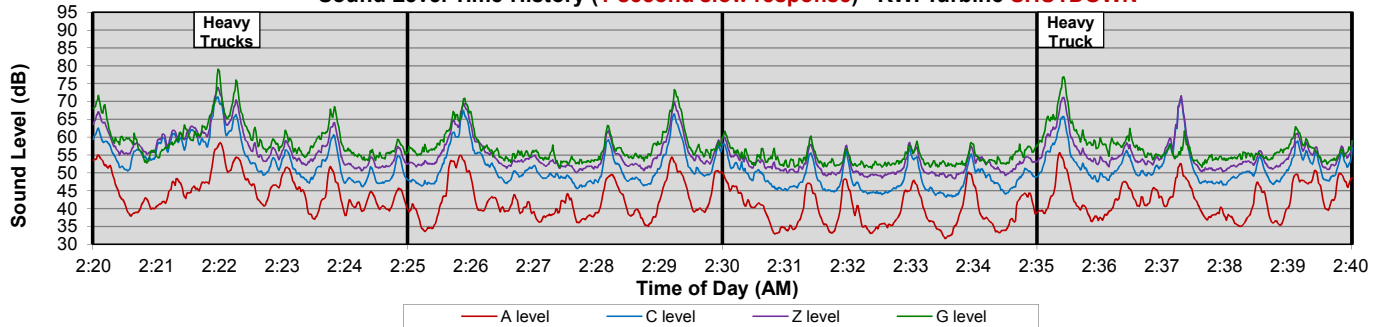


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-8: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **4/7/2014** from **2:20 to 2:40 AM** with KWI Turbine **SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>6.0 m/s</b>	Wind Direction: <b>248°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>51 °F</b>
Wind Speed Range: <b>0 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>5.7 m/s</b>	Wind Direction: <b>258°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine SHUTDOWN**



**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**

**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (100% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	58.5	71.3	73.9	79.0	4.8	Lmax	54.9	67.5	69.9	73.3	5.1	Lmax	50.1	58.3	60.0	61.6	6.7	Lmax	55.6	71.1	71.6	76.9	5.6
L01	57.5	70.1	72.2	76.0	3.6	L01	54.4	66.3	68.7	71.3	3.5	L01	49.6	56.9	59.0	60.3	3.6	L01	54.3	68.6	70.7	73.8	4.3
Leq	48.5	59.1	61.7	64.6	1.4	Leq	45.8	55.8	58.8	61.0	1.4	Leq	42.0	49.6	52.8	54.6	1.4	Leq	45.4	56.6	59.2	61.7	1.4
L50	44.7	54.1	57.0	58.8	1.3	L50	40.3	49.8	53.4	56.1	1.2	L50	37.8	47.1	51.1	53.3	1.2	L50	41.9	50.7	54.0	56.2	1.3
L90	39.5	47.8	52.1	54.8	0.7	L90	36.4	47.0	51.7	53.4	0.7	L90	33.6	44.3	49.3	52.0	0.7	L90	36.8	47.5	51.3	53.6	0.7
Lmin	37.0	46.1	50.5	52.8	0.3	Lmin	33.6	45.6	50.1	51.6	0.2	Lmin	31.6	43.2	48.3	51.2	0.3	Lmin	35.0	46.6	50.2	51.6	0.3

2:20 to 2:40 AM (100% included)					
Avg	A	C	Z	G	MD
Lmax	54.8	67.0	68.8	72.7	5.6
L01	55.0	68.6	70.3	73.2	3.9
Leq	46.0	56.4	59.1	61.7	1.4
L50	41.4	50.3	53.7	56.0	1.2
L90	35.5	46.0	50.4	52.7	0.7
Lmin	31.6	43.2	48.3	51.2	0.2

Octave Band Sound Levels (2:20 to 2:40 AM)

1/3-Octave Band Sound Levels (2:20 to 2:40 AM)

**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (3% included)						2:25 to 2:30 AM (23% included)						2:30 to 2:35 AM (29% included)						2:35 to 2:40 AM (23% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	40.0	49.4	54.1	58.4	2.5	Lmax	40.1	51.5	54.9	58.1	3.2	Lmax	36.0	47.2	53.0	56.9	3.4	Lmax	40.4	50.2	54.5	59.8	4.2
L01	39.9	49.3	54.0	58.3	2.5	L01	39.9	51.5	54.9	58.0	2.9	L01	35.8	47.2	52.8	56.3	2.8	L01	40.1	50.1	54.2	59.4	3.2
Leq	38.3	48.2	53.4	56.9	1.2	Leq	37.2	48.0	52.4	55.2	1.2	Leq	34.2	45.0	50.1	52.9	1.2	Leq	37.3	48.2	52.1	55.8	1.2
L50	38.3	48.2	53.5	57.2	1.2	L50	36.9	47.3	52.3	54.7	1.0	L50	34.0	44.7	49.8	52.5	1.1	L50	37.3	47.8	51.8	54.6	1.1
L90	37.0	47.3	52.8	55.5	0.7	L90	34.5	46.3	51.0	53.0	0.7	L90	32.7	43.9	49.1	51.8	0.6	L90	35.4	47.0	50.8	53.7	0.6
Lmin	37.0	47.1	52.4	55.2	0.4	Lmin	33.6	45.6	50.1	52.5	0.2	Lmin	31.6	43.2	48.6	51.2	0.3	Lmin	35.0	46.6	50.2	52.5	0.3

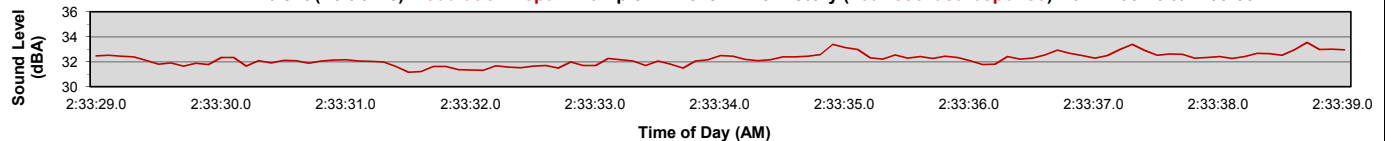
  

2:20 to 2:40 AM (20% included)					
Avg	A	C	Z	G	MD
Lmax	39.1	49.6	54.1	58.3	3.3
L01	40.0	51.0	54.5	58.8	3.0
Leq	36.4	47.2	51.6	54.8	1.2
L50	35.9	47.0	51.3	54.0	1.1
L90	33.3	44.3	49.3	52.2	0.6
Lmin	31.6	43.2	48.6	51.2	0.2

Octave Band Sound Levels (2:20 to 2:40 AM)

1/3-Octave Band Sound Levels (2:20 to 2:40 AM)

**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:33:29 to 2:33:39**



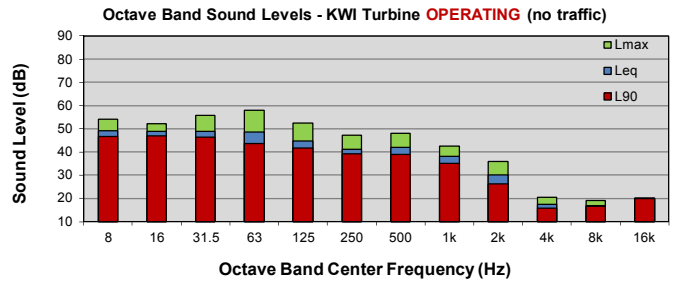
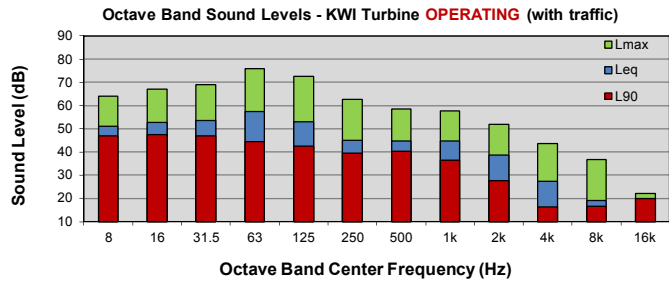
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-9: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **4/7/2014** between **2:20 AM** and **3:10 AM** with KWI Turbine **OPERATING** and **SHUTDOWN**

Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine **OPERATING**

Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>5.2 m/s</b>	Wind Direction: <b>256°</b>	Average Power Level: <b>210 kW</b>	Air Temperature: <b>52 °F</b>
Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>4.8 m/s</b>	Wind Direction: <b>252°</b>	Average Power Level: <b>189 kW</b>	Air Temperature: <b>52 °F</b>
Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>4.9 m/s</b>	Wind Direction: <b>233°</b>	Average Power Level: <b>130 kW</b>	Air Temperature: <b>49 °F</b>

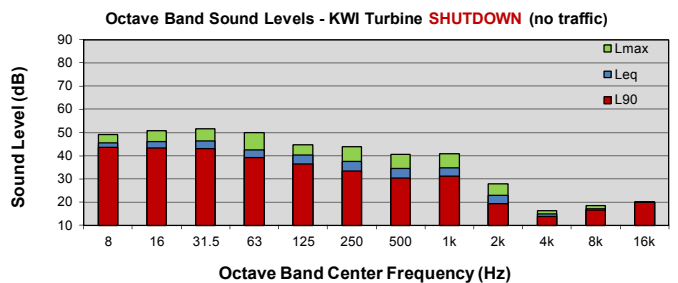
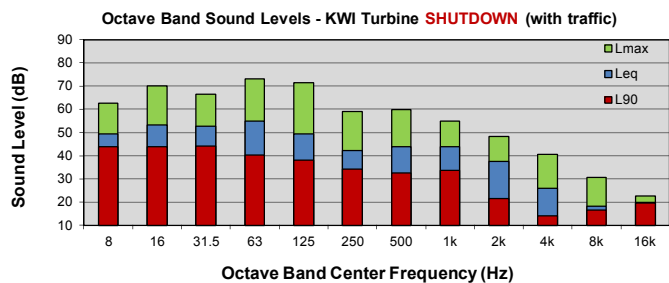
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine <b>OPERATING</b> (wind turbine plus traffic)						KWI Turbine <b>OPERATING</b> (wind turbine only)					
2:50 to 3:10 AM (100% included)						2:50 to 3:10 AM (35% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	57.7	71.3	72.4	71.7	4.2	Avg Lmax	45.7	55.7	58.7	60.3	2.8
L01	57.3	72.0	73.2	71.1	3.0	L01	46.5	57.4	59.4	60.0	2.4
Leq	48.1	59.5	61.4	61.2	1.2	Leq	42.8	52.4	55.7	57.4	1.1
L50	45.4	53.9	56.9	58.0	0.6	L50	42.5	51.1	55.2	57.2	1.0
L90	41.6	50.6	54.4	56.3	0.6	L90	40.6	50.1	53.9	55.9	0.6
Lmin	38.8	48.9	52.9	54.2	0.2	Lmin	38.8	48.9	52.9	54.2	0.3



Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine **SHUTDOWN**

Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>6.0 m/s</b>	Wind Direction: <b>248°</b>	Average Power Level: <b>000 kW</b>	Air Temperature: <b>51 °F</b>
Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>5.7 m/s</b>	Wind Direction: <b>258°</b>	Average Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>

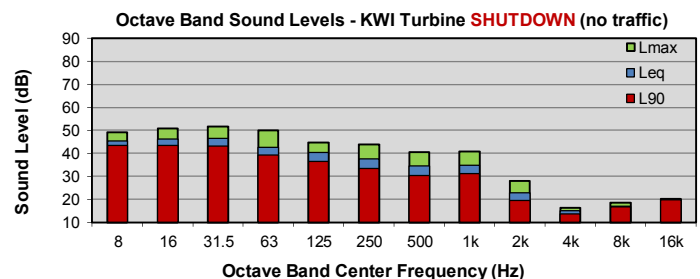
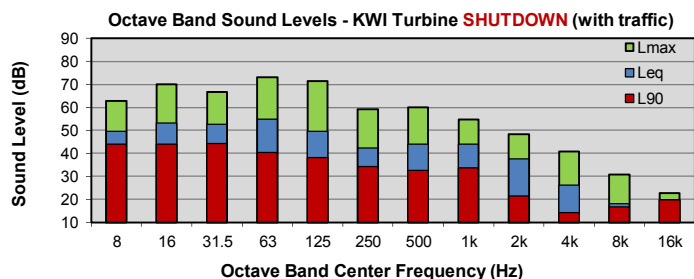
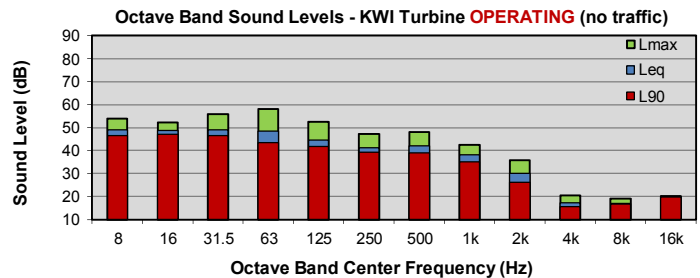
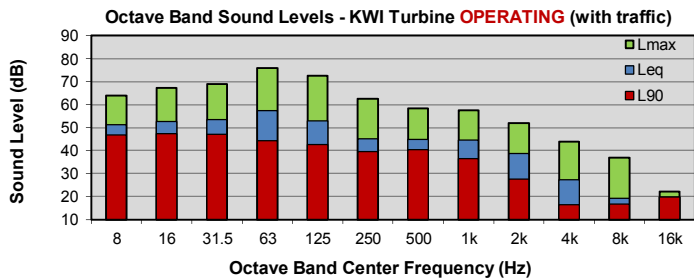
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)						KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)					
2:20 to 2:40 AM (100% included)						2:20 to 2:40 AM (20% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	56.4	68.7	70.1	72.8	5.6	Avg Lmax	40.1	50.7	54.8	58.5	3.3
L01	56.1	69.5	71.3	73.4	3.9	L01	41.7	51.5	55.1	59.0	3.0
Leq	47.0	57.3	59.8	61.8	1.4	Leq	37.5	48.1	52.1	54.9	1.2
L50	42.2	51.1	54.2	56.0	1.2	L50	36.8	47.7	51.8	54.0	1.1
L90	36.5	46.9	50.9	52.8	0.7	L90	34.4	45.2	49.7	52.2	0.6
Lmin	32.4	44.0	48.7	51.4	0.2	Lmin	32.4	44.0	48.8	51.4	0.2



Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-10: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)  
HMMH Project # 305270.001

Measurement at Site 1: 13 Schofield Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN

Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.3	1.6	10.7	15.5	21.2	25.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	5.6	4.1	8.3	8.9	11.3	13.3
	L01	0.8	1.1	10.3	15.1	20.8	24.9		L01	6.4	4.9	9.1	9.7	12.1	14.1
	Leq	-8.4	-8.1	1.1	5.9	11.6	15.7		Leq	2.7	1.2	5.4	6.0	8.4	10.4
	L50	-11.0	-10.7	-1.5	3.2	9.0	13.0		L50	2.3	0.8	5.0	5.6	8.1	10.0
	L90	-14.9	-14.6	-5.4	-0.7	5.1	9.1		L90	0.5	-1.1	3.1	3.8	6.2	8.2
	Lmin	-17.6	-17.3	-8.2	-3.4	2.3	6.4		Lmin	-1.3	-2.8	1.4	2.0	4.4	6.4



Operating - Shutdown Differences: <b>Overall Comparison</b>								Octave Band Sound Level Comparison: <b>Pure-tone Check</b>							
Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)															
<b>FAST Response A-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>Including traffic on Route 3:</b>							
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	-10.7	-10.4	-1.3	3.5	<b>9.2</b>	13.3	<b>L90 Pure-tone?</b>	NO		<b>L90 Pure-tone?</b>	NO			
	L01	-9.9	-9.6	-0.5	4.3	10.0	14.1	<b>Excluding traffic on Route 3:</b>							
	Leq	-13.6	-13.3	-4.2	0.6	<b>6.3</b>	10.4								
	L50	-14.0	-13.7	-4.5	0.2	6.0	10.0	<b>Leq Octave Band Check: KWI Turbine ONLY</b>	NO KWI PURE TONE	<b>Leq Octave Band Check Ambient (no traffic)</b>					
	L90	-15.8	-15.5	-6.4	-1.6	<b>4.1</b>	8.2	<b>Leq Pure-tone?</b>	NO	<b>L90 Pure-tone?</b>	NO				
	Lmin	-17.6	-17.3	-8.2	-3.4	2.3	6.4	<b>L90 Octave Band Check KWI Turbine ONLY</b>	NO KWI PURE TONE	<b>L90 Octave Band Check Ambient (no traffic)</b>					
								<b>L90 Pure-tone?</b>	NO		<b>L90 Pure-tone?</b>	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-11: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.6	1.8	13.9	20.1	24.3	27.2	KWI Turbine OPERATING (with traffic)	Avg Lmax	2.3	1.1	12.7	18.2	21.6	23.8
	L01	3.3	2.5	14.6	20.8	25.1	27.9		L01	3.1	1.9	13.5	19.0	22.4	24.6
	Leq	-9.2	-9.9	2.2	8.4	12.6	15.5		Leq	-8.7	-9.9	1.7	7.2	10.6	12.8
	L50	-14.8	-15.6	-3.5	2.7	7.0	9.8		L50	-13.2	-14.4	-2.8	2.7	6.0	8.2
	L90	-18.1	-18.9	-6.8	-0.6	3.7	6.5		L90	-15.7	-16.9	-5.4	0.2	3.5	5.7
	Lmin	-19.8	-20.6	-8.4	-2.2	2.0	4.9		Lmin	-17.3	-18.4	-6.9	-1.4	2.0	4.2
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	5.0	4.2	7.6	8.0	10.5	11.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.9	3.5	6.6	6.9	8.9	9.8
	L01	6.7	5.9	9.3	9.7	12.2	13.4		L01	4.6	4.3	7.3	7.6	9.7	10.6
	Leq	1.7	0.9	4.3	4.7	7.2	8.4		Leq	0.9	0.6	3.6	4.0	6.0	6.9
	L50	0.4	-0.3	3.0	3.4	5.9	7.1		L50	0.4	0.1	3.1	3.4	5.4	6.3
	L90	-0.6	-1.4	2.0	2.4	4.9	6.0		L90	-0.9	-1.2	1.8	2.1	4.1	5.1
	Lmin	-1.8	-2.6	0.8	1.2	3.7	4.9		Lmin	-1.9	-2.2	0.8	1.1	3.1	4.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-13.0	-13.8	-1.7	4.5	8.8	11.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	-11.5	-12.7	-1.1	4.4	7.8	10.0
	L01	-11.3	-12.1	0.0	6.2	10.5	13.4		L01	-10.7	-11.9	-0.4	5.2	8.5	10.7
	Leq	-16.3	-17.1	-4.9	1.3	5.5	8.4		Leq	-14.4	-15.6	-4.1	1.5	4.8	7.0
	L50	-17.6	-18.3	-6.2	0.0	4.2	7.1		L50	-15.0	-16.1	-4.6	0.9	4.3	6.5
	L90	-18.6	-19.4	-7.3	-1.1	3.2	6.0		L90	-16.3	-17.4	-5.9	-0.3	3.0	5.2
	Lmin	-19.8	-20.6	-8.4	-2.2	2.0	4.9		Lmin	-17.3	-18.4	-6.9	-1.4	2.0	4.2

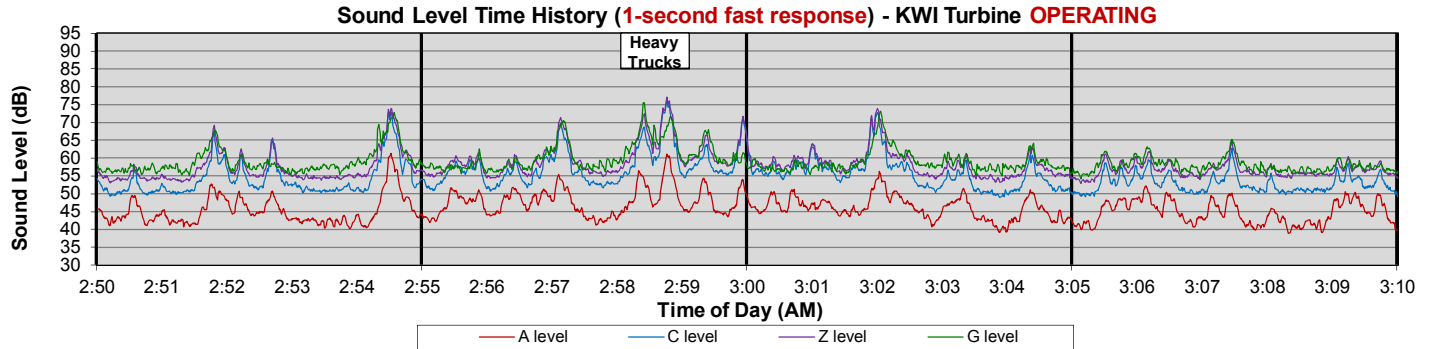
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-12: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.1	-1.7	9.9	15.6	18.9	20.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.4	0.3	2.8	2.9	3.5	4.0
	L01	-1.6	-2.2	9.3	15.1	18.3	19.8		L01	-2.6	-0.9	1.6	1.7	2.3	2.8
	Leq	-11.5	-12.1	-0.5	5.2	8.4	9.9		Leq	-4.4	-2.7	-0.2	-0.1	0.5	1.0
	L50	-14.8	-15.4	-3.8	1.9	5.2	6.6		L50	-4.9	-3.2	-0.8	-0.6	0.0	0.4
	L90	-16.5	-17.1	-5.5	0.2	3.5	4.9		L90	-4.9	-3.2	-0.8	-0.6	-0.1	0.4
	Lmin	-18.5	-19.1	-7.5	-1.8	1.4	2.9		Lmin	-5.3	-3.6	-1.2	-1.0	-0.5	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	1.8	1.3	5.4	6.3	8.1	8.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.5	-0.2	1.6	1.7	2.2	2.6
	L01	1.5	1.0	5.1	6.0	7.8	8.6		L01	-0.9	-0.6	1.2	1.3	1.8	2.2
	Leq	-1.1	-1.5	2.6	3.4	5.2	6.1		Leq	-2.2	-1.9	-0.1	0.0	0.5	0.9
	L50	-1.3	-1.7	2.3	3.2	5.0	5.8		L50	-2.3	-1.9	-0.2	-0.1	0.4	0.8
	L90	-2.6	-3.1	1.0	1.8	3.7	4.5		L90	-2.7	-2.3	-0.6	-0.5	0.0	0.4
	Lmin	-4.3	-4.7	-0.6	0.2	2.0	2.9		Lmin	-3.0	-2.7	-0.9	-0.8	-0.3	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-12.5	-13.1	-1.5	4.3	7.5	8.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.8	-1.1	1.4	1.6	2.1	2.6
	L01	-12.8	-13.4	-1.8	3.9	7.2	8.6		L01	-3.1	-1.5	1.0	1.2	1.7	2.2
	Leq	-15.3	-15.9	-4.3	1.4	4.6	6.1		Leq	-4.5	-2.8	-0.3	-0.1	0.4	0.9
	L50	-15.6	-16.2	-4.6	1.2	4.4	5.8		L50	-4.5	-2.8	-0.4	-0.2	0.3	0.8
	L90	-16.9	-17.5	-5.9	-0.2	3.1	4.5		L90	-4.9	-3.2	-0.8	-0.6	-0.1	0.4
	Lmin	-18.5	-19.1	-7.5	-1.8	1.4	2.9		Lmin	-5.3	-3.6	-1.1	-0.9	-0.4	0.1



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-13: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **4/7/2014** from **2:50 to 3:10 AM** with KWI Turbine **OPERATING**

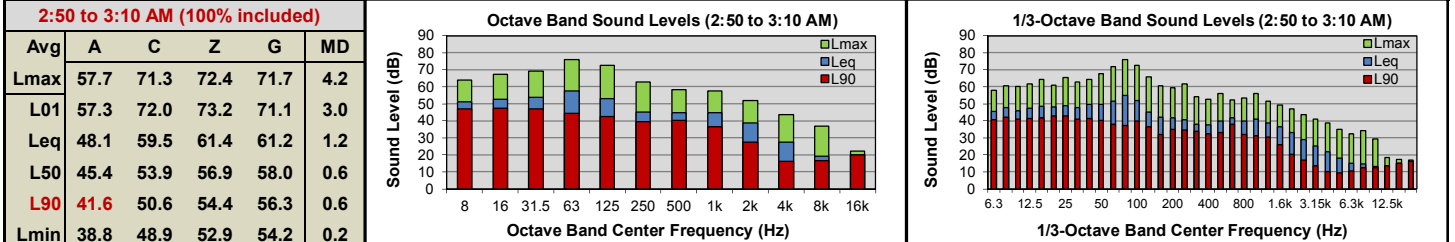
Site data		Supervisory Control and Data Acquisition (SCADA) data					
Distance from KWI:	740 ft	Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 5.2 m/s	Wind Direction: 256°	Avg Power Level: 210 kW	Air Temperature: 52 °F	
Wind Speed Range:	0 m/s	Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 4.8 m/s	Wind Direction: 252°	Avg Power Level: 189 kW	Air Temperature: 52 °F	
		Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 4.9 m/s	Wind Direction: 233°	Avg Power Level: 130 kW	Air Temperature: 49 °F	



Event Log	
Traffic on Route 3 <b>throughout</b>	
Spring peeper noise <b>removed</b>	

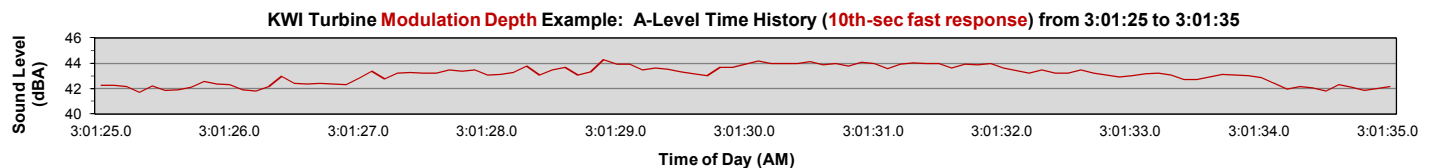
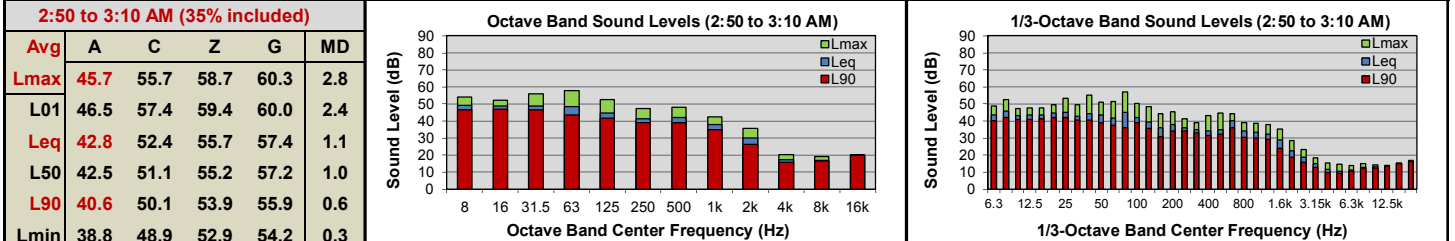
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)						3:05 to 3:10 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	61.2	73.0	73.8	72.8	4.5	Lmax	61.1	76.4	77.1	75.6	5.2	Lmax	56.4	72.7	73.8	73.2	3.4	Lmax	52.2	62.8	65.0	65.2	3.6
L01	60.2	71.1	71.8	71.2	2.9	L01	60.2	74.3	75.1	71.5	3.5	L01	54.2	71.5	72.5	70.3	2.7	L01	50.9	59.5	62.2	64.2	2.7
Leq	48.1	58.7	60.8	61.3	1.2	Leq	50.0	62.5	64.2	63.3	1.2	Leq	47.3	59.1	60.9	60.5	1.1	Leq	45.9	53.7	57.1	58.4	1.1
L50	43.8	52.1	55.3	57.7	1.1	L50	47.5	56.4	58.9	59.2	1.1	L50	45.8	55.6	57.7	58.0	1.0	L50	44.4	52.2	56.2	57.5	1.1
L90	41.5	50.4	53.9	56.2	0.6	L90	43.2	52.5	55.5	56.9	0.7	L90	42.1	50.7	54.7	56.4	0.6	L90	40.6	50.3	54.6	55.9	0.6
Lmin	40.1	49.4	53.1	55.1	0.3	Lmin	41.3	50.8	54.3	55.7	0.3	Lmin	39.1	48.9	53.2	55.1	0.2	Lmin	38.8	49.1	52.9	54.2	0.3



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (42% included)						2:55 to 3:00 AM (23% included)						3:00 to 3:05 AM (38% included)						3:05 to 3:10 AM (39% included)					
5.1 m/s	A	C	Z	G	MD	4.9 m/s	A	C	Z	G	MD	4.8 m/s	A	C	Z	G	MD	4.9 m/s	A	C	Z	G	MD
Lmax	44.4	54.2	57.4	61.3	3.0	Lmax	45.7	57.1	59.6	61.0	2.3	Lmax	48.1	59.1	60.2	59.8	2.8	Lmax	44.8	52.4	57.5	59.1	3.0
L01	44.3	53.4	56.6	60.1	2.4	L01	45.7	56.9	59.4	60.7	2.0	L01	46.8	58.8	60.1	59.7	2.4	L01	44.6	52.4	57.0	58.9	2.4
Leq	42.3	51.2	54.7	57.5	1.2	Leq	43.7	53.9	56.8	58.2	1.0	Leq	43.7	53.6	56.3	57.6	1.1	Leq	41.7	50.9	55.3	56.7	1.1
L50	42.3	50.9	54.5	57.2	1.1	L50	43.5	53.0	56.1	57.9	1.0	L50	43.1	51.5	55.4	57.5	1.0	L50	41.4	50.7	55.4	56.6	1.0
L90	41.0	50.1	53.8	56.0	0.7	L90	42.3	51.4	54.8	56.8	0.7	L90	40.9	50.0	54.1	56.3	0.6	L90	40.1	49.9	53.9	55.6	0.6
Lmin	40.1	49.4	53.1	55.1	0.3	Lmin	41.3	50.8	54.3	55.8	0.3	Lmin	39.1	48.9	53.2	55.1	0.3	Lmin	38.8	49.1	52.9	54.2	0.3

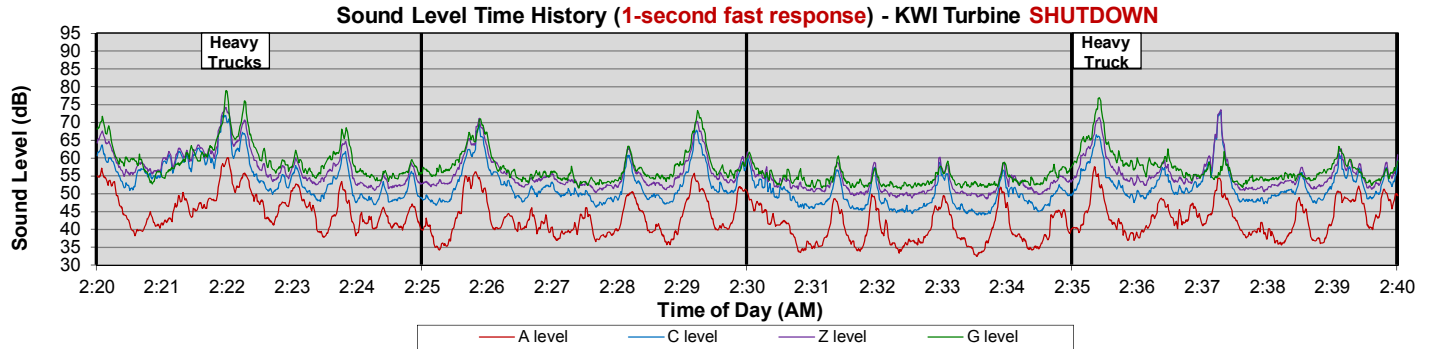




Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-14: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown  
HMMH Project # 305270.001

Measurement at Site 1: 13 Schofield Rd. on 4/7/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 740 ft	Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 6.0 m/s	Wind Direction: 248°	Avg Power Level: 000 kW	Air Temperature: 51 °F
Wind Speed Range: 0 m/s	Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 5.7 m/s	Wind Direction: 258°	Avg Power Level: 000 kW	Air Temperature: 52 °F



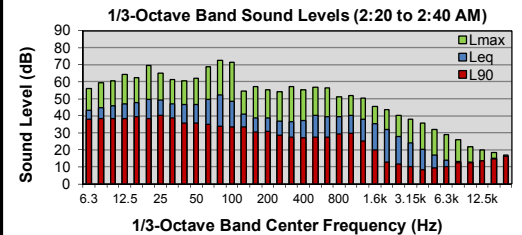
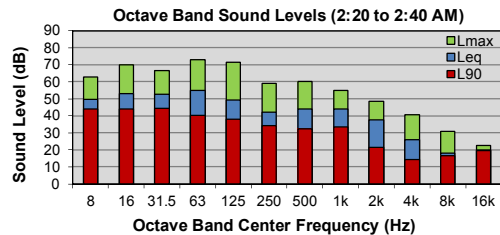
Event Log

Traffic on Route 3 throughout  
Spring peeper noise removed

Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN

2:20 to 2:25 AM (100% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	60.1	71.9	74.3	79.0	4.8	Lmax	56.1	69.5	71.2	73.4	5.1	Lmax	51.9	60.3	61.6	61.7	6.7	Lmax	57.6	73.0	73.6	77.0	5.6
L01	58.7	71.5	73.0	76.0	3.6	L01	55.6	67.6	70.0	71.2	3.5	L01	50.4	58.7	60.2	60.5	3.6	L01	55.5	71.8	72.2	73.9	4.3
Leq	49.5	59.9	62.2	64.7	1.4	Leq	46.8	56.8	59.5	61.1	1.4	Leq	42.8	50.6	53.4	54.7	1.4	Leq	46.5	57.8	60.1	61.8	1.4
L50	45.8	54.9	57.4	59.0	1.3	L50	41.5	50.7	54.0	56.2	1.2	L50	38.5	47.7	51.6	53.4	1.2	L50	42.7	51.6	54.5	56.3	1.3
L90	40.3	48.7	52.5	54.8	0.7	L90	37.4	47.7	52.1	53.5	0.7	L90	34.6	45.2	49.7	52.1	0.7	L90	37.6	48.4	51.7	53.7	0.7
Lmin	37.8	46.9	50.9	52.7	0.3	Lmin	34.3	46.3	50.3	51.6	0.2	Lmin	32.4	44.0	48.7	51.4	0.3	Lmin	35.7	47.1	50.5	51.7	0.3

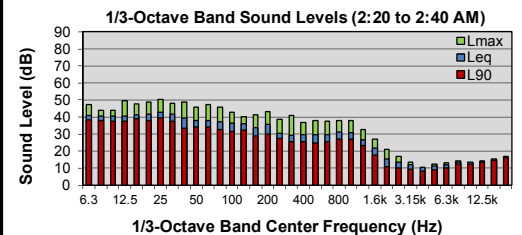
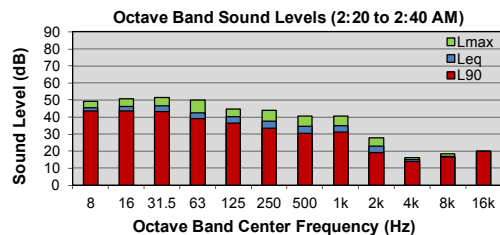
2:20 to 2:40 AM (100% included)					
Avg	A	C	Z	G	MD
Lmax	56.4	68.7	70.1	72.8	5.6
L01	56.1	69.5	71.3	73.4	3.9
Leq	47.0	57.3	59.8	61.8	1.4
L50	42.2	51.1	54.2	56.0	1.2
L90	36.5	46.9	50.9	52.8	0.7
Lmin	32.4	44.0	48.7	51.4	0.2



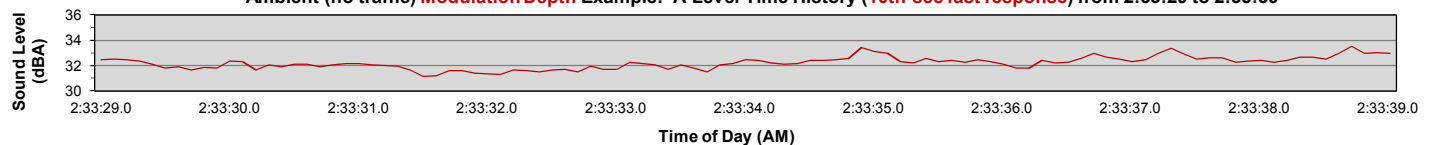
Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN

2:20 to 2:25 AM (3% included)						2:25 to 2:30 AM (23% included)						2:30 to 2:35 AM (29% included)						2:35 to 2:40 AM (23% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	39.5	50.4	54.7	58.6	2.5	Lmax	41.7	53.3	56.0	58.3	3.2	Lmax	37.4	48.2	53.3	57.0	3.4	Lmax	42.0	51.0	55.2	60.1	4.2
L01	39.5	50.4	54.7	58.6	2.5	L01	41.6	52.8	55.7	58.2	2.9	L01	37.4	47.8	52.8	56.3	2.8	L01	41.9	50.8	54.7	59.6	3.2
Leq	38.8	49.1	53.9	57.2	1.2	Leq	38.3	48.9	52.9	55.3	1.2	Leq	35.2	45.9	50.5	53.0	1.2	Leq	38.3	49.0	52.5	55.8	1.2
L50	38.7	49.0	53.9	57.4	1.2	L50	37.7	48.3	52.7	54.8	1.0	L50	35.1	45.6	50.1	52.5	1.1	L50	37.9	48.8	52.3	54.7	1.1
L90	38.0	48.0	53.1	55.6	0.7	L90	35.4	47.1	51.3	53.0	0.7	L90	33.6	44.7	49.5	51.9	0.6	L90	36.3	47.7	51.2	53.8	0.6
Lmin	37.8	47.9	52.7	55.4	0.4	Lmin	34.3	46.3	50.3	52.6	0.2	Lmin	32.4	44.0	48.8	51.4	0.3	Lmin	35.7	47.1	50.5	52.6	0.3

2:20 to 2:40 AM (20% included)					
Avg	A	C	Z	G	MD
Lmax	40.1	50.7	54.8	58.5	3.3
L01	41.7	51.5	55.1	59.0	3.0
Leq	37.5	48.1	52.1	54.9	1.2
L50	36.8	47.7	51.8	54.0	1.1
L90	34.4	45.2	49.7	52.2	0.6
Lmin	32.4	44.0	48.8	51.4	0.2



Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:33:29 to 2:33:39



**Detailed Acoustical Monitoring Data**  
**13 Schofield Road**  
**March 22, 2014**

Slow-response data: Pages D-16 to D-21

Fast-response data: Pages D-22 to D-27

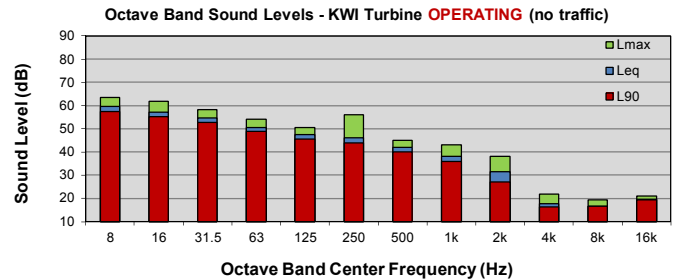
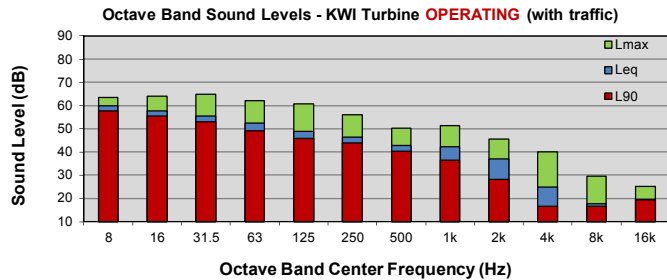
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-16: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 1: 13 Schofield Rd. on 3/22/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 236°	Average Power Level: 539 kW	Air Temperature: 31 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 235°	Average Power Level: 600 kW	Air Temperature: 31 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 236°	Average Power Level: 669 kW	Air Temperature: 31 °F

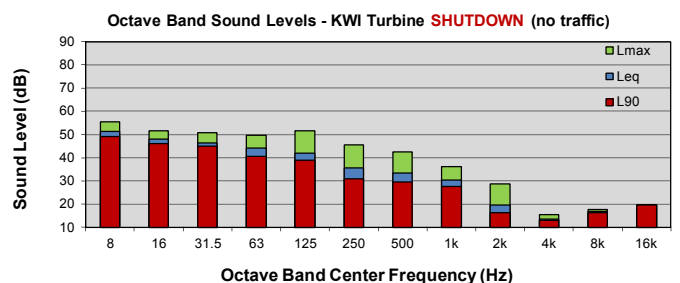
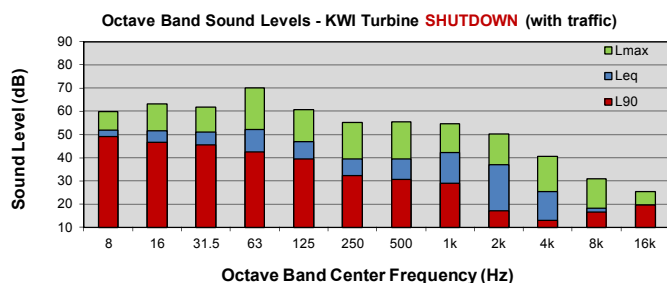
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:45 to 3:05 AM (100% included)						2:45 to 3:05 AM (49% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	51.4	63.6	67.3	70.3	3.8	Avg Lmax	45.5	58.3	65.2	67.7	3.6
L01	52.2	62.7	67.7	70.8	3.0	L01	46.5	58.2	65.1	67.9	3.0
Leq	45.9	57.2	63.5	65.8	1.4	Leq	43.2	56.0	63.0	65.2	1.6
L50	44.5	56.5	63.3	65.4	0.8	L50	42.7	55.8	62.8	65.0	1.5
L90	41.7	55.0	61.7	63.8	0.8	L90	41.4	54.7	61.4	63.5	0.9
Lmin	40.2	53.9	60.0	61.6	0.2	Lmin	40.2	53.9	60.0	61.6	0.3



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 230°	Average Power Level: 000 kW	Air Temperature: 31 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 235°	Average Power Level: 000 kW	Air Temperature: 31 °F

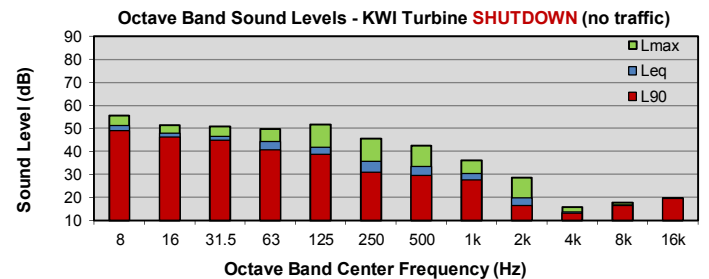
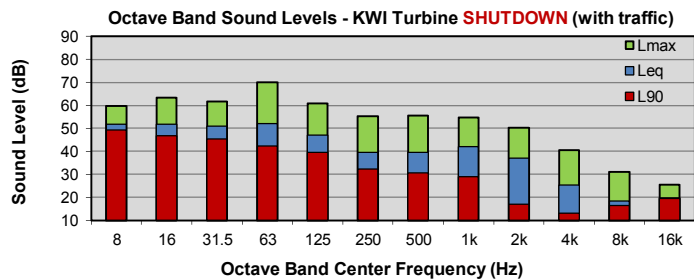
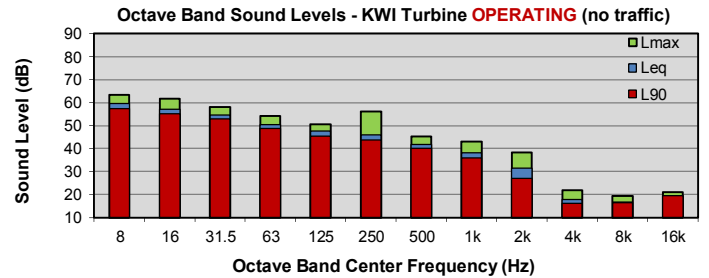
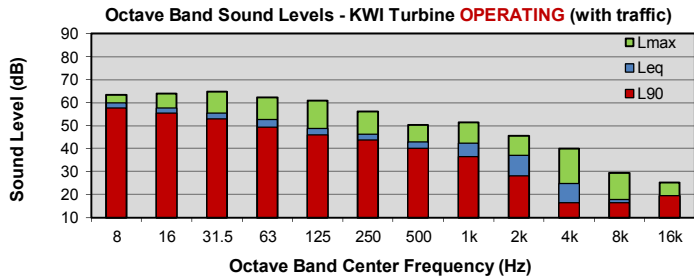
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (99% included)						2:20 to 2:40 AM (30% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.5	64.5	67.0	69.4	5.0	Avg Lmax	38.1	51.2	56.8	58.9	3.3
L01	54.4	64.2	66.6	69.6	3.7	L01	39.3	51.6	57.0	59.3	3.6
Leq	44.7	54.7	58.3	60.0	1.3	Leq	34.8	48.5	54.6	56.1	1.1
L50	39.4	50.4	55.8	56.9	1.1	L50	34.1	48.3	54.5	55.9	1.0
L90	33.0	47.4	53.7	55.1	0.6	L90	32.1	46.4	53.0	54.6	0.6
Lmin	31.1	45.3	51.8	53.2	0.2	Lmin	31.1	45.3	51.8	53.2	0.2



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-17: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd. on 3/22/2014 between 2:20 AM and 3:05 AM** with KWI Turbine **OPERATING** and **SHUTDOWN**

Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine <b>OPERATING</b> (wind turbine plus traffic) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)								Vertical: KWI Turbine <b>OPERATING</b> (wind turbine only) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine <b>SHUTDOWN</b> (with traffic)						SLOW Response A-levels		KWI Turbine <b>SHUTDOWN</b> (no traffic)					
KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	Lmax	L01	Leq	L50	L90	Lmin	KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	Lmax	L01	Leq	L50	L90	Lmin
	L01	-1.3	-2.2	7.5	12.8	19.2	21.1		L01	8.4	7.2	11.7	12.4	14.5	15.4
	Leq	-7.7	-8.5	1.2	6.4	12.8	14.8		Leq	5.2	3.9	8.4	9.1	11.2	12.1
	L50	-9.0	-9.9	-0.2	5.1	11.5	13.4		L50	4.6	3.4	7.9	8.6	10.6	11.6
	L90	-11.8	-12.7	-3.0	2.3	8.7	10.6		L90	3.3	2.0	6.5	7.2	9.3	10.3
	Lmin	-13.3	-14.2	-4.5	0.8	7.2	9.1		Lmin	2.1	0.9	5.4	6.1	8.1	9.1



Operating - Shutdown Differences: <b>Overall Comparison</b>								Octave Band Sound Level Comparison: <b>Pure-tone Check</b>							
Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)															
<b>SLOW Response A-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	-8.0	-8.9	0.8	6.1	12.5	14.4								
	L01	-7.0	-7.9	1.8	7.1	13.5	15.4								
	Leq	-10.3	-11.1	-1.4	3.8	10.2	12.1								
	L50	-10.8	-11.7	-2.0	3.3	9.7	11.6								
	L90	-12.2	-13.0	-3.3	1.9	8.3	10.3								
	Lmin	-13.3	-14.2	-4.5	0.8	7.2	9.1								
								Including traffic on Route 3:							
L90 Octave Band Check: KWI Turbine <b>OPERATING</b>				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine <b>SHUTDOWN</b>									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
								Excluding traffic on Route 3:							
Leq Octave Band Check: <b>KWI Turbine ONLY</b>				NO KWI PURE TONE		Leq Octave Band Check <b>Ambient (no traffic)</b>									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check <b>KWI Turbine ONLY</b>				NO KWI PURE TONE		L90 Octave Band Check <b>Ambient (no traffic)</b>									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-18: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/22/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.9	-0.6	8.9	13.1	16.2	18.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.3	0.8	9.0	11.6	13.6	15.6
	L01	-1.8	-1.5	8.0	12.3	15.3	17.4		L01	0.7	1.1	9.4	11.9	14.0	16.0
	Leq	-7.3	-7.0	2.5	6.8	9.8	11.9		Leq	-3.4	-3.0	5.2	7.8	9.9	11.8
	L50	-8.0	-7.7	1.8	6.1	9.1	11.2		L50	-3.7	-3.2	5.0	7.6	9.6	11.6
	L90	-9.5	-9.2	0.3	4.5	7.6	9.7		L90	-5.3	-4.9	3.4	5.9	8.0	10.0
	Lmin	-10.6	-10.3	-0.8	3.5	6.5	8.6		Lmin	-6.9	-6.5	1.7	4.3	6.4	8.3
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	7.1	6.7	9.8	10.0	11.8	12.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.4	8.2	10.6	10.7	12.2	13.4
	L01	7.0	6.6	9.7	9.9	11.8	12.8		L01	8.3	8.2	10.6	10.7	12.1	13.4
	Leq	4.8	4.4	7.5	7.7	9.6	10.7		Leq	6.2	6.0	8.4	8.5	9.9	11.2
	L50	4.7	4.3	7.4	7.6	9.4	10.5		L50	6.0	5.9	8.2	8.4	9.8	11.1
	L90	3.5	3.1	6.2	6.4	8.3	9.4		L90	4.6	4.5	6.9	7.0	8.4	9.7
	Lmin	2.7	2.3	5.4	5.6	7.5	8.6		Lmin	3.2	3.1	5.5	5.6	7.0	8.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.3	-6.0	3.6	7.8	10.9	12.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.8	-1.4	6.8	9.4	11.5	13.4
	L01	-6.4	-6.1	3.5	7.7	10.8	12.8		L01	-1.9	-1.4	6.8	9.4	11.4	13.4
	Leq	-8.5	-8.2	1.3	5.5	8.6	10.7		Leq	-4.0	-3.6	4.6	7.2	9.3	11.2
	L50	-8.7	-8.4	1.2	5.4	8.4	10.5		L50	-4.2	-3.7	4.5	7.1	9.1	11.1
	L90	-9.8	-9.5	0.0	4.3	7.3	9.4		L90	-5.5	-5.1	3.1	5.7	7.7	9.7
	Lmin	-10.6	-10.3	-0.8	3.5	6.5	8.6		Lmin	-6.9	-6.5	1.7	4.3	6.4	8.3

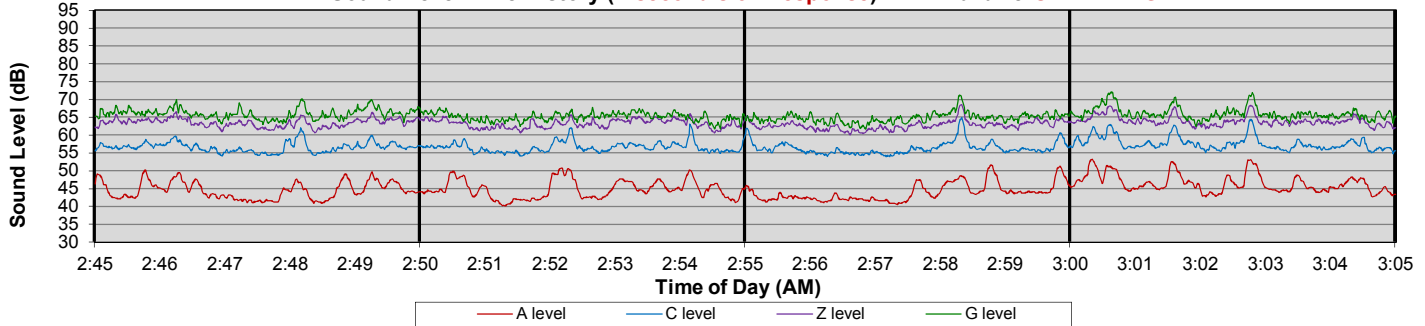
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-19: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/22/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.9	0.7	10.3	13.4	15.2	17.1	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.1	0.1	2.6	2.8	3.2	3.6
	L01	1.5	1.3	10.9	13.9	15.8	17.7		L01	-2.0	-0.8	1.7	1.9	2.3	2.8
	Leq	-3.6	-3.8	5.9	8.9	10.7	12.6		Leq	-3.5	-2.3	0.2	0.4	0.8	1.2
	L50	-4.0	-4.2	5.4	8.5	10.3	12.2		L50	-4.1	-2.9	-0.4	-0.3	0.2	0.6
	L90	-5.6	-5.8	3.8	6.9	8.7	10.6		L90	-4.2	-2.9	-0.5	-0.3	0.2	0.6
	Lmin	-7.8	-7.9	1.7	4.7	6.5	8.5		Lmin	-4.8	-3.5	-1.1	-0.9	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.8	8.3	11.5	11.8	13.1	14.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.3	0.0	2.5	2.6	3.0	3.4
	L01	9.0	8.6	11.8	12.0	13.3	14.7		L01	-0.3	-0.6	1.9	2.0	2.4	2.8
	Leq	6.3	5.9	9.1	9.3	10.6	12.0		Leq	-1.8	-2.1	0.5	0.6	1.0	1.3
	L50	6.1	5.7	8.9	9.1	10.4	11.8		L50	-1.8	-2.1	0.4	0.5	0.9	1.3
	L90	4.6	4.2	7.4	7.6	9.0	10.4		L90	-2.4	-2.7	-0.2	0.0	0.4	0.7
	Lmin	2.7	2.3	5.5	5.7	7.1	8.5		Lmin	-3.0	-3.3	-0.8	-0.7	-0.3	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.7	-1.9	7.7	10.8	12.6	14.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.4	-0.1	2.3	2.5	3.0	3.4
	L01	-1.5	-1.7	7.9	11.0	12.8	14.7		L01	-1.9	-0.7	1.8	1.9	2.4	2.8
	Leq	-4.2	-4.4	5.2	8.3	10.1	12.0		Leq	-3.4	-2.1	0.3	0.5	0.9	1.4
	L50	-4.4	-4.6	5.0	8.1	9.9	11.8		L50	-3.4	-2.2	0.3	0.4	0.9	1.3
	L90	-5.9	-6.0	3.6	6.6	8.4	10.4		L90	-4.0	-2.8	-0.3	-0.2	0.3	0.7
	Lmin	-7.8	-7.9	1.7	4.7	6.5	8.5		Lmin	-4.7	-3.4	-1.0	-0.8	-0.3	0.1

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-20: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/22/2014** from **2:45 to 3:05 AM** with KWI Turbine **OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>236°</b>	Avg Power Level: <b>539 kW</b>	Air Temperature: <b>31 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>7.1 m/s</b>	Wind Direction: <b>235°</b>	Avg Power Level: <b>600 kW</b>	Air Temperature: <b>31 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>236°</b>	Avg Power Level: <b>669 kW</b>	Air Temperature: <b>31 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**



**Event Log**

Traffic on Route 3 **throughout**

**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (100% included)						2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	50.1	62.1	66.5	70.1	3.4	Lmax	50.8	63.1	65.9	67.7	4.2	Lmax	51.7	64.9	68.6	71.2	3.7	Lmax	53.2	64.3	68.3	72.0	4.0
L01	49.6	60.9	66.1	69.7	2.6	L01	50.6	61.9	65.4	67.3	3.3	L01	51.2	63.7	67.4	70.2	2.8	L01	53.0	63.8	68.1	71.7	2.9
Leq	45.2	56.8	63.6	66.3	1.4	Leq	45.6	56.8	63.3	65.3	1.5	Leq	44.8	56.8	62.9	65.1	1.5	Leq	47.4	58.2	64.2	66.5	1.4
L50	44.1	56.5	63.5	66.0	1.3	L50	44.4	56.4	63.3	65.1	1.4	L50	43.4	55.9	62.6	64.6	1.4	L50	45.8	57.1	63.7	65.7	1.4
L90	41.5	54.9	61.9	64.2	0.8	L90	41.8	55.1	61.6	63.6	0.8	L90	41.5	54.7	61.2	63.3	0.8	L90	43.9	55.9	62.5	64.3	0.8
Lmin	41.0	54.2	60.7	62.9	0.3	Lmin	40.2	54.2	60.6	61.7	0.3	Lmin	40.5	53.9	60.0	61.6	0.3	Lmin	42.6	54.6	61.4	62.4	0.2

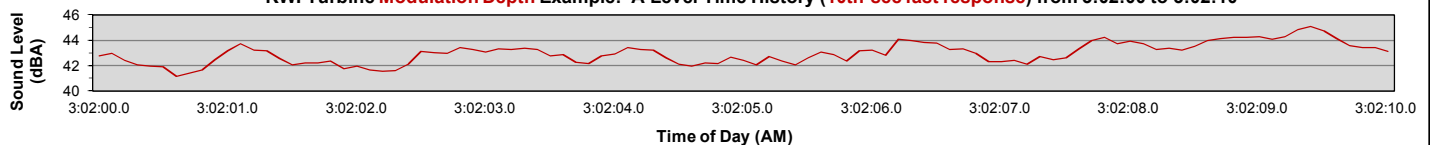
2:45 to 3:05 AM (100% included)						Octave Band Sound Levels (2:45 to 3:05 AM)												1/3-Octave Band Sound Levels (2:45 to 3:05 AM)											
Avg	A	C	Z	G	MD																								
Lmax	51.4	63.6	67.3	70.3	3.8																								
L01	52.2	62.7	67.7	70.8	3.0																								
Leq	45.9	57.2	63.5	65.8	1.4																								
L50	44.5	56.5	63.3	65.4	0.8																								
L90	41.7	55.0	61.7	63.8	0.8																								
Lmin	40.2	53.9	60.0	61.6	0.2																								

**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (44% included)						2:50 to 2:55 AM (44% included)						2:55 to 3:00 AM (67% included)						3:00 to 3:05 AM (40% included)					
7.5 m/s	A	C	Z	G	MD	7.2 m/s	A	C	Z	G	MD	7.1 m/s	A	C	Z	G	MD	7.2 m/s	A	C	Z	G	MD
Lmax	44.9	58.2	65.7	69.0	3.4	Lmax	45.2	58.1	65.4	67.7	4.2	Lmax	44.6	58.2	64.9	66.9	3.3	Lmax	47.3	58.5	64.7	67.1	3.5
L01	44.8	57.3	65.2	68.5	2.7	L01	44.9	58.0	65.3	67.6	3.5	L01	44.4	57.9	64.4	66.7	2.8	L01	47.0	58.4	64.6	67.0	2.8
Leq	42.6	55.8	63.1	65.8	1.5	Leq	42.9	56.0	63.3	65.5	1.7	Leq	42.6	55.6	62.4	64.5	1.5	Leq	44.8	56.7	63.3	65.2	1.6
L50	42.3	55.7	63.1	65.7	1.4	L50	42.5	55.8	63.1	65.2	1.6	L50	42.3	55.4	62.3	64.4	1.5	L50	44.8	56.6	63.3	65.2	1.5
L90	41.3	54.5	61.5	63.9	0.9	L90	41.3	54.9	61.7	64.0	1.0	L90	41.3	54.5	61.0	63.0	0.9	L90	43.2	55.7	62.3	64.1	0.9
Lmin	41.0	54.2	60.7	62.9	0.4	Lmin	40.2	54.2	60.6	62.4	0.5	Lmin	40.5	53.9	60.0	61.6	0.3	Lmin	42.6	55.0	61.4	62.4	0.5

2:45 to 3:05 AM (49% included)						Octave Band Sound Levels (2:45 to 3:05 AM)												1/3-Octave Band Sound Levels (2:45 to 3:05 AM)											
Avg	A	C	Z	G	MD																								
Lmax	45.5	58.3	65.2	67.7	3.6																								
L01	46.5	58.2	65.1	67.9	3.0																								
Leq	43.2	56.0	63.0	65.2	1.6																								
L50	42.7	55.8	62.8	65.0	1.5																								
L90	41.4	54.7	61.4	63.5	0.9																								
Lmin	40.2	53.9	60.0	61.6	0.3																								

**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:02:00 to 3:02:10**

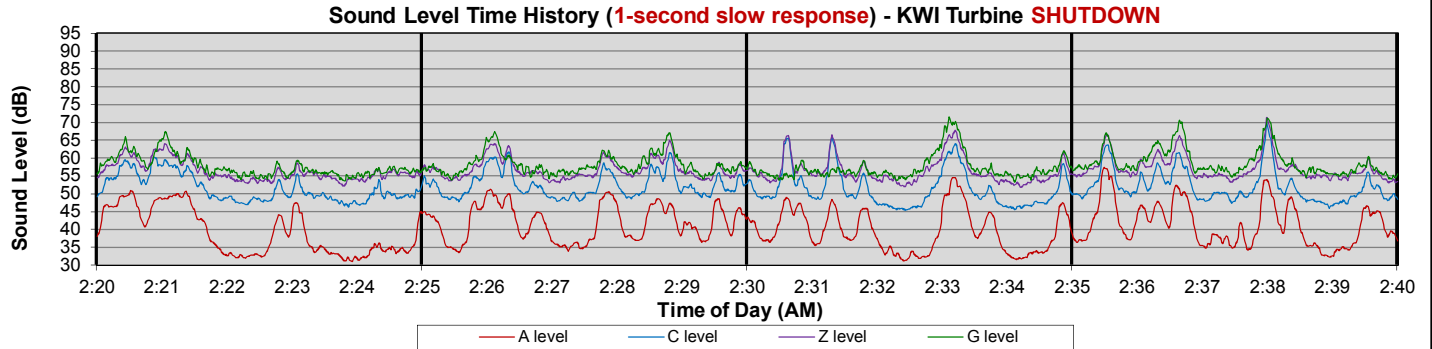




**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-21: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/22/2014** from **2:20 to 2:40 AM** with KWI Turbine **SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>7.7 m/s</b>	Wind Direction: <b>230°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>31 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>235°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>31 °F</b>



**Event Log**

Traffic on Route 3 **throughout**

HMMH consultant makes noise from **2:23:51 to 2:23:54 (EXCLUDE)**

HMMH consultant makes noise from **2:36:51 to 2:36:54 (EXCLUDE)**

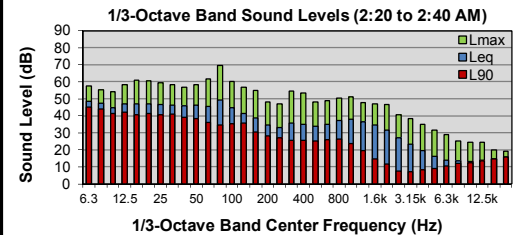
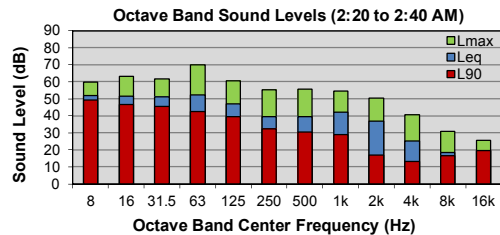
KWI auxiliary equipment noise from **2:39:54 to 2:40:00 (EXCLUDE)**

**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (99% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (97% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	50.9	60.3	64.0	67.4	4.4	Lmax	51.3	61.7	64.9	67.4	4.8	Lmax	54.5	66.1	67.8	71.6	4.7	Lmax	57.4	69.9	71.3	71.2	5.9
L01	50.5	59.6	63.2	66.0	3.6	L01	50.9	61.3	64.0	66.7	3.4	L01	54.5	65.4	66.7	70.0	3.3	L01	57.0	66.2	68.9	70.4	4.1
Leq	43.8	53.3	57.4	58.8	1.1	Leq	44.5	54.0	57.8	59.4	1.2	Leq	43.8	55.2	58.5	59.8	1.2	Leq	46.3	55.8	59.4	61.4	1.5
L50	36.3	49.9	55.6	56.7	1.0	L50	42.0	51.6	56.0	57.4	1.1	L50	38.1	49.4	55.2	56.1	1.1	L50	40.1	50.6	56.2	57.7	1.3
L90	32.4	47.6	53.6	54.8	0.6	L90	35.4	48.8	54.0	55.4	0.6	L90	32.4	46.3	53.1	54.7	0.6	L90	34.6	47.8	54.4	55.6	0.7
Lmin	31.1	46.6	52.1	53.7	0.2	Lmin	33.6	47.8	53.0	53.8	0.3	Lmin	31.2	45.3	51.8	53.2	0.2	Lmin	32.3	46.0	53.1	54.2	0.3

**2:20 to 2:40 AM (99% included)**

Avg	A	C	Z	G	MD
Lmax	53.5	64.5	67.0	69.4	5.0
L01	54.4	64.2	66.6	69.6	3.7
Leq	44.7	54.7	58.3	60.0	1.3
L50	39.4	50.4	55.8	56.9	1.1
L90	33.0	47.4	53.7	55.1	0.6
Lmin	31.1	45.3	51.8	53.2	0.2

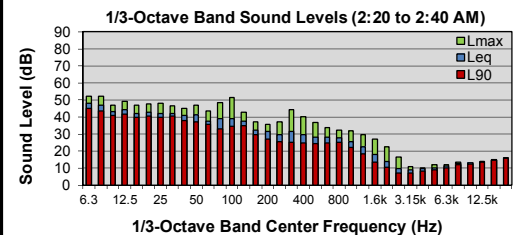
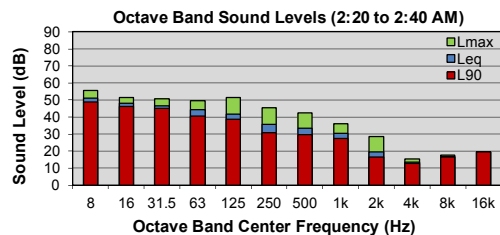


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

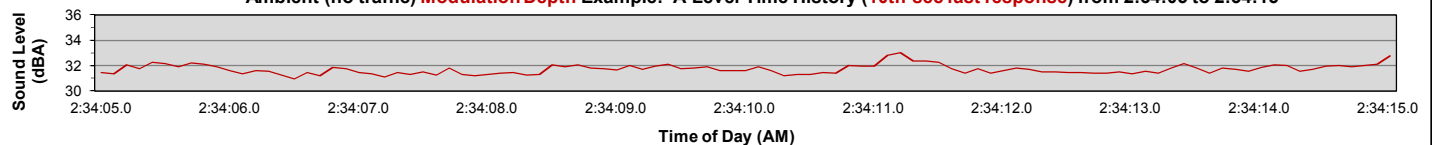
2:20 to 2:25 AM (42% included)						2:25 to 2:30 AM (17% included)						2:30 to 2:35 AM (29% included)						2:35 to 2:40 AM (33% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	36.2	54.0	57.1	57.8	4.2	Lmax	38.3	50.3	56.0	58.1	1.8	Lmax	35.8	49.5	57.7	60.1	2.9	Lmax	42.0	50.8	56.5	59.6	4.4
L01	36.1	52.9	56.9	57.6	3.6	L01	38.3	50.3	55.9	57.8	1.7	L01	35.4	49.1	57.6	59.8	2.2	L01	41.5	50.7	56.2	58.6	3.9
Leq	33.6	49.0	54.7	55.9	1.1	Leq	36.1	49.0	54.7	56.2	0.9	Leq	33.1	46.7	53.8	55.8	1.0	Leq	36.4	48.8	54.9	56.6	1.3
L50	33.2	48.7	54.4	55.9	1.0	L50	35.5	48.9	54.8	56.2	0.8	L50	32.9	46.5	53.4	55.3	0.9	L50	35.6	48.4	54.9	56.7	1.1
L90	32.0	47.2	53.2	54.5	0.6	L90	34.6	48.1	53.6	54.9	0.5	L90	31.7	45.8	52.3	54.3	0.6	L90	32.8	47.2	54.0	55.3	0.6
Lmin	31.1	46.6	52.1	53.7	0.2	Lmin	33.8	47.9	53.1	53.8	0.3	Lmin	31.2	45.3	51.8	53.2	0.4	Lmin	32.3	46.0	53.2	54.6	0.4

**2:20 to 2:40 AM (30% included)**

Avg	A	C	Z	G	MD
Lmax	38.1	51.2	56.8	58.9	3.3
L01	39.3	51.6	57.0	59.3	3.6
Leq	34.8	48.5	54.6	56.1	1.1
L50	34.1	48.3	54.5	55.9	1.0
L90	32.1	46.4	53.0	54.6	0.6
Lmin	31.1	45.3	51.8	53.2	0.2



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:34:05 to 2:34:15**



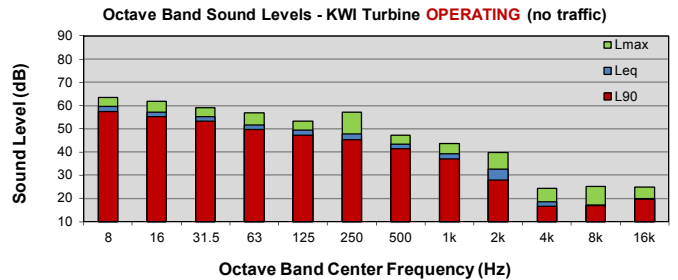
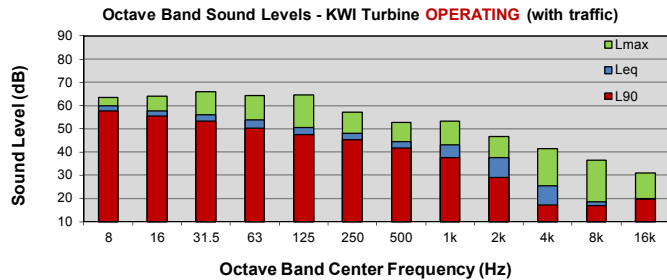
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-22: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 1: 13 Schofield Rd. on 3/22/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 236°	Average Power Level: 539 kW	Air Temperature: 31 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 235°	Average Power Level: 600 kW	Air Temperature: 31 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 236°	Average Power Level: 669 kW	Air Temperature: 31 °F

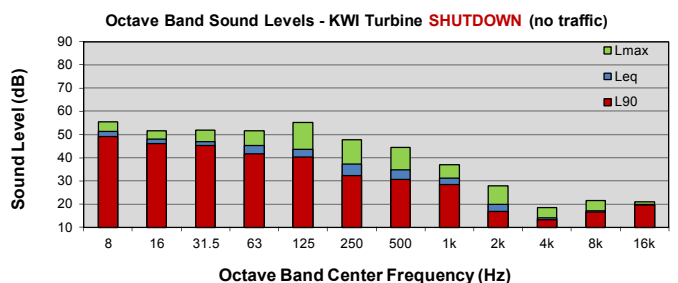
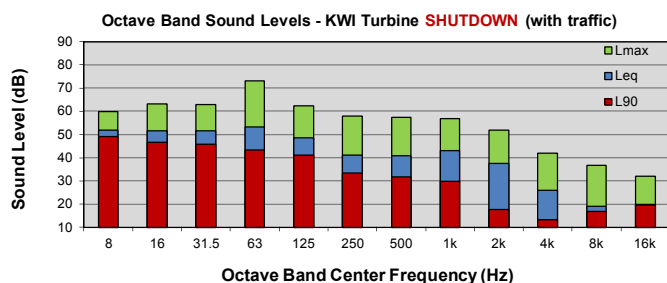
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:45 to 3:05 AM (100% included)						2:45 to 3:05 AM (49% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.4	66.1	68.3	70.3	3.8	Avg Lmax	46.4	60.7	65.4	67.7	3.6
L01	52.8	64.4	68.0	71.1	3.0	L01	47.3	60.1	65.3	68.0	3.0
Leq	46.4	58.5	63.9	65.9	1.4	Leq	43.9	57.4	63.2	65.3	1.6
L50	45.1	57.8	63.6	65.5	0.8	L50	43.3	57.2	63.1	65.0	1.5
L90	42.4	56.1	62.0	63.8	0.8	L90	42.0	55.8	61.7	63.6	0.9
Lmin	40.7	54.2	60.5	61.7	0.2	Lmin	40.7	54.2	60.5	61.7	0.3



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 230°	Average Power Level: 000 kW	Air Temperature: 31 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 235°	Average Power Level: 000 kW	Air Temperature: 31 °F

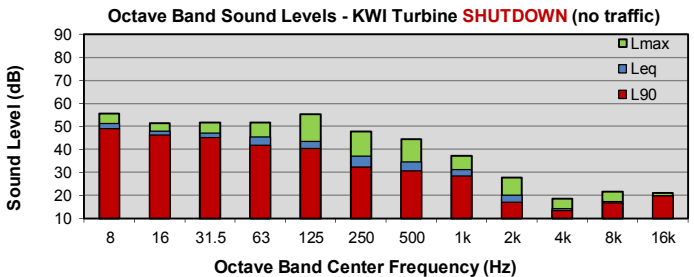
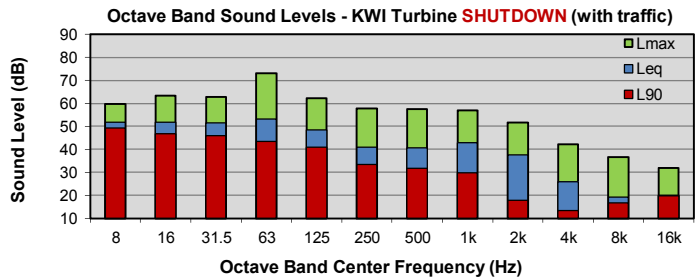
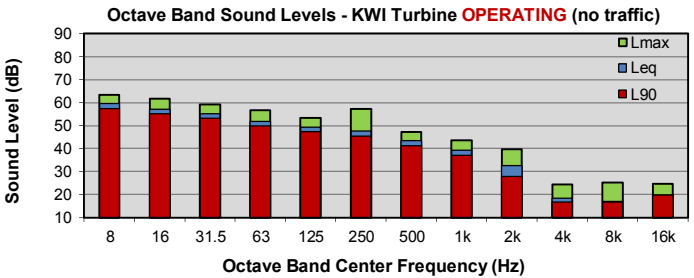
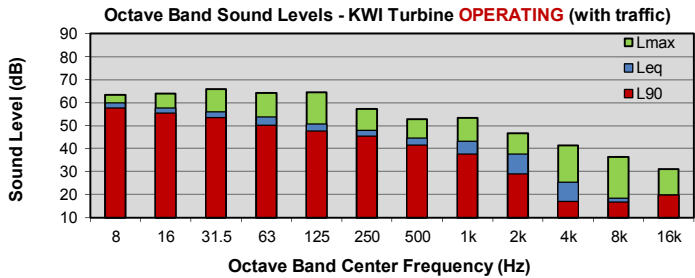
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (99% included)						2:20 to 2:40 AM (30% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	54.5	67.1	68.4	69.4	5.0	Avg Lmax	39.3	53.2	57.4	59.0	3.3
L01	54.9	65.8	67.4	69.5	3.7	L01	39.8	52.9	57.5	59.5	3.6
Leq	45.1	55.8	58.9	60.0	1.3	Leq	35.3	49.7	54.9	56.2	1.1
L50	39.7	51.5	56.1	57.0	1.1	L50	34.5	49.4	54.8	56.0	1.0
L90	33.4	48.6	54.0	55.1	0.6	L90	32.5	47.5	53.3	54.6	0.6
Lmin	31.3	45.8	52.0	53.2	0.2	Lmin	31.3	45.8	52.0	53.2	0.2



**HMMH Project # 305270.001**

**Measurement at Site 1: 13 Schofield Rd. on 3/22/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine <b>OPERATING</b> (wind turbine plus traffic) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)								Vertical: KWI Turbine <b>OPERATING</b> (wind turbine only) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)							
FAST Response A-levels		KWI Turbine <b>SHUTDOWN</b> (with traffic)						FAST Response A-levels		KWI Turbine <b>SHUTDOWN</b> (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	-2.1	-2.4	7.3	12.8	19.0	21.2	KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	7.1	6.6	11.1	11.9	13.9	15.2
	L01	-1.7	-2.1	7.6	13.1	19.3	21.5		L01	8.0	7.5	12.0	12.8	14.8	16.0
	Leq	-8.1	-8.5	1.3	6.7	13.0	15.1		Leq	4.7	4.1	8.7	9.4	11.4	12.7
	L50	-9.4	-9.8	0.0	5.4	11.7	13.9		L50	4.1	3.5	8.1	8.8	10.8	12.1
	L90	-12.1	-12.5	-2.7	2.7	9.0	11.1		L90	2.7	2.2	6.7	7.5	9.5	10.7
	Lmin	-13.8	-14.2	-4.4	1.0	7.3	9.5		Lmin	1.4	0.9	5.4	6.2	8.2	9.5



Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin							L90 Octave Band Check: KWI Turbine OPERATING	NO KWI PURE TONE
KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.1	-8.4	1.3	6.7	13.0	15.2	L90 Pure-tone?	NO	L90 Pure-tone?	NO				
	L01	-7.2	-7.6	2.2	7.6	13.9	16.0								
	Leq	-10.6	-10.9	-1.2	4.3	10.5	12.7	Excluding traffic on Route 3:							
	L50	-11.2	-11.5	-1.8	3.7	9.9	12.1								
	L90	-12.5	-12.9	-3.1	2.3	8.6	10.7								
	Lmin	-13.8	-14.2	-4.4	1.0	7.3	9.5								
								Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
								Leq Pure-tone?	NO		Leq Pure-tone?	NO			
								L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
								L90 Pure-tone?	NO		L90 Pure-tone?	NO			

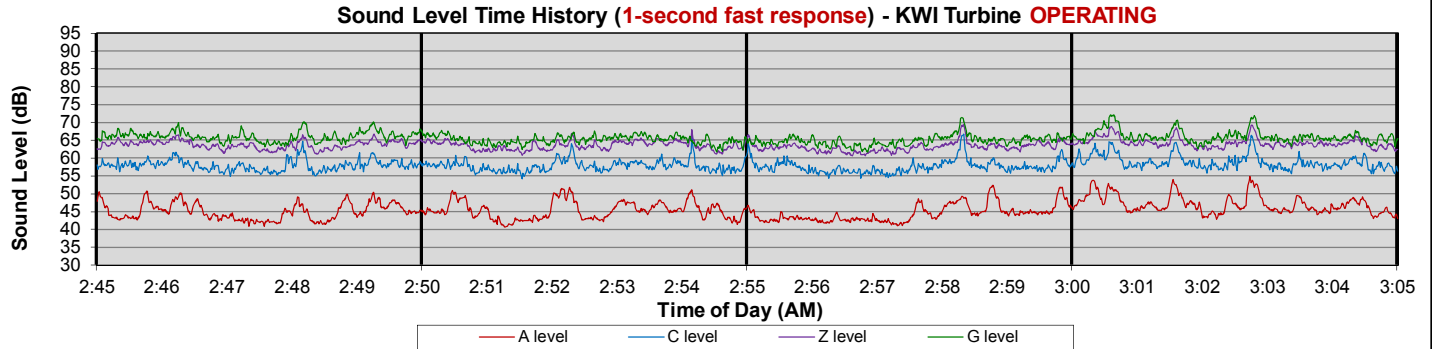
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-24: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/22/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.0	0.3	10.2	14.5	17.5	20.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.1	0.9	9.4	12.2	14.3	16.3
	L01	-2.7	-1.4	8.5	12.8	15.8	18.6		L01	-0.4	0.7	9.1	11.9	14.0	16.0
	Leq	-8.5	-7.3	2.7	7.0	9.9	12.8		Leq	-4.5	-3.5	5.0	7.8	9.9	11.9
	L50	-9.2	-8.0	2.0	6.3	9.3	12.1		L50	-4.8	-3.8	4.7	7.5	9.6	11.6
	L90	-11.0	-9.7	0.2	4.5	7.5	10.3		L90	-6.4	-5.3	3.1	5.9	8.0	10.0
	Lmin	-12.9	-11.6	-1.6	2.7	5.6	8.4		Lmin	-7.9	-6.8	1.7	4.4	6.5	8.5
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	7.5	7.8	11.0	11.3	13.3	15.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.0	7.9	10.5	10.6	12.1	13.4
	L01	6.9	7.2	10.4	10.7	12.7	14.4		L01	7.9	7.8	10.4	10.5	12.0	13.4
	Leq	4.1	4.4	7.7	7.9	9.9	11.6		Leq	5.8	5.7	8.3	8.4	9.9	11.2
	L50	4.0	4.3	7.6	7.8	9.8	11.5		L50	5.7	5.6	8.2	8.3	9.8	11.1
	L90	2.5	2.8	6.1	6.3	8.3	10.0		L90	4.3	4.2	6.8	6.9	8.4	9.7
	Lmin	1.0	1.3	4.5	4.8	6.7	8.4		Lmin	3.1	3.0	5.6	5.7	7.2	8.5
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.3	-5.1	4.9	9.2	12.2	15.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-3.0	-2.0	6.5	9.3	11.4	13.4
	L01	-6.9	-5.7	4.3	8.6	11.6	14.4		L01	-3.1	-2.0	6.5	9.2	11.3	13.4
	Leq	-9.7	-8.4	1.5	5.8	8.8	11.6		Leq	-5.2	-4.1	4.4	7.1	9.2	11.2
	L50	-9.8	-8.6	1.4	5.7	8.7	11.5		L50	-5.3	-4.2	4.2	7.0	9.1	11.1
	L90	-11.3	-10.0	-0.1	4.2	7.2	10.0		L90	-6.7	-5.6	2.8	5.6	7.7	9.7
	Lmin	-12.9	-11.6	-1.6	2.7	5.6	8.4		Lmin	-7.9	-6.8	1.7	4.4	6.5	8.5

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-25: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/22/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.9	0.8	10.3	13.3	15.2	17.1	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.1	0.1	2.6	2.8	3.2	3.6
	L01	1.7	1.6	11.1	14.1	15.9	17.9		L01	-2.0	-0.8	1.7	1.9	2.3	2.8
	Leq	-3.5	-3.6	5.9	8.9	10.7	12.7		Leq	-3.5	-2.3	0.2	0.4	0.8	1.2
	L50	-3.9	-4.0	5.5	8.5	10.3	12.3		L50	-4.1	-2.9	-0.4	-0.3	0.2	0.6
	L90	-5.6	-5.7	3.8	6.8	8.7	10.6		L90	-4.2	-2.9	-0.5	-0.3	0.2	0.6
	Lmin	-7.8	-7.9	1.6	4.7	6.5	8.5		Lmin	-4.8	-3.5	-1.1	-0.9	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.8	8.3	11.6	11.8	13.1	14.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.3	0.0	2.5	2.6	3.0	3.4
	L01	9.0	8.5	11.8	12.0	13.4	14.8		L01	-0.3	-0.6	1.9	2.0	2.4	2.8
	Leq	6.3	5.8	9.1	9.3	10.6	12.1		Leq	-1.8	-2.1	0.5	0.6	1.0	1.3
	L50	6.1	5.6	8.8	9.1	10.4	11.8		L50	-1.8	-2.1	0.4	0.5	0.9	1.3
	L90	4.6	4.1	7.4	7.6	9.0	10.4		L90	-2.4	-2.7	-0.2	0.0	0.4	0.7
	Lmin	2.7	2.2	5.5	5.7	7.0	8.5		Lmin	-3.0	-3.3	-0.8	-0.7	-0.3	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.7	-1.8	7.7	10.8	12.6	14.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.4	-0.1	2.3	2.5	3.0	3.4
	L01	-1.5	-1.6	7.9	11.0	12.8	14.8		L01	-1.9	-0.7	1.8	1.9	2.4	2.8
	Leq	-4.2	-4.3	5.2	8.3	10.1	12.1		Leq	-3.4	-2.1	0.3	0.5	0.9	1.4
	L50	-4.4	-4.5	5.0	8.1	9.9	11.8		L50	-3.4	-2.2	0.3	0.4	0.9	1.3
	L90	-5.9	-6.0	3.5	6.6	8.4	10.4		L90	-4.0	-2.8	-0.3	-0.2	0.3	0.7
	Lmin	-7.8	-7.9	1.6	4.7	6.5	8.5		Lmin	-4.7	-3.4	-1.0	-0.8	-0.3	0.1

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-26: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/22/2014** from **2:45 to 3:05 AM** with KWI Turbine **OPERATING**

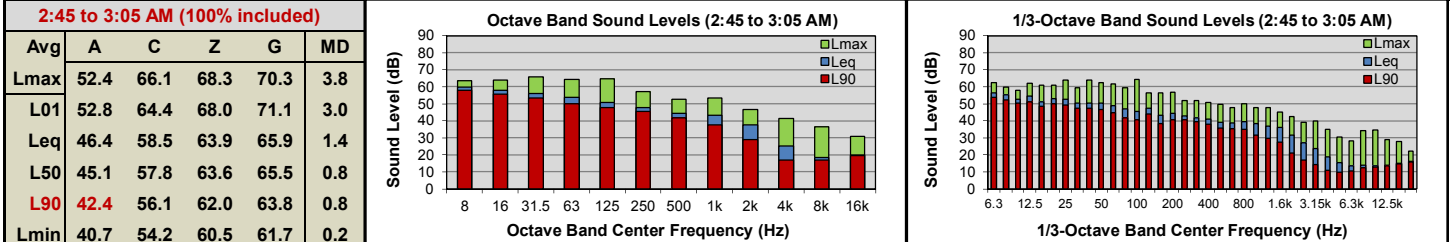
Site data		Supervisory Control and Data Acquisition (SCADA) data					
Distance from KWI: <b>740 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>236°</b>	Avg Power Level: <b>539 kW</b>	Air Temperature: <b>31 °F</b>		
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>7.1 m/s</b>	Wind Direction: <b>235°</b>	Avg Power Level: <b>600 kW</b>	Air Temperature: <b>31 °F</b>		
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>236°</b>	Avg Power Level: <b>669 kW</b>	Air Temperature: <b>31 °F</b>		



Event Log	
Traffic on Route 3 throughout	

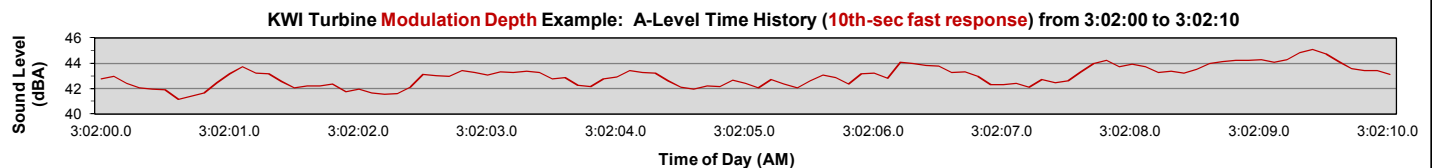
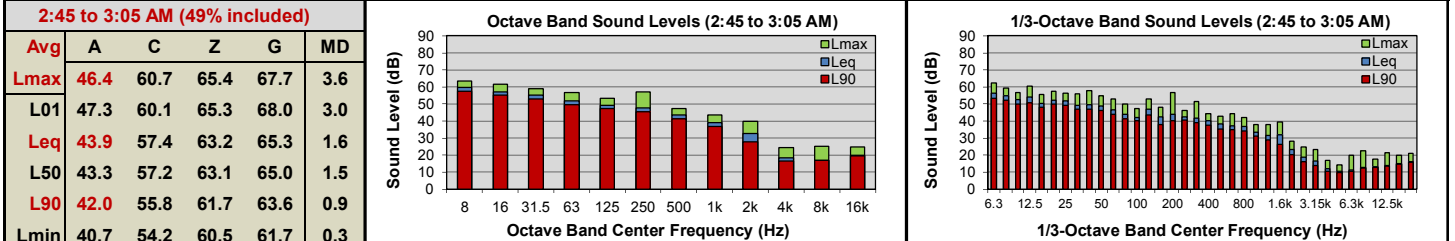
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (100% included)						2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	50.8	64.8	66.7	70.2	3.4	Lmax	51.8	66.6	67.9	67.7	4.2	Lmax	52.3	66.7	69.3	71.3	3.7	Lmax	54.8	66.3	69.2	72.1	4.0
L01	50.2	62.1	66.5	69.7	2.6	L01	51.1	62.8	65.9	67.4	3.3	L01	51.8	64.7	68.1	70.2	2.8	L01	53.7	64.5	68.6	71.8	2.9
Leq	45.7	58.3	63.9	66.3	1.4	Leq	46.1	58.1	63.7	65.3	1.5	Leq	45.3	58.1	63.3	65.1	1.5	Leq	47.9	59.4	64.6	66.6	1.4
L50	44.7	57.9	63.8	66.0	1.3	L50	45.0	57.6	63.5	65.1	1.4	L50	43.9	57.3	63.0	64.7	1.4	L50	46.4	58.4	64.0	65.7	1.4
L90	42.2	56.1	62.2	64.2	0.8	L90	42.5	56.0	62.0	63.6	0.8	L90	42.0	55.7	61.5	63.3	0.8	L90	44.4	56.9	62.8	64.4	0.8
Lmin	40.9	55.0	61.1	63.1	0.3	Lmin	40.7	54.2	60.8	61.7	0.3	Lmin	41.1	54.3	60.5	61.7	0.3	Lmin	42.9	55.5	61.8	62.6	0.2



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (44% included)						2:50 to 2:55 AM (44% included)						2:55 to 3:00 AM (67% included)						3:00 to 3:05 AM (40% included)					
7.5 m/s	A	C	Z	G	MD	7.2 m/s	A	C	Z	G	MD	7.1 m/s	A	C	Z	G	MD	7.2 m/s	A	C	Z	G	MD
Lmax	45.5	61.6	65.9	69.0	3.4	Lmax	46.0	60.1	65.6	67.7	4.2	Lmax	46.0	60.6	65.1	67.0	3.3	Lmax	48.1	60.6	65.0	67.3	3.5
L01	45.5	60.1	65.4	68.5	2.7	L01	45.8	59.7	65.5	67.6	3.5	L01	45.6	60.0	64.6	66.8	2.8	L01	47.8	60.1	64.8	67.2	2.8
Leq	43.3	57.4	63.4	65.9	1.5	Leq	43.7	57.4	63.5	65.5	1.7	Leq	43.3	57.0	62.7	64.6	1.5	Leq	45.5	57.9	63.6	65.3	1.6
L50	43.1	57.2	63.3	65.7	1.4	L50	43.2	57.3	63.3	65.2	1.6	L50	42.9	56.8	62.6	64.5	1.5	L50	45.4	57.8	63.6	65.3	1.5
L90	41.7	55.7	61.8	63.9	0.9	L90	41.7	55.9	62.1	64.0	1.0	L90	41.9	55.5	61.4	63.0	0.9	L90	43.8	56.7	62.6	64.2	0.9
Lmin	40.9	55.0	61.1	63.1	0.4	Lmin	40.7	54.2	60.8	62.4	0.5	Lmin	41.1	54.3	60.5	61.7	0.3	Lmin	42.9	55.6	61.9	62.6	0.5



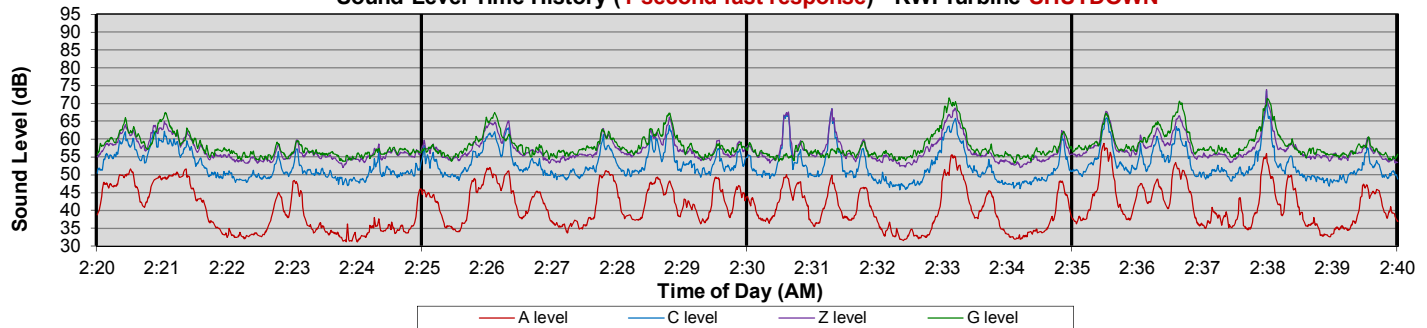


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-27: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/22/2014** from **2:20 to 2:40 AM** with KWI Turbine **SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>7.7 m/s</b>	Wind Direction: <b>230°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>31 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>235°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>31 °F</b>

**Sound Level Time History (1-second fast response) - KWI Turbine SHUTDOWN**



**Event Log**

Traffic on Route 3 **throughout**

HMMH consultant makes noise from **2:23:51 to 2:23:54 (EXCLUDE)**

HMMH consultant makes noise from **2:36:51 to 2:36:54 (EXCLUDE)**

KWI auxiliary equipment noise from **2:39:54 to 2:40:00 (EXCLUDE)**

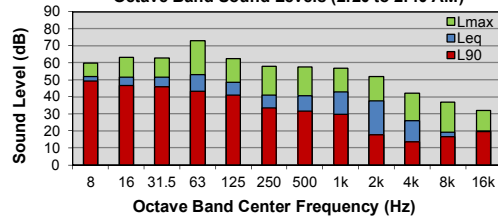
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (99% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (97% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	51.7	62.3	64.9	67.3	4.4	Lmax	52.0	63.8	66.2	67.4	4.8	Lmax	55.5	68.6	68.6	71.6	4.7	Lmax	58.7	73.5	73.9	71.4	5.9
L01	51.2	61.9	64.0	66.0	3.6	L01	51.5	62.8	64.8	66.7	3.4	L01	54.8	67.1	67.7	70.2	3.3	L01	57.5	66.5	68.8	70.3	4.1
Leq	44.2	54.4	57.9	58.9	1.1	Leq	44.9	55.2	58.4	59.5	1.2	Leq	44.2	56.4	59.0	59.9	1.2	Leq	46.7	56.9	59.9	61.4	1.5
L50	36.7	51.1	55.9	56.7	1.0	L50	42.0	52.5	56.5	57.5	1.1	L50	38.3	50.7	55.5	56.2	1.1	L50	40.2	51.7	56.5	57.7	1.3
L90	32.8	48.8	53.9	54.9	0.6	L90	35.7	49.8	54.4	55.4	0.6	L90	32.8	47.4	53.4	54.8	0.6	L90	35.1	49.0	54.6	55.7	0.7
Lmin	31.3	47.1	52.1	53.7	0.2	Lmin	33.7	48.5	53.3	53.8	0.3	Lmin	31.5	45.8	52.0	53.2	0.2	Lmin	32.6	46.8	53.4	54.2	0.3

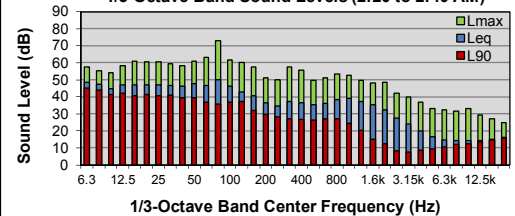
**2:20 to 2:40 AM (99% included)**

Avg	A	C	Z	G	MD
Lmax	54.5	67.1	68.4	69.4	5.0
L01	54.9	65.8	67.4	69.5	3.7
Leq	45.1	55.8	58.9	60.0	1.3
L50	39.7	51.5	56.1	57.0	1.1
L90	33.4	48.6	54.0	55.1	0.6
Lmin	31.3	45.8	52.0	53.2	0.2

**Octave Band Sound Levels (2:20 to 2:40 AM)**



**1/3-Octave Band Sound Levels (2:20 to 2:40 AM)**



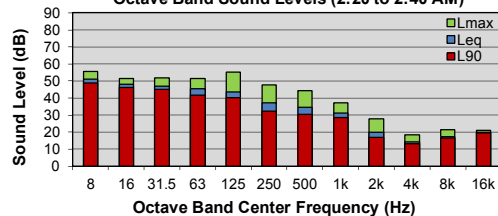
**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (42% included)						2:25 to 2:30 AM (17% included)						2:30 to 2:35 AM (29% included)						2:35 to 2:40 AM (33% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	38.0	56.6	58.6	57.8	4.2	Lmax	38.7	52.1	56.3	58.1	1.8	Lmax	36.7	51.6	57.9	60.2	2.9	Lmax	43.6	52.6	56.9	59.7	4.4
L01	37.4	54.2	57.4	57.7	3.6	L01	38.7	52.0	56.3	57.9	1.7	L01	35.9	51.6	57.8	60.0	2.2	L01	43.2	52.4	56.6	58.7	3.9
Leq	34.0	50.2	55.1	55.9	1.1	Leq	36.4	50.1	55.1	56.3	0.9	Leq	33.5	48.1	54.1	55.8	1.0	Leq	36.9	50.0	55.3	56.7	1.3
L50	33.7	49.7	54.8	55.9	1.0	L50	36.0	49.9	55.1	56.2	0.8	L50	33.1	47.6	53.7	55.4	0.9	L50	36.0	49.6	55.3	56.8	1.1
L90	32.3	48.3	53.5	54.5	0.6	L90	34.8	49.2	54.0	54.9	0.5	L90	32.1	46.8	52.6	54.3	0.6	L90	33.4	48.3	54.4	55.4	0.6
Lmin	31.3	47.1	52.1	53.7	0.2	Lmin	34.0	48.5	53.4	53.8	0.3	Lmin	31.5	45.8	52.0	53.2	0.4	Lmin	32.6	46.8	53.4	54.6	0.4

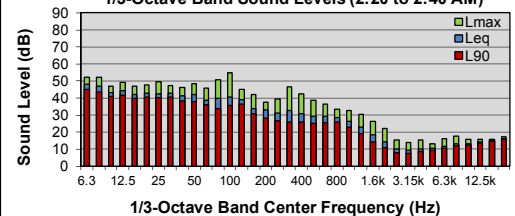
**2:20 to 2:40 AM (30% included)**

Avg	A	C	Z	G	MD
Lmax	39.3	53.2	57.4	59.0	3.3
L01	39.8	52.9	57.5	59.5	3.6
Leq	35.3	49.7	54.9	56.2	1.1
L50	34.5	49.4	54.8	56.0	1.0
L90	32.5	47.5	53.3	54.6	0.6
Lmin	31.3	45.8	52.0	53.2	0.2

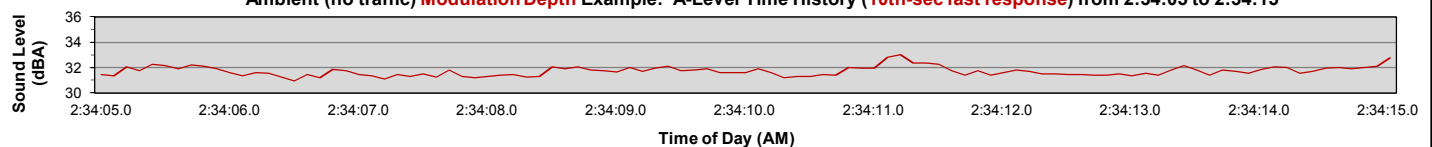
**Octave Band Sound Levels (2:20 to 2:40 AM)**



**1/3-Octave Band Sound Levels (2:20 to 2:40 AM)**



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:34:05 to 2:34:15**





**Detailed Acoustical Monitoring Data**  
**13 Schofield Road**  
**March 2, 2014**

Slow-response data: Pages D-29 to D-34

Fast-response data: Pages D-35 to D-40

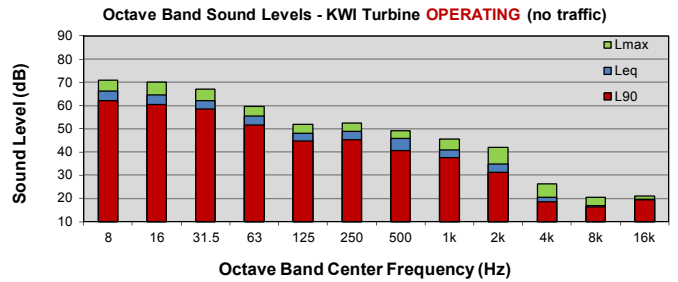
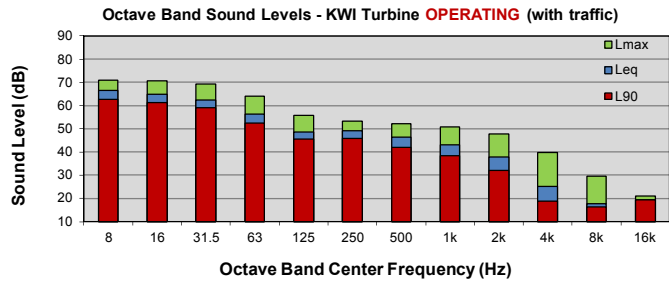
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-29: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 200°	Average Power Level: 949 kW	Air Temperature: 33 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 201°	Average Power Level: 1026 kW	Air Temperature: 33 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 205°	Average Power Level: 831 kW	Air Temperature: 33 °F

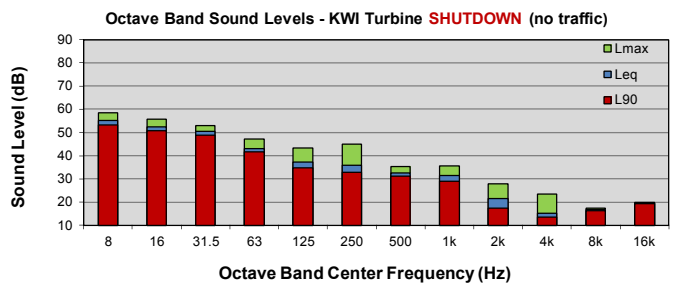
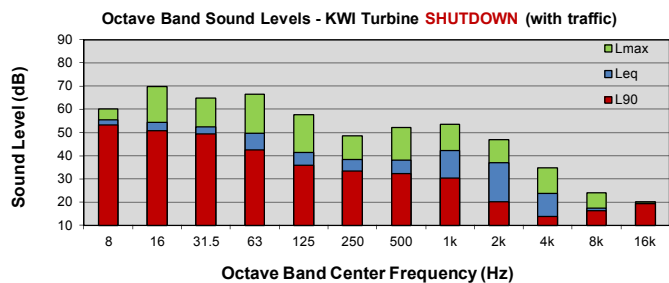
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:45 to 3:05 AM (100% included)						2:45 to 3:05 AM (65% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.8	66.5	73.3	77.2	5.7	Avg Lmax	49.2	64.9	72.8	76.7	5.7
L01	53.3	66.2	73.0	76.4	4.5	L01	49.1	64.9	72.7	76.3	4.9
Leq	47.6	62.4	69.9	72.9	2.0	Leq	46.3	62.1	69.7	72.7	2.2
L50	47.1	62.4	69.9	72.7	1.1	L50	46.4	62.1	69.7	72.6	2.1
L90	44.2	59.3	66.7	69.6	1.1	L90	42.7	58.7	65.8	68.8	1.2
Lmin	38.3	54.4	61.9	64.1	0.4	Lmin	38.3	54.4	61.9	64.1	0.5



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 197°	Average Power Level: 000 kW	Air Temperature: 33 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 8.7 m/s	Wind Direction: 199°	Average Power Level: 000 kW	Air Temperature: 33 °F

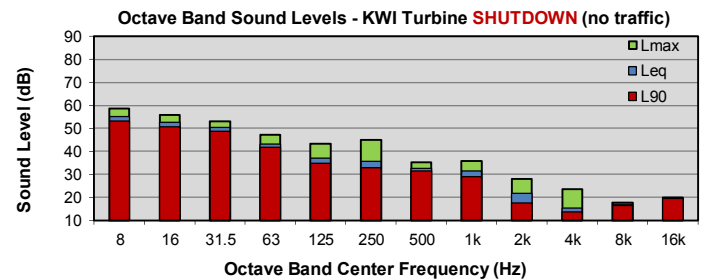
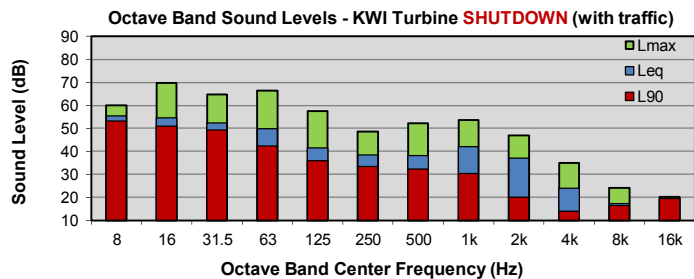
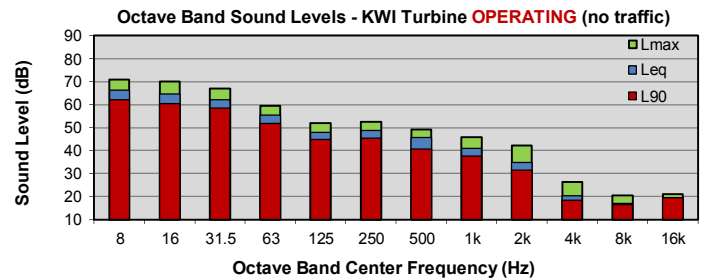
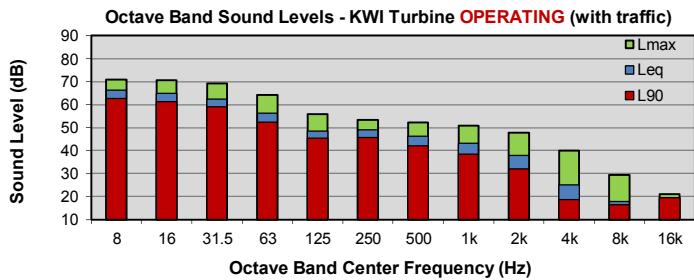
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (90% included)						2:20 to 2:40 AM (21% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	51.3	61.3	66.0	70.2	4.1	Avg Lmax	37.2	51.7	60.0	63.1	3.0
L01	52.1	63.4	66.7	71.4	3.2	L01	37.0	52.2	60.4	63.1	2.9
Leq	44.3	53.8	59.8	62.8	1.2	Leq	34.7	50.0	58.1	60.8	1.1
L50	41.4	51.3	58.7	61.2	1.1	L50	34.4	49.9	57.9	60.7	1.0
L90	34.1	49.3	57.0	59.3	0.6	L90	33.0	48.6	56.6	59.0	0.6
Lmin	32.3	47.4	55.3	56.8	0.3	Lmin	32.3	47.4	55.4	56.8	0.3



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-30: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine <b>OPERATING</b> (wind turbine plus traffic) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)								Vertical: KWI Turbine <b>OPERATING</b> (wind turbine only) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)							
<b>SLOW Response A-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>SLOW Response A-levels</b>		KWI Turbine <b>SHUTDOWN</b> (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	1.6	0.7	8.5	11.5	18.7	20.5	KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	11.9	12.2	14.4	14.7	16.1	16.8
	L01	2.0	1.2	9.0	11.9	19.2	21.0		L01	11.9	12.2	14.4	14.7	16.1	16.8
	Leq	-3.6	-4.5	3.3	6.3	13.5	15.3		Leq	9.1	9.4	11.6	11.9	13.3	14.0
	L50	-4.2	-5.0	2.8	5.7	12.9	14.7		L50	9.1	9.4	11.7	11.9	13.3	14.0
	L90	-7.1	-7.9	-0.1	2.8	10.1	11.9		L90	5.5	5.7	8.0	8.3	9.7	10.4
	Lmin	-13.0	-13.8	-6.0	-3.1	4.2	6.0		Lmin	1.1	1.3	3.6	3.9	5.3	6.0



Operating - Shutdown Differences: <b>Overall Comparison</b>								Octave Band Sound Level Comparison: <b>Pure-tone Check</b>					
Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)													
<b>SLOW Response A-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>Including traffic on Route 3:</b>					
		Avg Lmax	L01	Leq	L50	L90	Lmin						
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	-2.1	-2.9	4.8	7.8	15.0	16.8	L90 Pure-tone?	NO	L90 Pure-tone?	NO		
	L01	-2.1	-3.0	4.8	7.8	15.0	16.8	<b>Excluding traffic on Route 3:</b>					
	Leq	-4.9	-5.7	2.0	5.0	12.2	14.0					Leq Octave Band Check: <b>KWI Turbine ONLY</b>	NO KWI PURE TONE
	L50	-4.9	-5.7	2.1	5.0	12.2	14.0	L90 Pure-tone?	NO	L90 Pure-tone?	NO		
	L90	-8.6	-9.4	-1.6	1.4	8.6	10.4	L90 Octave Band Check <b>KWI Turbine ONLY</b>	NO KWI PURE TONE	L90 Octave Band Check <b>Ambient (no traffic)</b>			
	Lmin	-13.0	-13.8	-6.0	-3.1	4.2	6.0	L90 Pure-tone?		NO	L90 Pure-tone?	NO	

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-31: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	5.1	3.0	12.7	15.1	17.1	19.1	KWI Turbine OPERATING (with traffic)	Avg Lmax	7.2	6.5	13.5	14.5	16.2	18.0
	L01	4.9	2.8	12.4	14.9	16.9	18.8		L01	7.0	6.3	13.3	14.3	16.0	17.8
	Leq	1.1	-1.0	8.6	11.1	13.1	15.0		Leq	3.9	3.2	10.2	11.2	12.9	14.7
	L50	1.0	-1.1	8.6	11.0	13.0	15.0		L50	3.8	3.1	10.1	11.1	12.8	14.6
	L90	-2.0	-4.1	5.5	8.0	10.0	11.9		L90	0.6	-0.1	6.9	7.9	9.6	11.4
	Lmin	-7.0	-9.1	0.6	3.0	5.0	7.0		Lmin	-4.1	-4.9	2.1	3.2	4.9	6.6
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	13.2	12.7	14.9	14.9	16.3	17.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	12.7	12.4	14.6	14.9	16.2	17.3
	L01	13.1	12.7	14.9	14.9	16.2	17.5		L01	12.6	12.3	14.5	14.8	16.1	17.2
	Leq	10.4	9.9	12.1	12.1	13.5	14.7		Leq	9.7	9.3	11.6	11.9	13.1	14.3
	L50	10.4	9.9	12.1	12.2	13.5	14.7		L50	9.7	9.4	11.6	11.9	13.2	14.3
	L90	7.0	6.5	8.7	8.8	10.1	11.3		L90	5.8	5.4	7.7	8.0	9.2	10.4
	Lmin	2.7	2.2	4.4	4.5	5.8	7.0		Lmin	1.9	1.5	3.8	4.0	5.3	6.5
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	3.5	1.4	11.1	13.5	15.5	17.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	6.7	6.0	13.0	14.0	15.7	17.5
	L01	3.5	1.4	11.1	13.5	15.5	17.5		L01	6.6	5.9	12.9	13.9	15.6	17.4
	Leq	0.7	-1.4	8.3	10.7	12.7	14.7		Leq	3.7	3.0	10.0	11.0	12.7	14.5
	L50	0.7	-1.4	8.3	10.7	12.7	14.7		L50	3.7	3.0	10.0	11.0	12.7	14.5
	L90	-2.7	-4.7	4.9	7.4	9.4	11.3		L90	-0.2	-0.9	6.0	7.1	8.8	10.6
	Lmin	-7.0	-9.1	0.6	3.0	5.0	7.0		Lmin	-4.1	-4.9	2.1	3.2	4.9	6.6

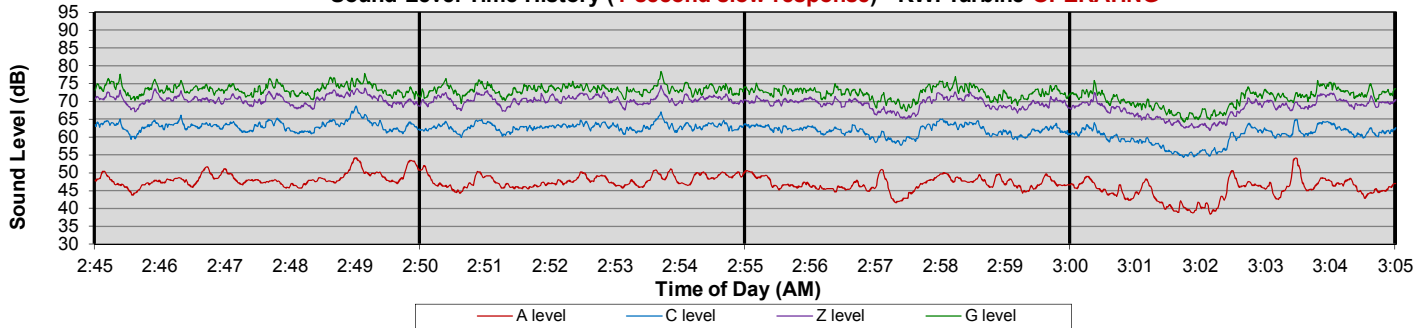
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-32: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	7.1	5.8	14.4	16.0	17.9	20.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.6	2.5	4.5	4.6	5.1	5.4
	L01	6.2	5.0	13.6	15.2	17.0	19.6		L01	0.4	1.3	3.3	3.4	3.9	4.2
	Leq	2.7	1.5	10.1	11.7	13.5	16.1		Leq	-2.1	-1.2	0.8	0.9	1.4	1.8
	L50	2.6	1.3	9.9	11.5	13.4	15.9		L50	-3.0	-2.1	-0.1	0.0	0.5	0.8
	L90	-0.6	-1.8	6.8	8.4	10.2	12.8		L90	-3.1	-2.1	-0.2	0.0	0.4	0.8
	Lmin	-6.0	-7.3	1.3	2.9	4.8	7.3		Lmin	-3.7	-2.8	-0.9	-0.7	-0.3	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	13.6	13.6	15.9	16.0	17.7	19.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.7	2.8	4.6	4.7	5.1	5.4
	L01	13.2	13.2	15.6	15.6	17.3	19.5		L01	1.8	2.0	3.7	3.8	4.2	4.6
	Leq	9.6	9.6	12.0	12.0	13.7	15.9		Leq	-0.8	-0.6	1.1	1.2	1.6	1.9
	L50	9.5	9.5	11.9	11.9	13.6	15.8		L50	-0.9	-0.8	1.0	1.1	1.5	1.8
	L90	5.7	5.7	8.1	8.1	9.8	12.0		L90	-1.8	-1.7	0.1	0.2	0.6	0.9
	Lmin	1.0	1.0	3.4	3.4	5.1	7.3		Lmin	-2.5	-2.4	-0.6	-0.5	-0.2	0.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	6.5	5.3	13.9	15.5	17.3	19.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	1.6	2.5	4.5	4.6	5.1	5.4
	L01	6.2	4.9	13.5	15.1	17.0	19.5		L01	0.7	1.7	3.6	3.8	4.2	4.6
	Leq	2.6	1.3	9.9	11.5	13.4	15.9		Leq	-1.9	-1.0	1.0	1.1	1.6	1.9
	L50	2.5	1.2	9.8	11.4	13.3	15.8		L50	-2.0	-1.1	0.9	1.0	1.5	1.8
	L90	-1.3	-2.6	6.0	7.6	9.5	12.0		L90	-2.9	-2.0	0.0	0.1	0.6	0.9
	Lmin	-6.0	-7.3	1.3	2.9	4.8	7.3		Lmin	-3.7	-2.7	-0.8	-0.6	-0.2	0.2

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-33: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/2/2014** from **2:45 to 3:05 AM** with KWI Turbine **OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>8.9 m/s</b>	Wind Direction: <b>200°</b>	Avg Power Level: <b>949 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-3 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>8.4 m/s</b>	Wind Direction: <b>201°</b>	Avg Power Level: <b>1026 kW</b>	Air Temperature: <b>33 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>7.7 m/s</b>	Wind Direction: <b>205°</b>	Avg Power Level: <b>831 kW</b>	Air Temperature: <b>33 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**



**Event Log**

Traffic on Route 3 **throughout**  
Loud wind chime from **2:54:30 to 2:54:31** (EXCLUDE)

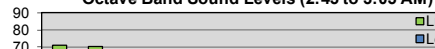
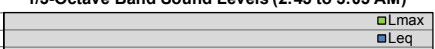
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (100% included)						2:50 to 2:55 AM (99% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.2	68.7	73.7	77.8	6.3	Lmax	52.1	67.1	74.3	78.3	5.1	Lmax	50.9	65.1	72.7	76.9	5.4	Lmax	54.2	64.9	72.4	75.9	6.0
L01	53.7	67.3	73.5	76.7	5.0	L01	51.0	65.8	73.0	76.4	4.2	L01	50.6	64.6	72.4	75.6	4.4	L01	53.4	64.4	72.3	75.3	4.5
Leq	48.8	63.4	70.7	73.7	2.0	Leq	48.1	63.0	70.6	73.5	2.0	Leq	47.2	62.1	69.6	72.6	2.0	Leq	46.0	60.7	68.4	71.2	2.0
L50	47.9	63.2	70.5	73.3	1.9	L50	47.4	62.9	70.5	73.4	1.9	L50	46.6	62.0	69.6	72.5	1.9	L50	45.4	60.7	68.4	71.2	1.9
L90	46.2	61.4	68.7	71.6	1.1	L90	46.0	61.6	69.1	71.8	1.1	L90	44.9	59.6	67.1	70.0	1.1	L90	40.1	55.8	63.6	66.3	1.1
Lmin	43.8	59.3	67.1	70.4	0.4	Lmin	44.3	59.9	67.2	69.5	0.4	Lmin	41.6	57.7	65.0	67.3	0.4	Lmin	38.3	54.4	61.9	64.1	0.5

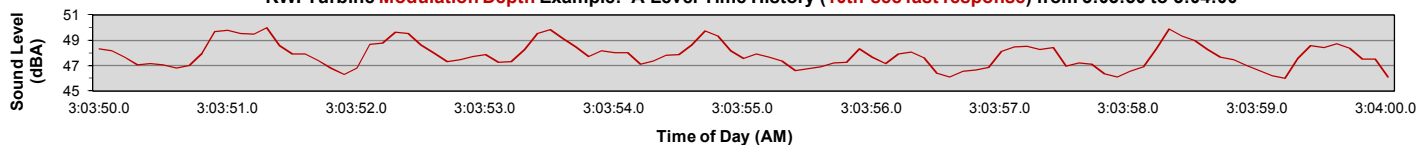
2:45 to 3:05 AM (100% included)						Octave Band Sound Levels (2:45 to 3:05 AM)												1/3-Octave Band Sound Levels (2:45 to 3:05 AM)											
Avg	A	C	Z	G	MD																								
Lmax	52.8	66.5	73.3	77.2	5.7																								
L01	53.3	66.2	73.0	76.4	4.5																								
Leq	47.6	62.4	69.9	72.9	2.0																								
L50	47.1	62.4	69.9	72.7	1.1																								
L90	44.2	59.3	66.7	69.6	1.1																								
Lmin	38.3	54.4	61.9	64.1	0.4																								

**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (65% included)						2:50 to 2:55 AM (48% included)						2:55 to 3:00 AM (70% included)						3:00 to 3:05 AM (76% included)					
8.8 m/s	A	C	Z	G	MD	8.6 m/s	A	C	Z	G	MD	8.5 m/s	A	C	Z	G	MD	7.8 m/s	A	C	Z	G	MD
Lmax	49.9	66.2	73.5	77.6	6.3	Lmax	48.6	64.4	72.5	76.4	5.1	Lmax	49.6	64.5	72.7	76.9	5.4	Lmax	48.6	64.4	72.4	75.9	6.0
L01	49.6	65.1	73.1	76.5	5.3	L01	48.3	64.1	72.4	75.8	4.1	L01	49.4	64.4	72.5	75.1	4.7	L01	48.5	64.2	72.3	75.3	4.8
Leq	47.4	63.1	70.6	73.6	2.3	Leq	46.6	62.6	70.3	73.4	2.2	Leq	46.5	62.0	69.7	72.7	2.2	Leq	44.7	60.4	68.4	71.2	2.1
L50	47.5	63.0	70.4	73.1	2.2	L50	46.5	62.8	70.3	73.3	2.1	L50	46.3	62.0	69.8	72.6	2.2	L50	44.6	60.5	68.4	71.2	2.0
L90	45.9	61.4	68.6	71.6	1.3	L90	45.6	61.3	68.3	71.6	1.2	L90	44.4	59.6	66.8	69.9	1.2	L90	39.9	55.5	63.3	66.1	1.1
Lmin	43.8	59.3	67.1	70.4	0.6	Lmin	44.3	59.9	67.2	69.5	0.5	Lmin	41.6	57.7	65.0	67.3	0.5	Lmin	38.3	54.4	61.9	64.1	0.5

2:45 to 3:05 AM (65% included)									
Avg	A	C	Z	G	MD				
Lmax	49.2	64.9	72.8	76.7	5.7				
L01	49.1	64.9	72.7	76.3	4.9				
Leq	46.3	62.1	69.7	72.7	2.2				
L50	46.4	62.1	69.7	72.6	2.1				
L90	42.7	58.7	65.8	68.8	1.2				
Lmin	38.3	54.4	61.9	64.1	0.5				

**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:03:50 to 3:04:00**

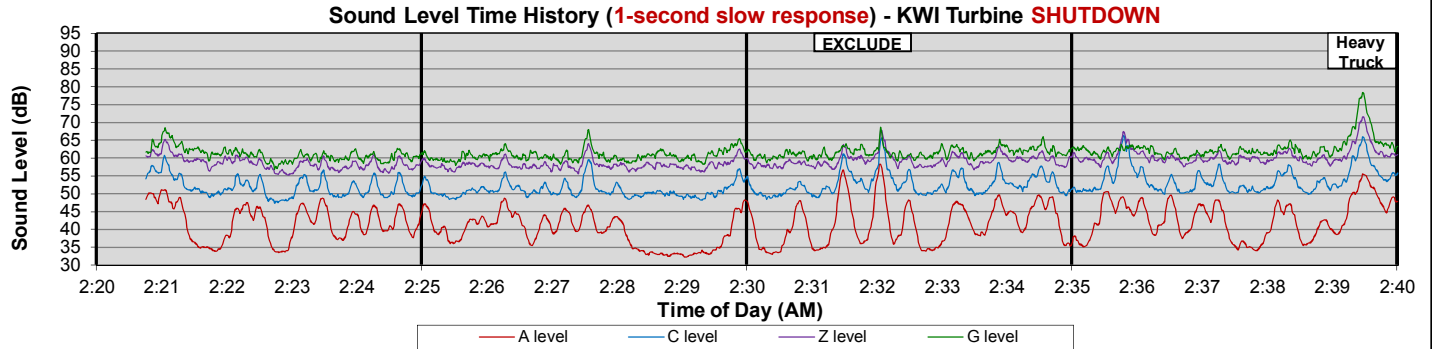


Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-34: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown

HMMH Project # 305270.001

Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 740 ft	Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 197°	Avg Power Level: 000 kW	Air Temperature: 33 °F
Wind Speed Range: 0-3 m/s	Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 8.7 m/s	Wind Direction: 199°	Avg Power Level: 000 kW	Air Temperature: 33 °F

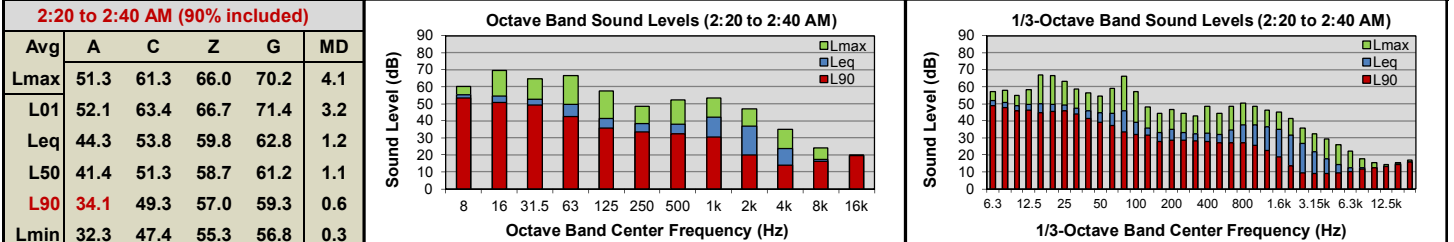


Event Log

Monitoring initiated at 2:20:45  
Traffic on Route 3 throughout  
Local vehicle from 2:31:13 to 2:32:17 (EXCLUDE)  
Loud wind chime from 2:34:58 to 2:35:08 (EXCLUDE)

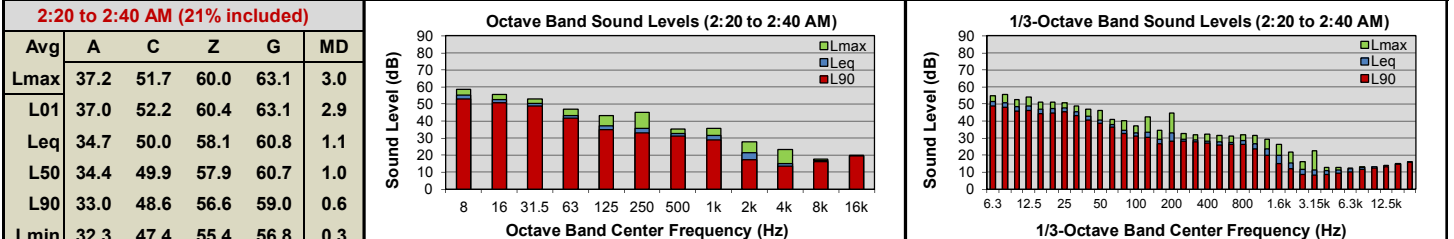
Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN

2:20 to 2:25 AM (85% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (78% included)						2:35 to 2:40 AM (97% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	51.2	60.8	65.3	68.5	3.9	Lmax	48.7	59.6	64.0	67.9	3.6	Lmax	49.7	58.8	63.4	65.9	4.1	Lmax	55.5	66.3	71.5	78.4	4.9
L01	51.1	59.4	64.3	67.4	3.1	L01	48.2	58.4	62.5	65.5	2.8	L01	49.5	58.1	62.4	64.9	3.5	L01	55.0	65.8	70.4	76.8	3.3
Leq	44.4	52.8	59.0	61.6	1.3	Leq	41.7	51.6	58.2	61.0	1.2	Leq	43.7	52.8	59.2	61.6	1.3	Leq	46.2	56.2	61.7	65.2	1.3
L50	42.3	51.1	58.4	61.0	1.2	L50	39.7	50.4	57.8	60.5	1.1	L50	40.4	51.5	58.8	61.3	1.1	L50	43.3	53.0	60.0	62.1	1.1
L90	34.7	48.9	56.3	58.8	0.6	L90	33.1	49.0	56.8	59.1	0.6	L90	34.2	49.6	57.4	59.8	0.6	L90	35.8	50.5	58.6	60.5	0.6
Lmin	33.6	47.4	55.3	56.8	0.3	Lmin	32.3	48.2	55.6	58.0	0.3	Lmin	33.1	48.5	56.7	58.6	0.3	Lmin	34.0	49.8	57.4	59.2	0.3

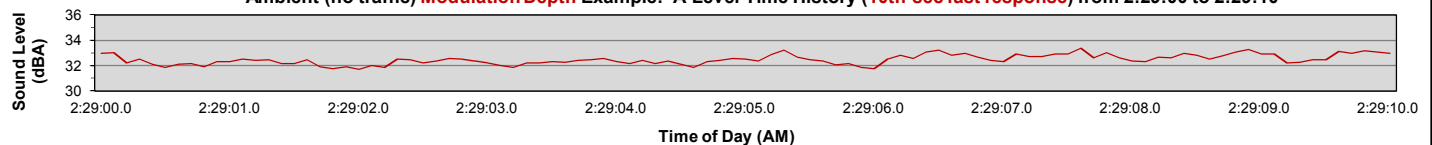


Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN

2:20 to 2:25 AM (14% included)						2:25 to 2:30 AM (33% included)						2:30 to 2:35 AM (21% included)						2:35 to 2:40 AM (16% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	37.0	51.9	59.9	63.2	3.1	Lmax	37.7	51.0	59.1	62.6	2.9	Lmax	36.8	51.5	60.4	63.0	3.9	Lmax	37.4	52.4	60.8	63.5	2.2
L01	36.9	51.7	59.9	63.0	3.1	L01	36.9	51.0	58.9	62.3	2.5	L01	36.6	51.5	59.7	62.7	3.2	L01	37.1	52.3	60.7	63.4	2.0
Leq	34.8	49.8	58.1	60.8	1.2	Leq	34.2	49.6	57.5	60.3	1.1	Leq	34.6	49.9	58.0	60.7	1.1	Leq	35.6	50.9	59.5	61.6	1.1
L50	34.6	49.9	58.0	61.1	1.1	L50	33.4	49.4	57.4	60.3	1.0	L50	34.4	49.7	57.8	60.6	1.0	L50	35.5	50.7	59.5	61.5	1.0
L90	33.7	47.9	55.7	58.0	0.6	L90	32.8	48.6	56.4	58.9	0.6	L90	33.5	49.0	57.3	59.8	0.7	L90	34.4	50.2	58.3	60.2	0.6
Lmin	33.6	47.4	55.4	56.8	0.4	Lmin	32.3	48.2	56.1	58.0	0.4	Lmin	33.1	48.5	57.0	58.6	0.4	Lmin	34.0	49.9	57.7	59.8	0.3



Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:29:00 to 2:29:10





**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-35: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 200°	Average Power Level: 949 kW	Air Temperature: 33 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 201°	Average Power Level: 1026 kW	Air Temperature: 33 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 205°	Average Power Level: 831 kW	Air Temperature: 33 °F

**20-minute Acoustical Metrics (including traffic on Route 3)**

**20-minute Acoustical Metrics (excluding traffic on Route 3)**

**KWI Turbine OPERATING (wind turbine plus traffic)**

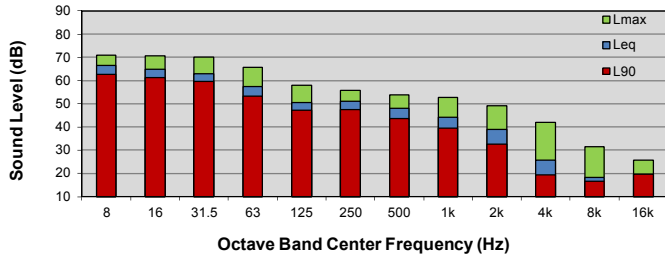
**KWI Turbine OPERATING (wind turbine only)**

**2:45 to 3:05 AM (100% included)**

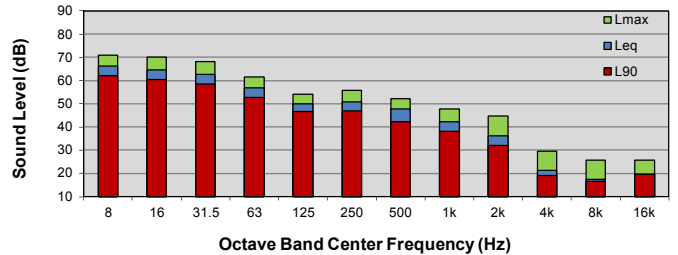
**2:45 to 3:05 AM (65% included)**

FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.8	69.5	73.5	77.3	5.7	Avg Lmax	50.8	68.5	72.9	76.8	5.7
L01	53.6	68.4	73.3	76.4	4.5	L01	50.5	67.8	72.9	76.4	4.9
Leq	48.5	64.4	70.2	72.9	2.0	Leq	47.4	64.1	69.9	72.8	2.2
L50	48.1	64.1	70.1	72.8	1.1	L50	47.3	63.9	70.0	72.7	2.1
L90	44.7	60.6	66.9	69.7	1.1	L90	43.4	59.9	66.1	69.0	1.2
Lmin	38.0	55.5	62.2	64.2	0.4	Lmin	38.0	55.5	62.2	64.2	0.5

**Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)**



**Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)**



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 197°	Average Power Level: 000 kW	Air Temperature: 33 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 8.7 m/s	Wind Direction: 199°	Average Power Level: 000 kW	Air Temperature: 33 °F

**20-minute Acoustical Metrics (including traffic on Route 3)**

**20-minute Acoustical Metrics (excluding traffic on Route 3)**

**KWI Turbine SHUTDOWN (ambient - with traffic)**

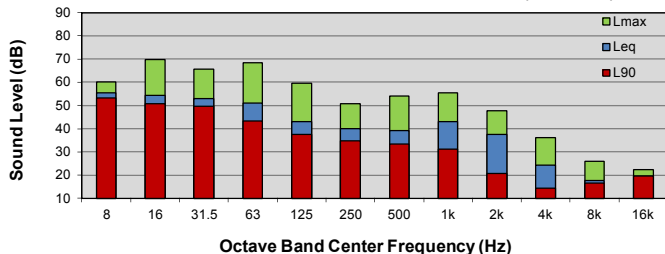
**KWI Turbine SHUTDOWN (ambient - no traffic)**

**2:20 to 2:40 AM (90% included)**

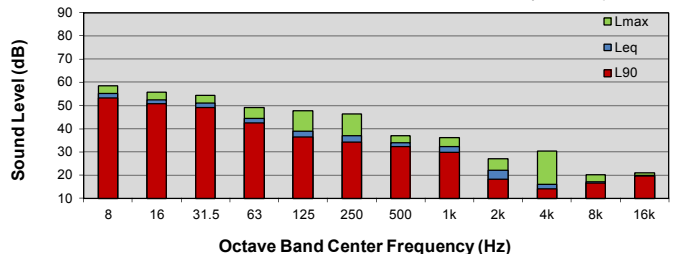
**2:20 to 2:40 AM (21% included)**

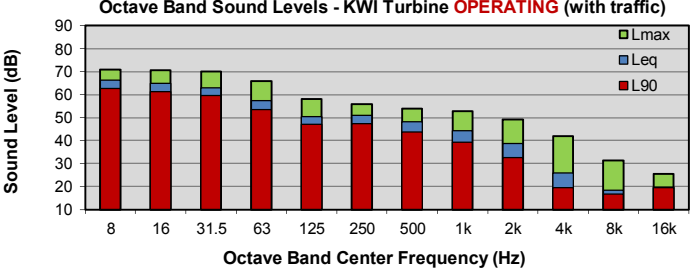
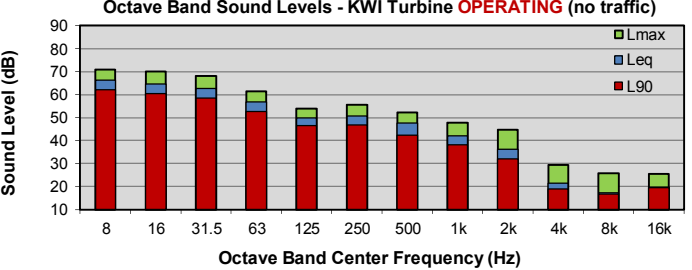
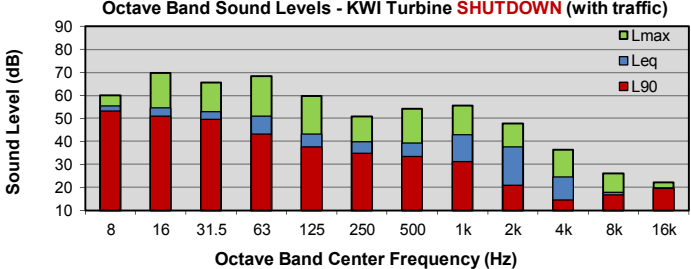
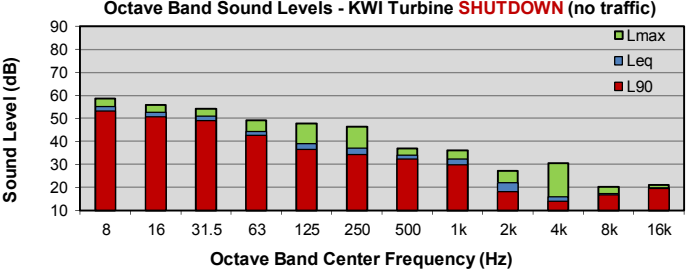
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.3	63.9	66.7	70.2	4.1	Avg Lmax	37.7	55.2	60.2	63.1	3.0
L01	52.3	65.0	67.5	71.4	3.2	L01	37.5	54.7	60.6	63.1	2.9
Leq	44.7	55.2	60.1	62.9	1.2	Leq	35.1	51.7	58.3	60.8	1.1
L50	41.6	52.9	58.9	61.3	1.1	L50	34.9	51.5	58.0	60.7	1.0
L90	34.7	50.6	57.2	59.4	0.6	L90	33.5	50.1	56.8	59.1	0.6
Lmin	32.7	48.2	55.4	57.0	0.3	Lmin	32.7	48.8	55.7	57.0	0.3

**Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)**



**Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)**



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-36: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.4	1.4	9.0	12.2	19.1	21.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	13.2	13.3	15.7	15.9	17.3	18.2
	L01	1.3	1.3	8.9	12.1	19.0	21.0		L01	12.8	12.9	15.3	15.5	16.9	17.8
	Leq	-3.9	-3.9	3.8	6.9	13.8	15.8		Leq	9.7	9.8	12.2	12.4	13.9	14.7
	L50	-4.3	-4.3	3.3	6.5	13.4	15.4		L50	9.6	9.8	12.1	12.3	13.8	14.6
	L90	-7.7	-7.7	0.0	3.1	10.0	12.0		L90	5.7	5.8	8.2	8.4	9.8	10.7
	Lmin	-14.3	-14.3	-6.7	-3.6	3.4	5.3		Lmin	0.3	0.5	2.9	3.1	4.5	5.3
															
															
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						<b>Including traffic on Route 3:</b>							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.5	-1.5	6.1	9.3	16.2	18.2	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-1.9	-1.9	5.7	8.9	15.8	17.8	<b>Excluding traffic on Route 3:</b>							
	Leq	-5.0	-5.0	2.7	5.8	12.7	14.7	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L50	-5.1	-5.1	2.6	5.7	12.6	14.6	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L90	-9.0	-9.0	-1.4	1.8	8.7	10.7	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
	Lmin	-14.3	-14.3	-6.7	-3.6	3.4	5.3	L90 Pure-tone?	NO		L90 Pure-tone?	NO			

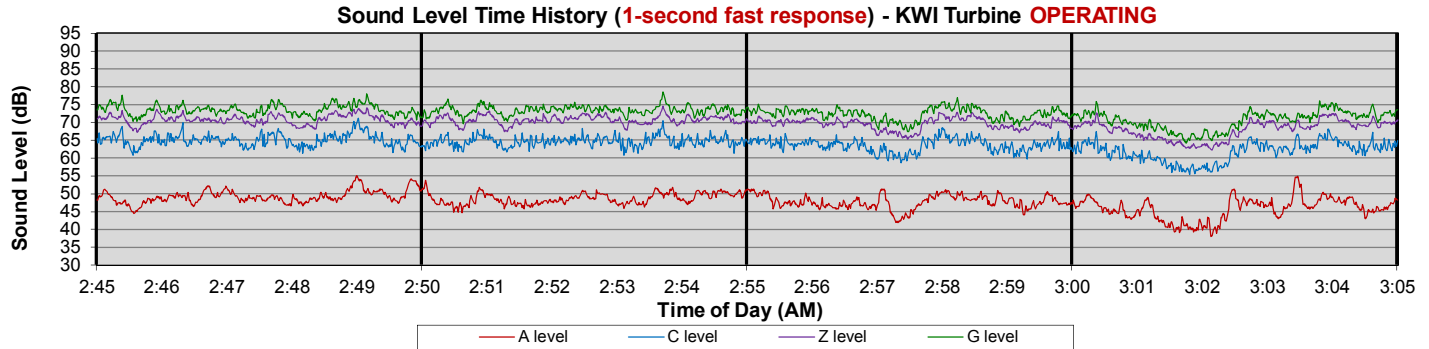
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-37: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	5.6	4.6	14.3	16.7	18.9	21.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	6.9	6.0	13.5	14.6	16.3	18.1
	L01	4.5	3.5	13.2	15.6	17.8	20.2		L01	6.6	5.8	13.2	14.4	16.0	17.8
	Leq	0.5	-0.6	9.2	11.5	13.8	16.2		Leq	3.5	2.7	10.1	11.2	12.9	14.7
	L50	0.1	-0.9	8.8	11.2	13.4	15.9		L50	3.4	2.6	10.0	11.2	12.9	14.7
	L90	-3.3	-4.4	5.4	7.8	10.0	12.4		L90	0.2	-0.6	6.8	8.0	9.7	11.4
	Lmin	-8.4	-9.5	0.3	2.6	4.9	7.3		Lmin	-4.5	-5.3	2.1	3.3	5.0	6.7
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	13.2	13.7	16.7	17.0	18.4	19.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	12.7	12.4	14.6	14.9	16.2	17.3
	L01	12.5	13.1	16.0	16.3	17.7	19.0		L01	12.7	12.3	14.6	14.8	16.1	17.2
	Leq	8.8	9.3	12.3	12.6	14.0	15.3		Leq	9.7	9.4	11.6	11.9	13.2	14.3
	L50	8.6	9.2	12.1	12.4	13.8	15.1		L50	9.8	9.4	11.7	11.9	13.2	14.3
	L90	4.6	5.2	8.1	8.4	9.8	11.1		L90	5.9	5.5	7.8	8.0	9.3	10.4
	Lmin	0.2	0.8	3.7	4.0	5.4	6.7		Lmin	2.0	1.6	3.9	4.2	5.4	6.5
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	4.6	3.5	13.3	15.6	17.9	20.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	6.3	5.5	12.9	14.0	15.7	17.5
	L01	3.9	2.8	12.6	14.9	17.2	19.6		L01	6.2	5.4	12.8	14.0	15.7	17.4
	Leq	0.2	-0.9	8.9	11.2	13.4	15.9		Leq	3.3	2.5	9.9	11.0	12.7	14.5
	L50	0.0	-1.1	8.7	11.0	13.3	15.7		L50	3.3	2.5	9.9	11.1	12.8	14.5
	L90	-4.0	-5.1	4.7	7.0	9.3	11.7		L90	-0.6	-1.4	6.0	7.2	8.9	10.6
	Lmin	-8.4	-9.5	0.3	2.6	4.9	7.3		Lmin	-4.5	-5.3	2.1	3.3	5.0	6.7

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-38: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	7.1	5.9	14.5	16.1	17.9	20.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.6	2.5	4.5	4.6	5.1	5.4
	L01	6.2	5.0	13.6	15.2	17.0	19.4		L01	0.4	1.3	3.3	3.4	3.9	4.2
	Leq	2.7	1.5	10.1	11.7	13.5	16.0		Leq	-2.1	-1.2	0.8	0.9	1.4	1.8
	L50	2.5	1.4	9.9	11.5	13.4	15.8		L50	-3.0	-2.1	-0.1	0.0	0.5	0.8
	L90	-0.6	-1.8	6.8	8.4	10.2	12.7		L90	-3.1	-2.1	-0.2	0.0	0.4	0.8
	Lmin	-6.0	-7.2	1.4	2.9	4.8	7.2		Lmin	-3.7	-2.8	-0.9	-0.7	-0.3	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	13.6	13.6	15.9	16.0	17.7	19.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.7	2.8	4.6	4.7	5.1	5.4
	L01	13.2	13.2	15.5	15.6	17.3	19.4		L01	1.8	2.0	3.7	3.8	4.2	4.6
	Leq	9.7	9.7	12.0	12.0	13.7	15.8		Leq	-0.8	-0.6	1.1	1.2	1.6	1.9
	L50	9.6	9.6	11.9	11.9	13.6	15.7		L50	-0.9	-0.8	1.0	1.1	1.5	1.8
	L90	5.9	5.9	8.2	8.3	10.0	12.0		L90	-1.8	-1.7	0.1	0.2	0.6	0.9
	Lmin	1.1	1.1	3.4	3.5	5.1	7.2		Lmin	-2.5	-2.4	-0.6	-0.5	-0.2	0.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	6.5	5.3	13.9	15.5	17.3	19.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	1.6	2.5	4.5	4.6	5.1	5.4
	L01	6.1	4.9	13.5	15.1	16.9	19.4		L01	0.7	1.7	3.6	3.8	4.2	4.6
	Leq	2.6	1.4	9.9	11.5	13.4	15.8		Leq	-1.9	-1.0	1.0	1.1	1.6	1.9
	L50	2.5	1.3	9.8	11.4	13.3	15.7		L50	-2.0	-1.1	0.9	1.0	1.5	1.8
	L90	-1.2	-2.4	6.2	7.7	9.6	12.0		L90	-2.9	-2.0	0.0	0.1	0.6	0.9
	Lmin	-6.0	-7.2	1.4	2.9	4.8	7.2		Lmin	-3.7	-2.7	-0.8	-0.6	-0.2	0.2

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-39: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/2/2014** from **2:45 to 3:05 AM** with KWI Turbine **OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data					
Distance from KWI: <b>740 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>8.9 m/s</b>	Wind Direction: <b>200°</b>	Avg Power Level: <b>949 kW</b>	Air Temperature: <b>33 °F</b>		
Wind Speed Range: <b>0-3 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>8.4 m/s</b>	Wind Direction: <b>201°</b>	Avg Power Level: <b>1026 kW</b>	Air Temperature: <b>33 °F</b>		
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>7.7 m/s</b>	Wind Direction: <b>205°</b>	Avg Power Level: <b>831 kW</b>	Air Temperature: <b>33 °F</b>		

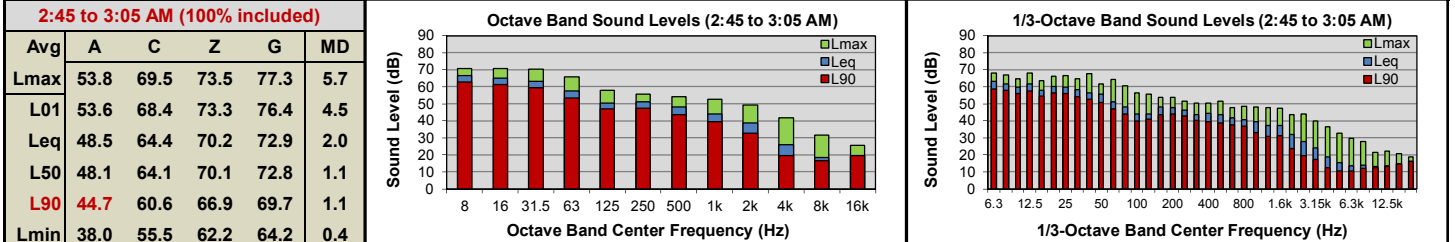


**Event Log**

Traffic on Route 3 **throughout**  
Loud wind chime from **2:54:30 to 2:54:31** (EXCLUDE)

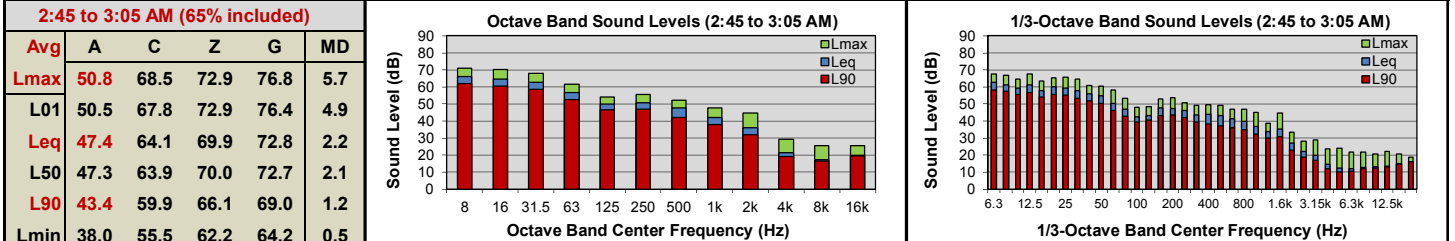
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (100% included)						2:50 to 2:55 AM (99% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	55.1	71.2	74.0	77.9	6.3	Lmax	53.8	70.4	74.6	78.5	5.1	Lmax	51.4	68.4	72.9	76.9	5.4	Lmax	54.9	68.1	72.6	76.0	6.0
L01	54.2	69.9	73.6	76.8	5.0	L01	51.8	68.2	73.2	76.5	4.2	L01	51.2	67.7	72.7	75.7	4.4	L01	53.6	67.2	72.4	75.4	4.5
Leq	49.6	65.4	71.0	73.8	2.0	Leq	48.9	65.0	70.8	73.6	2.0	Leq	48.1	64.0	69.8	72.7	2.0	Leq	46.8	62.6	68.6	71.3	2.0
L50	48.9	65.0	70.7	73.4	1.9	L50	48.4	64.7	70.7	73.4	1.9	L50	47.6	63.8	69.9	72.6	1.9	L50	46.3	62.2	68.6	71.2	1.9
L90	47.1	63.0	68.9	71.6	1.1	L90	46.8	62.8	69.3	71.8	1.1	L90	45.6	61.0	67.3	70.0	1.1	L90	40.7	57.2	63.8	66.4	1.1
Lmin	44.4	60.8	67.3	70.4	0.4	Lmin	44.6	60.8	67.5	69.5	0.4	Lmin	41.9	58.7	65.4	67.4	0.4	Lmin	38.0	55.5	62.2	64.2	0.5

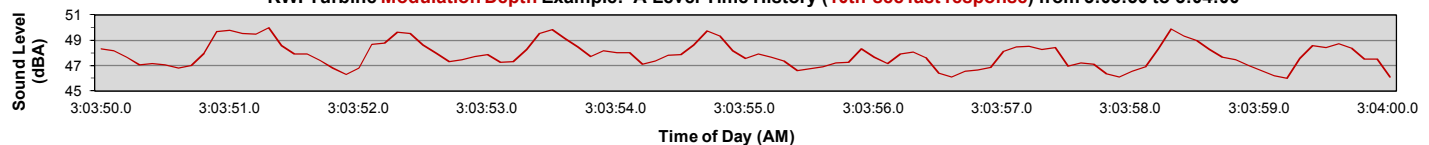


**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (65% included)						2:50 to 2:55 AM (48% included)						2:55 to 3:00 AM (70% included)						3:00 to 3:05 AM (76% included)					
8.8 m/s	A	C	Z	G	MD	8.6 m/s	A	C	Z	G	MD	8.5 m/s	A	C	Z	G	MD	7.8 m/s	A	C	Z	G	MD
Lmax	51.3	69.9	73.6	77.6	6.3	Lmax	50.7	67.7	72.7	76.5	5.1	Lmax	51.0	68.2	72.9	76.9	5.4	Lmax	50.3	68.1	72.6	76.0	6.0
L01	50.4	68.3	73.3	76.6	5.3	L01	50.2	67.3	72.6	75.9	4.1	L01	50.7	67.0	72.7	75.3	4.7	L01	49.9	67.3	72.5	75.5	4.8
Leq	48.5	65.1	70.8	73.7	2.3	Leq	47.6	64.6	70.5	73.5	2.2	Leq	47.6	64.0	69.9	72.7	2.2	Leq	45.7	62.4	68.6	71.3	2.1
L50	48.4	64.8	70.6	73.2	2.2	L50	47.4	64.4	70.5	73.4	2.1	L50	47.2	63.9	70.1	72.7	2.2	L50	45.5	62.1	68.6	71.3	2.0
L90	46.9	62.8	68.8	71.6	1.3	L90	46.4	62.7	68.6	71.7	1.2	L90	45.1	61.1	67.0	70.0	1.2	L90	40.5	57.0	63.5	66.2	1.1
Lmin	44.4	60.8	67.3	70.4	0.6	Lmin	44.6	60.8	67.5	69.5	0.5	Lmin	41.9	58.7	65.4	67.4	0.5	Lmin	38.0	55.5	62.2	64.2	0.5



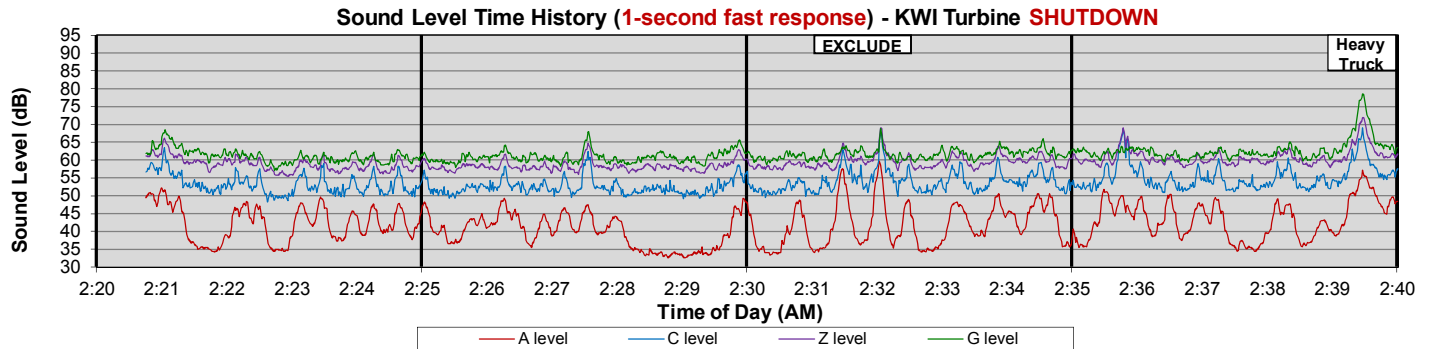
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:03:50 to 3:04:00**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-40: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/2/2014** from **2:20 to 2:40 AM** with KWI Turbine **SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>197°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-3 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>8.7 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>

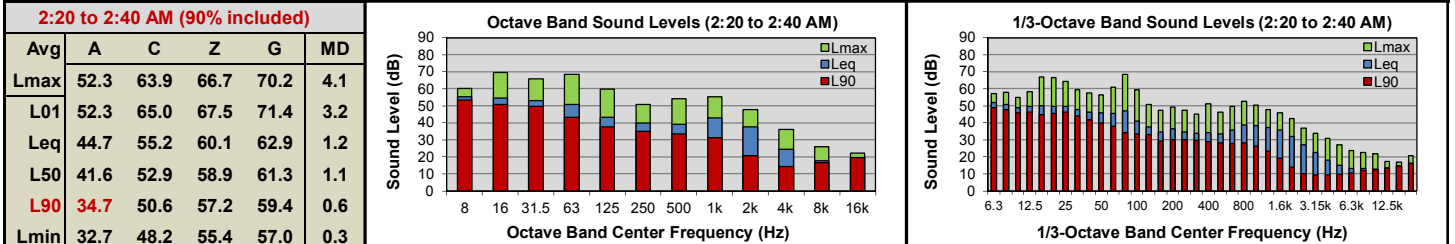


**Event Log**

Monitoring initiated at **2:20:45**  
Traffic on Route 3 **throughout**  
Local vehicle from **2:31:13 to 2:32:17 (EXCLUDE)**  
Loud wind chime from **2:34:58 to 2:35:08 (EXCLUDE)**

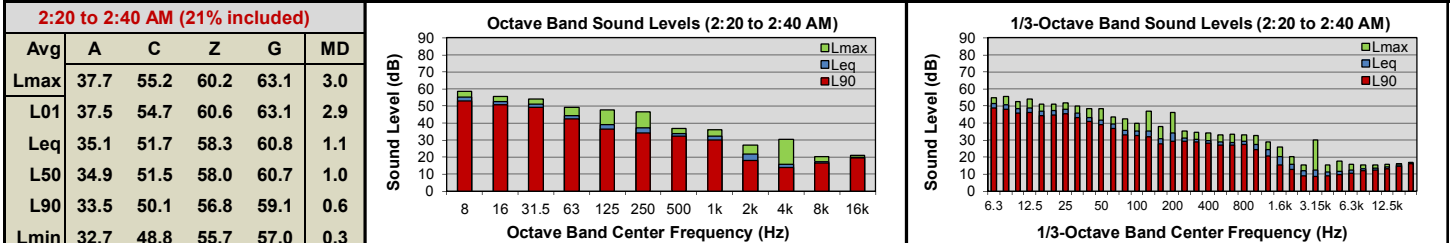
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (85% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (78% included)						2:35 to 2:40 AM (97% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	52.2	63.5	66.1	68.6	3.9	Lmax	49.4	62.4	64.8	68.0	3.6	Lmax	50.6	60.8	63.9	65.9	4.1	Lmax	57.2	69.0	71.9	78.5	4.9
L01	51.5	60.7	65.0	67.5	3.1	L01	48.7	60.0	63.0	65.6	2.8	L01	50.5	59.4	63.1	65.0	3.5	L01	55.4	67.0	70.6	76.9	3.3
Leq	44.8	54.3	59.3	61.7	1.3	Leq	42.1	53.1	58.5	61.1	1.2	Leq	44.0	54.1	59.4	61.7	1.3	Leq	46.7	57.6	62.0	65.3	1.3
L50	42.2	52.6	58.7	61.1	1.2	L50	40.0	51.9	58.0	60.6	1.1	L50	40.5	53.2	59.0	61.3	1.1	L50	43.5	54.3	60.2	62.2	1.1
L90	<b>35.1</b>	50.1	56.5	58.9	0.6	L90	<b>33.7</b>	50.3	57.0	59.2	0.6	L90	<b>34.5</b>	50.8	57.6	59.9	0.6	L90	<b>36.2</b>	51.9	58.7	60.5	0.6
Lmin	34.2	48.2	55.4	57.0	0.3	Lmin	32.7	49.2	55.9	57.9	0.3	Lmin	33.4	49.4	56.8	58.6	0.3	Lmin	34.4	50.9	57.9	59.3	0.3

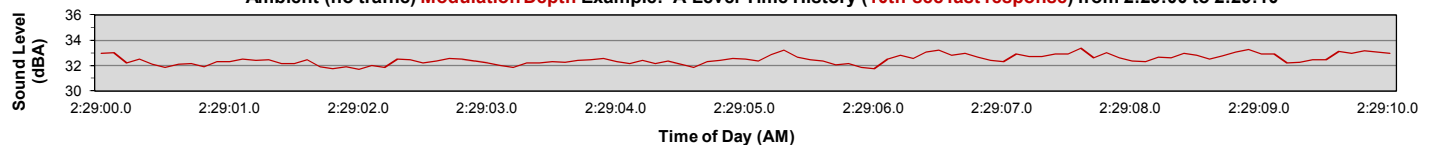


**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (14% included)						2:25 to 2:30 AM (33% included)						2:30 to 2:35 AM (21% included)						2:35 to 2:40 AM (16% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	37.1	54.5	60.1	63.2	3.1	Lmax	37.9	54.9	59.2	62.6	2.9	Lmax	37.5	55.7	60.5	63.1	3.9	Lmax	38.1	55.9	61.0	63.6	2.2
L01	37.1	54.2	60.0	63.1	3.1	L01	37.5	54.3	59.0	62.4	2.5	L01	37.2	54.9	59.9	62.8	3.2	L01	37.8	55.2	61.0	63.4	2.0
Leq	35.3	51.5	58.2	60.9	1.2	Leq	34.7	51.3	57.7	60.4	1.1	Leq	35.0	51.8	58.1	60.7	1.1	Leq	36.1	52.7	59.6	61.7	1.1
L50	35.0	51.3	58.2	61.2	1.1	L50	34.1	51.0	57.5	60.4	1.0	L50	34.8	51.4	58.0	60.7	1.0	L50	35.9	52.4	59.7	61.5	1.0
L90	34.4	49.4	55.9	58.1	0.6	L90	33.2	50.0	56.6	58.9	0.6	L90	34.0	50.3	57.4	59.8	0.7	L90	35.0	51.6	58.5	60.2	0.6
Lmin	34.2	48.8	55.7	57.0	0.4	Lmin	32.7	49.2	56.3	57.9	0.4	Lmin	33.4	49.4	57.1	58.6	0.4	Lmin	34.4	51.1	58.0	59.7	0.3



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:29:00 to 2:29:10**



**Detailed Acoustical Monitoring Data**  
**13 Schofield Road**  
**March 15, 2014**

Slow-response data: Pages D-42 to D-47

Fast-response data: Pages D-48 to D-53



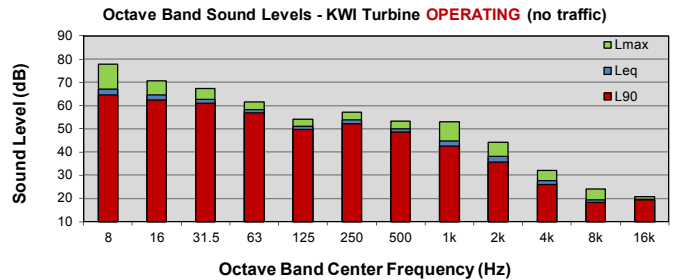
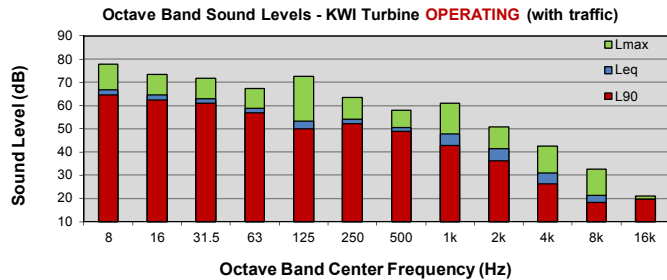
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-42: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 1: 13 Schofield Rd. on 3/15/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 176°	Average Power Level: 1505 kW	Air Temperature: 40 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 10.2 m/s	Wind Direction: 177°	Average Power Level: 1805 kW	Air Temperature: 40 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 9.8 m/s	Wind Direction: 179°	Average Power Level: 1624 kW	Air Temperature: 40 °F

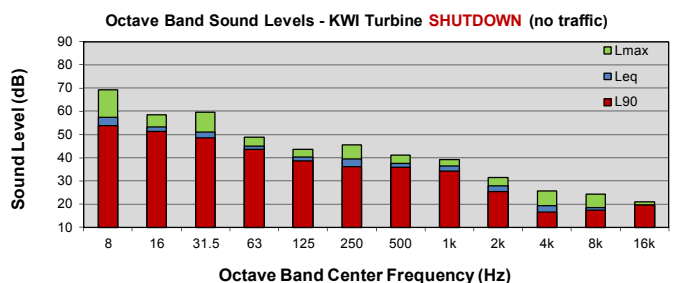
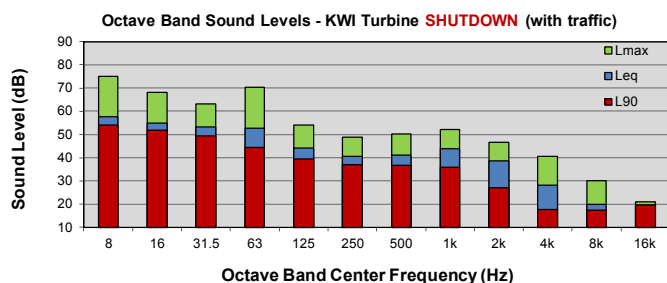
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:45 to 3:05 AM (100% included)						2:45 to 3:05 AM (54% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	58.4	70.7	76.6	79.3	6.8	Avg Lmax	52.8	65.8	75.7	76.8	5.8
L01	59.3	69.5	75.7	78.4	5.2	L01	53.5	65.7	75.5	76.4	5.4
Leq	52.1	64.0	70.5	73.0	2.4	Leq	50.5	63.4	70.4	72.8	2.7
L50	51.0	63.4	70.0	72.5	1.3	L50	50.3	63.3	70.0	72.4	2.5
L90	49.5	62.2	68.7	70.9	1.2	L90	49.2	62.2	68.7	70.9	1.5
Lmin	48.0	61.0	67.5	67.8	0.4	Lmin	48.0	61.1	67.5	67.8	0.5



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 10.0 m/s	Wind Direction: 178°	Average Power Level: 000 kW	Air Temperature: 40 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 177°	Average Power Level: 000 kW	Air Temperature: 40 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (100% included)						2:20 to 2:40 AM (24% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.8	65.5	71.6	71.8	5.0	Avg Lmax	41.3	54.1	64.3	64.7	2.9
L01	52.7	65.6	69.9	71.1	3.2	L01	41.6	56.5	66.9	65.5	2.2
Leq	46.2	55.6	61.4	63.3	1.2	Leq	39.5	51.6	59.8	61.6	1.0
L50	44.1	52.7	59.5	61.9	1.0	L50	39.6	51.2	58.6	61.2	0.9
L90	39.1	50.7	58.0	60.3	0.6	L90	37.6	49.8	57.4	59.6	0.6
Lmin	36.2	48.5	55.5	58.0	0.2	Lmin	36.2	48.5	55.5	58.0	0.3



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-43: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/15/2014** between **2:20 AM** and **3:05 AM** with KWI Turbine **OPERATING** and **SHUTDOWN**

Operating - Shutdown Differences (including traffic on Route 3)

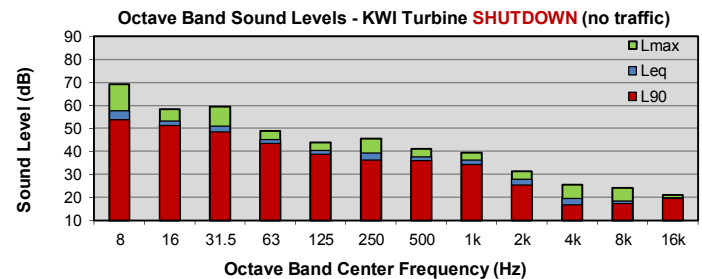
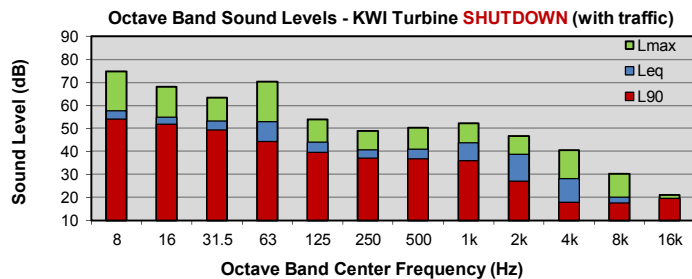
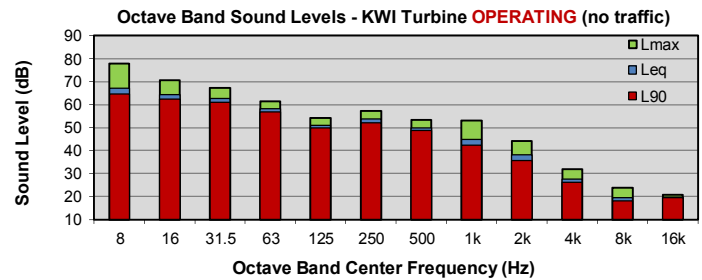
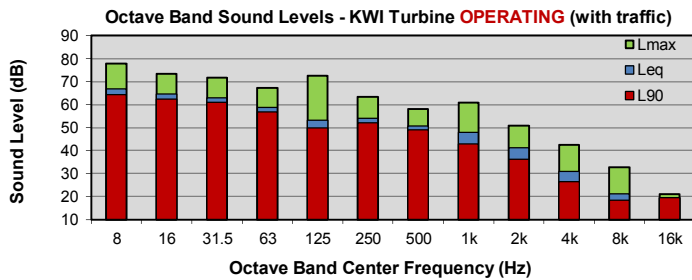
Operating - Shutdown Differences (excluding traffic on Route 3)

Vertical: KWI Turbine **OPERATING** (wind turbine plus traffic)  
Horizontal: KWI Turbine **SHUTDOWN** (ambient - with traffic)

Vertical: KWI Turbine **OPERATING** (wind turbine only)  
Horizontal: KWI Turbine **SHUTDOWN** (ambient - no traffic)

SLOW Response A-levels		KWI Turbine <b>SHUTDOWN</b> (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	5.6	5.7	12.2	14.3	19.3	22.2
	L01	6.5	6.6	13.1	15.2	20.2	23.2
	Leq	-0.8	-0.7	5.8	8.0	12.9	15.9
	L50	-1.9	-1.8	4.7	6.9	11.8	14.8
	L90	-3.3	-3.2	3.3	5.4	10.4	13.3
	Lmin	-4.9	-4.8	1.7	3.9	8.8	11.8

SLOW Response A-levels		KWI Turbine <b>SHUTDOWN</b> (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	11.5	11.2	13.4	13.3	15.2	16.7
	L01	12.2	11.9	14.1	14.0	15.9	17.4
	Leq	9.1	8.8	11.0	10.9	12.9	14.3
	L50	9.0	8.7	10.8	10.7	12.7	14.1
	L90	7.9	7.6	9.8	9.7	11.6	13.1
	Lmin	6.6	6.3	8.5	8.4	10.4	11.8



Operating - Shutdown Differences: **Overall Comparison**

Octave Band Sound Level Comparison: **Pure-tone Check**

Vertical: **KWI Turbine ONLY** (excluding traffic on Route 3)  
Horizontal: **Ambient Sound Levels** (including traffic on Route 3)

SLOW Response A-levels		KWI Turbine <b>SHUTDOWN</b> (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	0.0	0.1	6.6	8.7	13.7	16.7
	L01	0.7	0.8	7.3	9.4	14.4	17.4
	Leq	-2.4	-2.3	4.3	6.4	11.3	14.3
	L50	-2.5	-2.4	4.1	6.2	11.2	14.1
	L90	-3.6	-3.5	3.0	5.1	10.1	13.1
	Lmin	-4.9	-4.8	1.7	3.9	8.8	11.8

Including traffic on Route 3:				
L90 Octave Band Check: KWI Turbine <b>OPERATING</b>		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine <b>SHUTDOWN</b>	
L90 Pure-tone?	NO		L90 Pure-tone?	NO
Excluding traffic on Route 3:				
Leq Octave Band Check: KWI Turbine <b>ONLY</b>		NO KWI PURE TONE	Leq Octave Band Check <b>Ambient (no traffic)</b>	
Leq Pure-tone?	NO		Leq Pure-tone?	NO
L90 Octave Band Check KWI Turbine <b>ONLY</b>		NO KWI PURE TONE	L90 Octave Band Check <b>Ambient (no traffic)</b>	
L90 Pure-tone?	NO		L90 Pure-tone?	NO

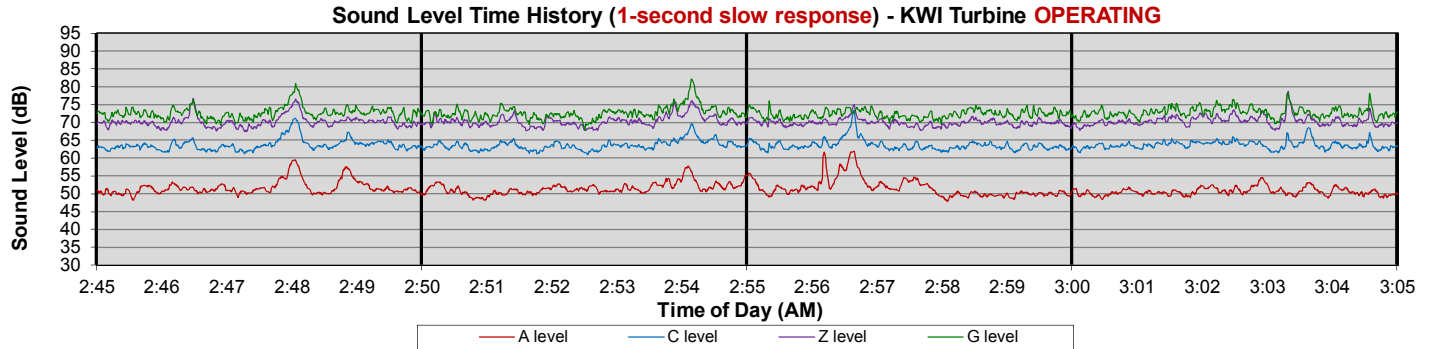
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-44: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/15/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	5.2	5.0	15.1	18.0	20.0	22.2	KWI Turbine OPERATING (with traffic)	Avg Lmax	5.0	6.7	15.2	17.1	18.6	21.1
	L01	4.0	3.9	13.9	16.9	18.8	21.0		L01	4.0	5.8	14.2	16.2	17.7	20.1
	Leq	-1.6	-1.7	8.3	11.3	13.2	15.4		Leq	-1.2	0.6	9.0	11.0	12.5	14.9
	L50	-2.1	-2.2	7.8	10.8	12.7	14.9		L50	-1.6	0.2	8.6	10.6	12.0	14.5
	L90	-3.3	-3.5	6.6	9.5	11.5	13.7		L90	-3.0	-1.2	7.2	9.2	10.7	13.1
	Lmin	-4.6	-4.7	5.3	8.3	10.2	12.4		Lmin	-4.2	-2.4	6.0	8.0	9.5	11.9
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	11.7	9.3	14.3	14.6	16.1	17.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	11.5	8.9	15.9	17.1	18.4	20.2
	L01	11.6	9.2	14.2	14.5	15.9	17.2		L01	11.3	8.7	15.7	16.9	18.2	20.0
	Leq	9.3	6.9	11.9	12.2	13.7	14.9		Leq	6.1	3.5	10.5	11.8	13.0	14.8
	L50	9.1	6.7	11.7	12.0	13.5	14.7		L50	5.7	3.1	10.1	11.4	12.6	14.4
	L90	8.0	5.6	10.6	10.9	12.4	13.6		L90	4.5	1.9	8.9	10.1	11.4	13.2
	Lmin	7.0	4.6	9.6	9.9	11.3	12.6		Lmin	3.2	0.6	7.6	8.9	10.1	11.9
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.3	0.2	10.2	13.2	15.1	17.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	4.1	5.9	14.3	16.3	17.8	20.2
	L01	0.2	0.1	10.1	13.1	15.0	17.2		L01	3.9	5.7	14.1	16.1	17.6	20.0
	Leq	-2.1	-2.2	7.8	10.8	12.7	14.9		Leq	-1.3	0.5	9.0	10.9	12.4	14.8
	L50	-2.3	-2.4	7.6	10.6	12.5	14.7		L50	-1.7	0.1	8.5	10.5	12.0	14.4
	L90	-3.4	-3.5	6.5	9.5	11.4	13.6		L90	-2.9	-1.1	7.3	9.3	10.8	13.2
	Lmin	-4.4	-4.5	5.5	8.5	10.4	12.6		Lmin	-4.2	-2.4	6.0	8.0	9.5	11.9

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-45: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/15/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	7.6	8.2	16.0	17.4	19.1	21.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.8	3.6	5.6	5.7	6.2	6.5
	L01	6.7	7.3	15.1	16.5	18.2	20.4		L01	0.3	2.0	4.0	4.2	4.6	5.0
	Leq	1.2	1.9	9.7	11.1	12.7	15.0		Leq	-2.6	-0.8	1.2	1.3	1.8	2.1
	L50	0.7	1.4	9.1	10.6	12.2	14.5		L50	-3.7	-1.9	0.1	0.2	0.7	1.0
	L90	-0.8	-0.2	7.6	9.0	10.7	12.9		L90	-3.8	-2.0	0.0	0.2	0.6	1.0
	Lmin	-4.0	-3.3	4.5	5.9	7.5	9.8		Lmin	-4.6	-2.8	-0.8	-0.7	-0.2	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	12.2	11.3	15.2	15.6	17.2	18.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.9	3.6	4.8	4.9	5.2	5.5
	L01	11.8	10.9	14.8	15.2	16.8	18.4		L01	2.5	3.2	4.4	4.5	4.8	5.1
	Leq	8.1	7.3	11.2	11.6	13.1	14.8		Leq	-0.2	0.5	1.7	1.7	2.1	2.4
	L50	7.8	6.9	10.8	11.2	12.8	14.4		L50	-0.3	0.4	1.5	1.6	1.9	2.2
	L90	6.3	5.4	9.3	9.7	11.3	12.9		L90	-1.4	-0.7	0.5	0.5	0.9	1.2
	Lmin	3.1	2.3	6.2	6.5	8.1	9.8		Lmin	-2.4	-1.7	-0.5	-0.4	-0.1	0.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	5.1	5.7	13.5	14.9	16.6	18.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.8	2.6	4.6	4.8	5.2	5.5
	L01	4.7	5.4	13.1	14.6	16.2	18.4		L01	0.4	2.2	4.2	4.4	4.8	5.2
	Leq	1.0	1.7	9.5	10.9	12.5	14.8		Leq	-2.3	-0.5	1.5	1.6	2.1	2.4
	L50	0.7	1.3	9.1	10.5	12.2	14.4		L50	-2.4	-0.6	1.4	1.5	1.9	2.3
	L90	-0.8	-0.2	7.6	9.0	10.7	12.9		L90	-3.5	-1.7	0.3	0.4	0.9	1.2
	Lmin	-4.0	-3.3	4.5	5.9	7.5	9.8		Lmin	-4.5	-2.7	-0.7	-0.5	-0.1	0.3

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-46: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/15/2014** from **2:45 to 3:05 AM** with KWI Turbine **OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>10.3 m/s</b>	Wind Direction: <b>176°</b>	Avg Power Level: <b>1505 kW</b>	Air Temperature: <b>40 °F</b>
Wind Speed Range: <b>0-3 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>10.2 m/s</b>	Wind Direction: <b>177°</b>	Avg Power Level: <b>1805 kW</b>	Air Temperature: <b>40 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>9.8 m/s</b>	Wind Direction: <b>179°</b>	Avg Power Level: <b>1624 kW</b>	Air Temperature: <b>40 °F</b>

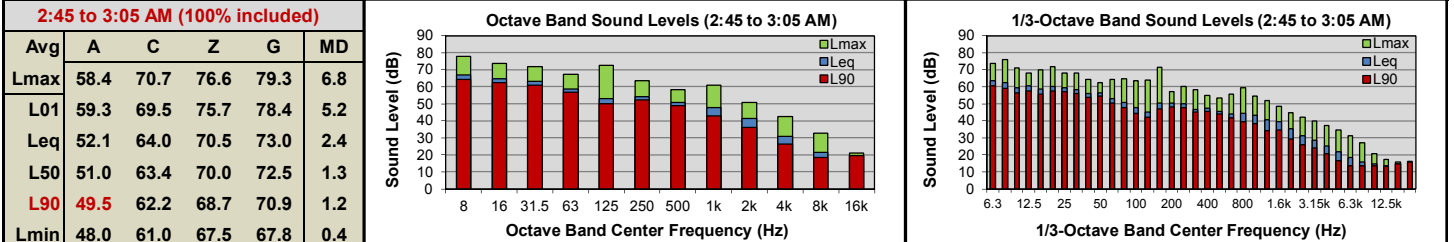


**Event Log**

Traffic on Route 3 **throughout**

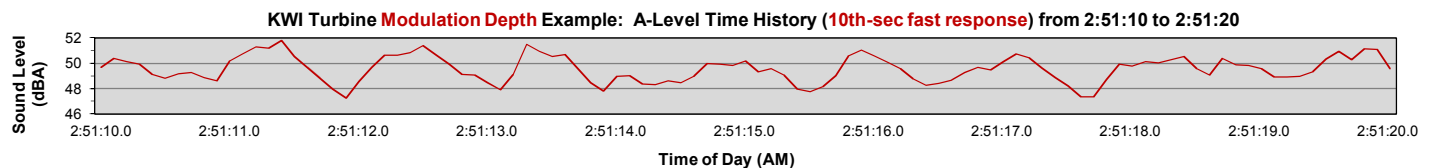
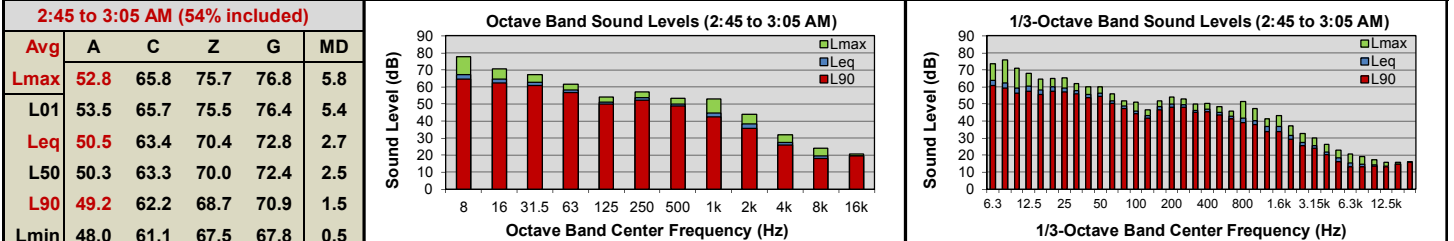
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (100% included)						2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	59.5	71.1	76.8	80.9	5.9	Lmax	57.7	69.7	76.0	82.1	5.9	Lmax	61.9	73.4	75.0	76.1	9.6	Lmax	54.5	68.6	78.7	78.2	5.7
L01	59.3	70.6	75.8	79.0	4.6	L01	57.3	68.4	75.7	80.4	5.3	L01	61.7	70.0	72.7	74.8	5.7	L01	54.0	67.4	75.7	77.4	5.1
Leq	52.4	64.1	70.5	73.1	2.1	Leq	51.8	63.8	70.6	73.3	2.4	Leq	53.0	64.0	70.0	72.5	2.3	Leq	50.8	63.8	70.7	73.1	2.6
L50	51.1	63.4	70.0	72.5	2.0	L50	51.3	63.4	70.1	72.5	2.2	L50	51.0	63.3	69.8	72.2	2.2	L50	50.5	63.6	70.3	72.7	2.4
L90	50.0	62.1	68.5	70.7	1.1	L90	49.8	62.1	68.6	70.7	1.2	L90	49.3	62.3	68.7	71.0	1.2	L90	49.4	62.5	68.9	71.2	1.3
Lmin	48.2	61.1	67.5	69.2	0.4	Lmin	48.2	61.0	67.6	67.8	0.4	Lmin	48.0	61.5	67.8	69.5	0.5	Lmin	48.4	61.5	67.7	69.6	0.6



**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

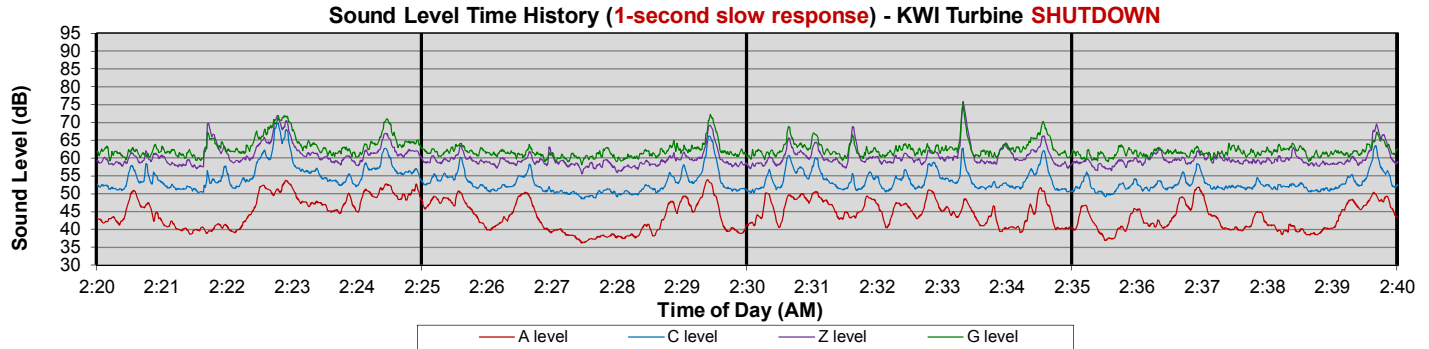
2:45 to 2:50 AM (45% included)						2:50 to 2:55 AM (50% included)						2:55 to 3:00 AM (48% included)						3:00 to 3:05 AM (72% included)					
10.3 m/s	A	C	Z	G	MD	10.4 m/s	A	C	Z	G	MD	10.3 m/s	A	C	Z	G	MD	9.9 m/s	A	C	Z	G	MD
Lmax	52.1	65.7	76.8	76.4	5.9	Lmax	54.4	65.7	75.9	76.6	5.9	Lmax	52.4	64.7	71.7	76.1	5.7	Lmax	52.4	67.3	78.7	78.2	5.7
L01	51.9	65.4	75.4	75.7	5.4	L01	54.3	65.7	75.0	76.0	5.6	L01	52.3	64.7	71.3	74.8	5.5	L01	52.0	66.6	77.0	77.7	5.1
Leq	50.6	63.3	70.4	72.5	2.5	Leq	51.0	63.6	70.7	73.0	2.7	Leq	50.0	63.1	69.7	72.4	2.6	Leq	50.2	63.6	70.6	73.0	2.7
L50	50.6	63.2	70.0	72.3	2.4	L50	50.7	63.5	70.2	72.8	2.6	L50	49.8	63.0	69.6	72.2	2.5	L50	50.2	63.4	70.0	72.5	2.6
L90	49.8	62.1	68.6	70.7	1.4	L90	49.0	62.2	69.0	71.0	1.5	L90	49.0	62.1	68.7	71.0	1.5	L90	49.2	62.4	68.8	71.1	1.5
Lmin	48.2	61.1	67.5	69.6	0.7	Lmin	48.2	61.5	67.7	67.8	0.5	Lmin	48.0	61.5	68.1	69.5	0.5	Lmin	48.4	61.5	67.7	69.6	0.8



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-47: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/15/2014** from **2:20 to 2:40 AM** with KWI Turbine **SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>10.0 m/s</b>	Wind Direction: <b>178°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>40 °F</b>
Wind Speed Range: <b>0-3 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>10.3 m/s</b>	Wind Direction: <b>177°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>40 °F</b>

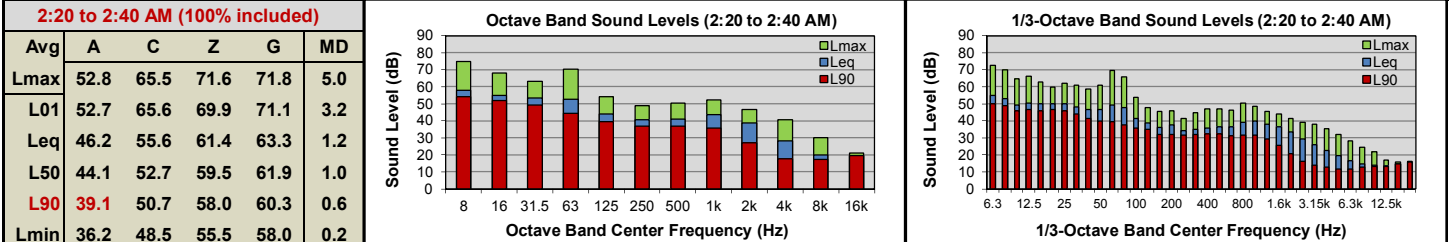


**Event Log**

Traffic on Route 3 **throughout**

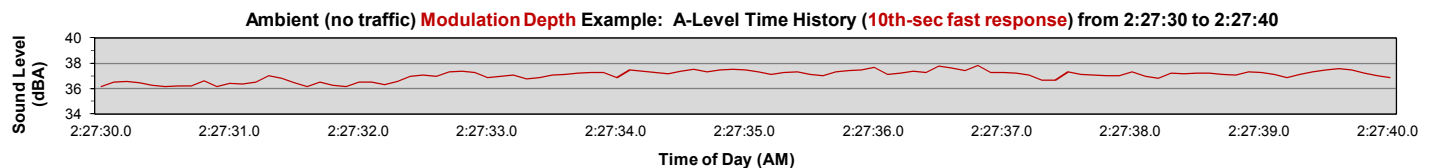
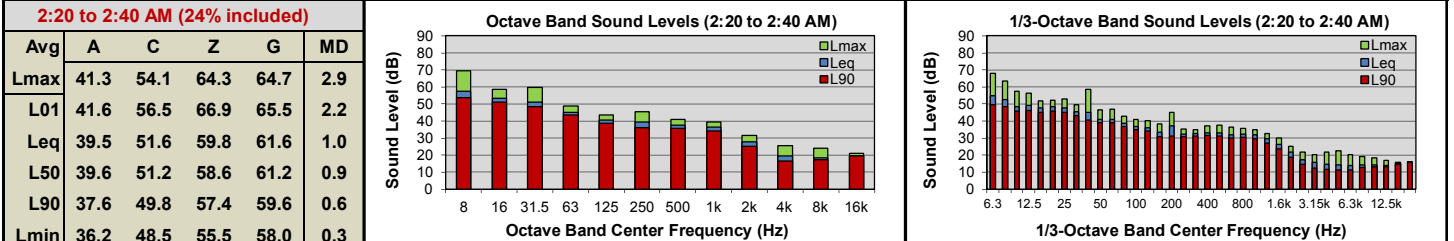
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (100% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	53.7	69.8	72.0	71.9	4.9	Lmax	54.1	66.1	69.3	72.3	4.2	Lmax	51.6	62.8	75.8	75.6	6.0	Lmax	51.9	63.5	69.5	67.3	4.8
L01	53.3	68.4	70.6	71.6	3.6	L01	53.3	65.0	68.5	70.6	2.9	L01	50.9	62.0	72.5	70.5	3.7	L01	51.3	62.1	67.8	65.9	3.0
Leq	47.8	58.1	62.7	64.7	1.2	Leq	45.6	54.6	59.9	62.4	1.1	Leq	46.3	54.9	62.2	63.7	1.3	Leq	44.6	53.5	60.3	61.9	1.2
L50	46.4	54.5	60.5	62.6	1.0	L50	41.8	51.9	59.0	61.4	1.0	L50	45.0	53.2	59.9	62.2	1.1	L50	41.8	52.1	59.2	61.6	1.0
L90	40.0	51.4	58.2	60.6	0.6	L90	37.9	49.9	57.5	59.9	0.6	L90	40.5	51.2	58.2	60.6	0.6	L90	39.0	50.8	58.1	60.2	0.6
Lmin	38.8	50.3	57.1	59.2	0.2	Lmin	36.2	48.5	55.5	58.0	0.3	Lmin	39.1	50.2	57.1	59.4	0.3	Lmin	36.9	49.1	56.5	59.0	0.3



**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (20% included)						2:25 to 2:30 AM (41% included)						2:30 to 2:35 AM (8% included)						2:35 to 2:40 AM (29% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	41.6	57.7	69.7	67.3	2.2	Lmax	41.9	52.6	63.0	62.9	3.2	Lmax	40.8	53.3	63.9	64.2	2.8	Lmax	41.0	53.0	60.5	64.2	3.3
L01	41.5	57.6	69.5	66.9	2.1	L01	41.8	52.4	62.3	62.9	2.1	L01	40.8	53.2	63.9	64.2	2.6	L01	40.7	52.8	60.5	64.0	2.2
Leq	40.1	53.0	62.2	62.5	1.0	Leq	38.9	50.6	58.4	60.8	1.0	Leq	40.2	52.2	61.6	62.8	1.1	Leq	39.4	51.4	58.8	61.6	1.0
L50	40.0	52.0	59.2	61.8	0.9	L50	38.5	50.6	58.2	60.6	0.9	L50	40.2	52.1	61.4	62.8	1.0	L50	39.6	51.4	58.6	61.3	1.0
L90	39.1	50.7	57.6	60.0	0.6	L90	37.3	49.3	57.1	59.4	0.6	L90	39.4	51.6	59.3	61.7	0.7	L90	37.6	50.0	57.5	59.9	0.6
Lmin	38.8	50.3	57.1	59.3	0.4	Lmin	36.2	48.5	55.5	58.0	0.3	Lmin	39.1	51.3	59.3	61.0	0.4	Lmin	36.9	49.1	56.5	59.0	0.3





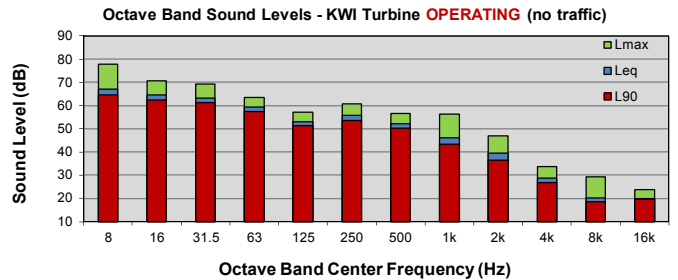
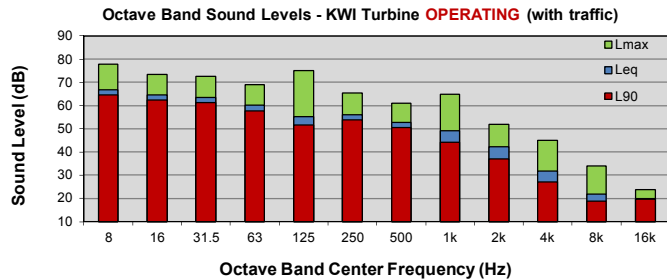
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-48: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 1: 13 Schofield Rd. on 3/15/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 176°	Average Power Level: 1505 kW	Air Temperature: 40 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 10.2 m/s	Wind Direction: 177°	Average Power Level: 1805 kW	Air Temperature: 40 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 9.8 m/s	Wind Direction: 179°	Average Power Level: 1624 kW	Air Temperature: 40 °F

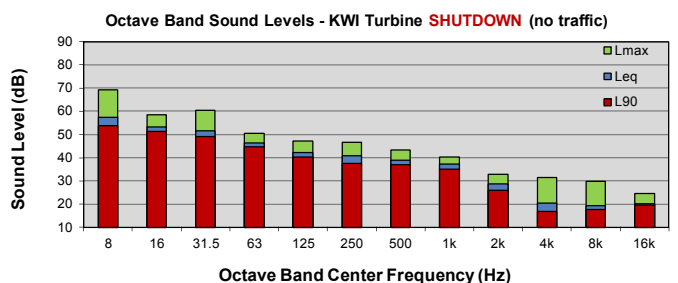
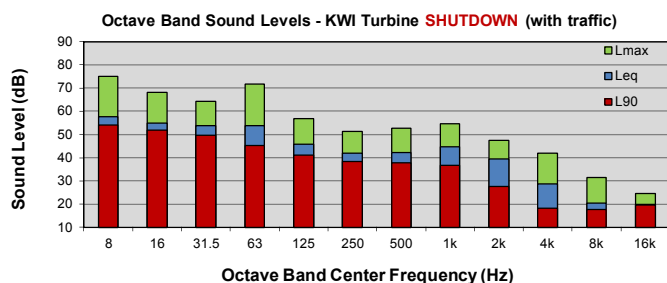
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:45 to 3:05 AM (100% included)						2:45 to 3:05 AM (54% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	60.2	73.5	77.1	79.5	6.8	Avg Lmax	55.2	70.0	75.9	77.0	5.8
L01	59.9	70.9	76.0	78.6	5.2	L01	55.1	68.8	75.7	76.5	5.4
Leq	53.0	65.6	70.8	73.1	2.4	Leq	51.7	65.2	70.7	72.9	2.7
L50	52.0	65.0	70.3	72.5	1.3	L50	51.4	64.8	70.3	72.5	2.5
L90	50.4	63.4	69.0	71.0	1.2	L90	50.1	63.4	69.1	71.0	1.5
Lmin	48.4	61.1	67.8	67.8	0.4	Lmin	48.4	62.1	67.8	67.8	0.5



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 10.0 m/s	Wind Direction: 178°	Average Power Level: 000 kW	Air Temperature: 40 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 177°	Average Power Level: 000 kW	Air Temperature: 40 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (100% included)						2:20 to 2:40 AM (24% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.7	68.2	72.1	71.8	5.0	Avg Lmax	42.1	57.3	64.4	64.7	2.9
L01	53.3	66.8	70.1	71.2	3.2	L01	42.4	57.7	66.9	65.5	2.2
Leq	46.6	56.9	61.8	63.4	1.2	Leq	39.9	53.0	60.0	61.7	1.0
L50	44.5	53.9	59.7	62.0	1.0	L50	39.9	52.5	58.8	61.3	0.9
L90	39.5	51.9	58.2	60.3	0.6	L90	38.0	50.9	57.6	59.7	0.6
Lmin	36.3	49.4	55.8	58.2	0.2	Lmin	36.3	49.4	55.8	58.2	0.3

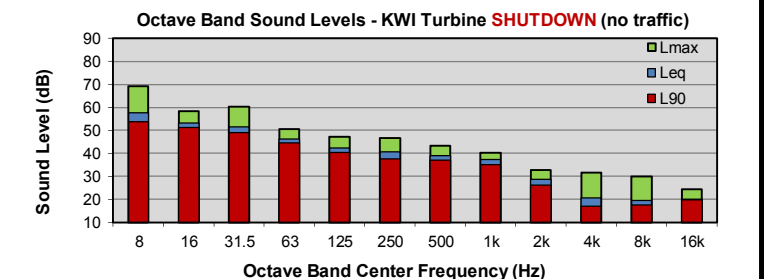
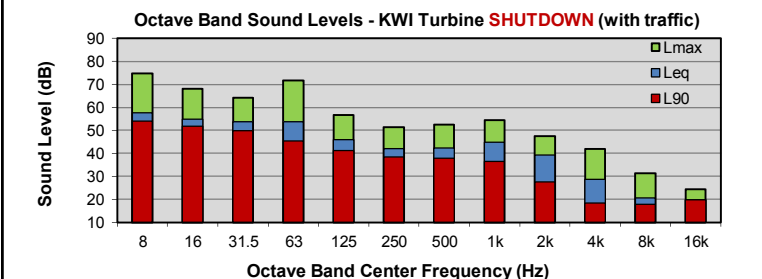
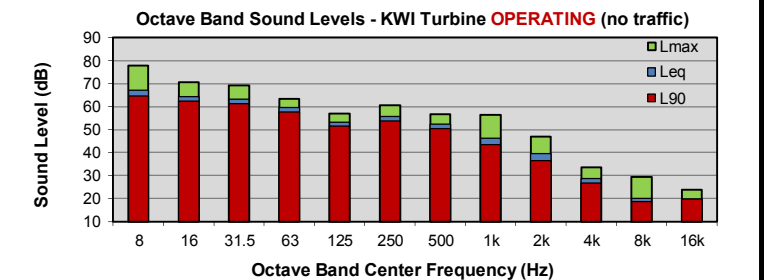
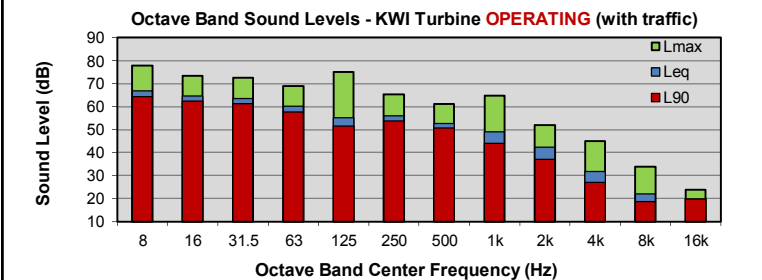




Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-49: **Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)**  
HMMH Project # 305270.001

Measurement at Site 1: 13 Schofield Rd. on 3/15/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN

Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine <b>OPERATING</b> (wind turbine plus traffic) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)								Vertical: KWI Turbine <b>OPERATING</b> (wind turbine only) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)							
FAST Response A-levels		KWI Turbine <b>SHUTDOWN</b> (with traffic)						FAST Response A-levels		KWI Turbine <b>SHUTDOWN</b> (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	6.5	6.9	13.5	15.7	20.7	23.9	KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	13.1	12.8	15.2	15.2	17.2	18.9
	L01	6.2	6.6	13.2	15.4	20.4	23.6		L01	13.1	12.7	15.2	15.2	17.1	18.8
	Leq	-0.6	-0.3	6.4	8.6	13.6	16.8		Leq	9.6	9.3	11.8	11.8	13.7	15.4
	L50	-1.6	-1.3	5.4	7.6	12.6	15.8		L50	9.3	9.0	11.5	11.4	13.4	15.1
	L90	-3.3	-2.9	3.8	5.9	10.9	14.1		L90	8.0	7.7	10.2	10.1	12.1	13.8
	Lmin	-5.2	-4.9	1.8	4.0	9.0	12.2		Lmin	6.4	6.1	8.5	8.5	10.4	12.2



Operating - Shutdown Differences: <b>Overall Comparison</b>								Octave Band Sound Level Comparison: <b>Pure-tone Check</b>					
Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)													
<b>FAST Response A-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>Including traffic on Route 3:</b>					
		Avg Lmax	L01	Leq	L50	L90	Lmin						
<b>KWI Turbine OPERATING</b> (no traffic)	Avg Lmax	1.5	1.8	8.5	10.7	<b>15.7</b>	18.9	<b>L90 Pure-tone?</b>	NO		<b>L90 Pure-tone?</b>	NO	
	L01	1.5	1.8	8.5	10.6	15.7	18.8	<b>Excluding traffic on Route 3:</b>					
	Leq	-2.0	-1.6	5.0	7.2	<b>12.2</b>	15.4						
	L50	-2.3	-1.9	4.7	6.9	11.9	15.1	Leq Octave Band Check: <b>KWI Turbine ONLY</b>		NO KWI PURE TONE	Leq Octave Band Check <b>Ambient (no traffic)</b>		
	L90	-3.6	-3.2	3.4	5.6	<b>10.6</b>	13.8	<b>Leq Pure-tone?</b>	NO		<b>Leq Pure-tone?</b>	NO	
	Lmin	-5.2	-4.9	1.8	4.0	9.0	12.2	L90 Octave Band Check <b>KWI Turbine ONLY</b>		NO KWI PURE TONE	L90 Octave Band Check <b>Ambient (no traffic)</b>		
							<b>L90 Pure-tone?</b>	NO	<b>L90 Pure-tone?</b>		NO		

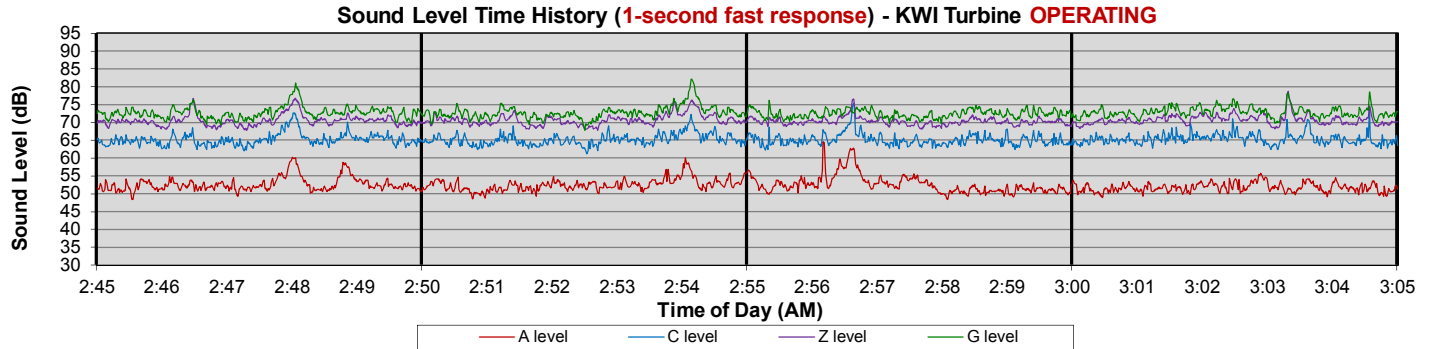
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-50: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/15/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	5.2	6.6	16.6	19.5	21.6	24.0	KWI Turbine OPERATING (with traffic)	Avg Lmax	5.0	7.0	15.3	17.3	18.9	21.3
	L01	2.7	4.1	14.0	17.0	19.0	21.5		L01	3.9	5.9	14.2	16.3	17.8	20.2
	Leq	-2.6	-1.2	8.7	11.7	13.7	16.2		Leq	-1.2	0.7	9.1	11.1	12.6	15.0
	L50	-3.2	-1.8	8.1	11.1	13.1	15.6		L50	-1.7	0.2	8.6	10.6	12.1	14.6
	L90	-4.8	-3.4	6.5	9.5	11.5	14.0		L90	-3.0	-1.1	7.3	9.3	10.8	13.3
	Lmin	-7.1	-5.7	4.2	7.2	9.2	11.7		Lmin	-4.3	-2.4	6.0	8.0	9.6	12.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	12.7	12.3	17.0	17.5	19.1	20.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	11.5	9.0	15.9	17.1	18.4	20.1
	L01	11.5	11.1	15.8	16.3	17.9	19.4		L01	11.3	8.8	15.6	16.8	18.1	19.9
	Leq	7.9	7.5	12.2	12.7	14.3	15.8		Leq	6.3	3.8	10.7	11.9	13.1	14.9
	L50	7.5	7.1	11.8	12.3	13.9	15.4		L50	5.9	3.4	10.3	11.5	12.7	14.5
	L90	6.1	5.7	10.4	10.8	12.5	13.9		L90	4.7	2.2	9.1	10.3	11.5	13.3
	Lmin	4.8	4.4	9.1	9.6	11.2	12.7		Lmin	3.4	0.9	7.8	9.0	10.2	12.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	1.8	3.2	13.1	16.1	18.1	20.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.9	5.8	14.2	16.2	17.7	20.1
	L01	0.6	2.0	11.9	14.9	16.9	19.4		L01	3.6	5.6	13.9	15.9	17.5	19.9
	Leq	-3.0	-1.6	8.3	11.3	13.3	15.8		Leq	-1.4	0.6	8.9	11.0	12.5	14.9
	L50	-3.4	-2.0	7.9	10.9	13.0	15.4		L50	-1.8	0.2	8.5	10.5	12.1	14.5
	L90	-4.8	-3.4	6.5	9.4	11.5	13.9		L90	-3.0	-1.0	7.3	9.3	10.9	13.3
	Lmin	-6.1	-4.7	5.2	8.2	10.2	12.7		Lmin	-4.3	-2.3	6.0	8.0	9.6	12.0

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-51: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 1: 13 Schofield Rd. on 3/15/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	7.7	8.3	16.1	17.5	19.2	21.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.8	3.6	5.6	5.7	6.2	6.5
	L01	6.8	7.3	15.2	16.6	18.2	20.4		L01	0.3	2.0	4.0	4.2	4.6	5.0
	Leq	1.3	1.8	9.7	11.1	12.7	14.9		Leq	-2.6	-0.8	1.2	1.3	1.8	2.1
	L50	0.7	1.3	9.1	10.6	12.2	14.4		L50	-3.7	-1.9	0.1	0.2	0.7	1.0
	L90	-0.8	-0.2	7.6	9.0	10.7	12.8		L90	-3.8	-2.0	0.0	0.2	0.6	1.0
	Lmin	-4.0	-3.4	4.4	5.8	7.5	9.6		Lmin	-4.6	-2.8	-0.8	-0.7	-0.2	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	12.2	11.4	15.3	15.7	17.2	18.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.9	3.6	4.8	4.9	5.2	5.5
	L01	11.8	11.0	14.8	15.2	16.8	18.4		L01	2.5	3.2	4.4	4.5	4.8	5.1
	Leq	8.1	7.3	11.2	11.6	13.1	14.7		Leq	-0.2	0.5	1.7	1.7	2.1	2.4
	L50	7.8	6.9	10.8	11.2	12.8	14.3		L50	-0.3	0.4	1.5	1.6	1.9	2.2
	L90	6.3	5.5	9.3	9.7	11.3	12.8		L90	-1.4	-0.7	0.5	0.5	0.9	1.2
	Lmin	3.1	2.3	6.1	6.5	8.1	9.6		Lmin	-2.4	-1.7	-0.5	-0.4	-0.1	0.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	5.2	5.7	13.6	15.0	16.6	18.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.8	2.6	4.6	4.8	5.2	5.5
	L01	4.7	5.3	13.1	14.6	16.2	18.4		L01	0.4	2.2	4.2	4.4	4.8	5.2
	Leq	1.1	1.6	9.5	10.9	12.5	14.7		Leq	-2.3	-0.5	1.5	1.6	2.1	2.4
	L50	0.7	1.3	9.1	10.5	12.2	14.3		L50	-2.4	-0.6	1.4	1.5	1.9	2.3
	L90	-0.8	-0.2	7.6	9.1	10.7	12.8		L90	-3.5	-1.7	0.3	0.4	0.9	1.2
	Lmin	-4.0	-3.4	4.4	5.8	7.5	9.6		Lmin	-4.5	-2.7	-0.7	-0.5	-0.1	0.3

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-52: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/15/2014** from **2:45 to 3:05 AM** with KWI Turbine **OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>10.3 m/s</b>	Wind Direction: <b>176°</b>	Avg Power Level: <b>1505 kW</b>	Air Temperature: <b>40 °F</b>
Wind Speed Range: <b>0-3 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>10.2 m/s</b>	Wind Direction: <b>177°</b>	Avg Power Level: <b>1805 kW</b>	Air Temperature: <b>40 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>9.8 m/s</b>	Wind Direction: <b>179°</b>	Avg Power Level: <b>1624 kW</b>	Air Temperature: <b>40 °F</b>

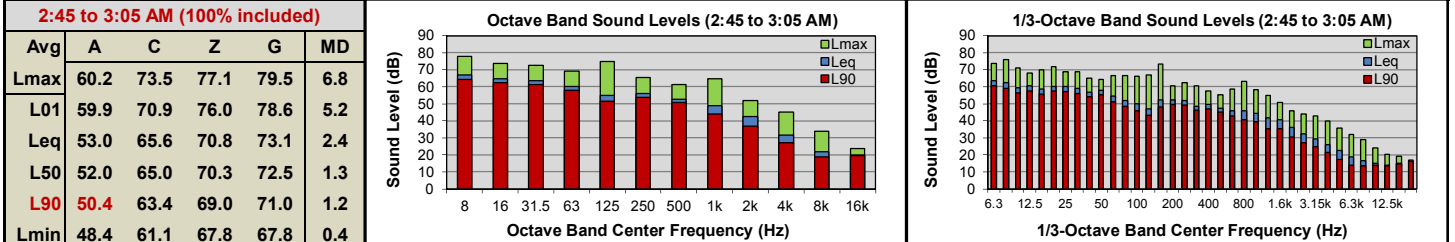


**Event Log**

Traffic on Route 3 **throughout**

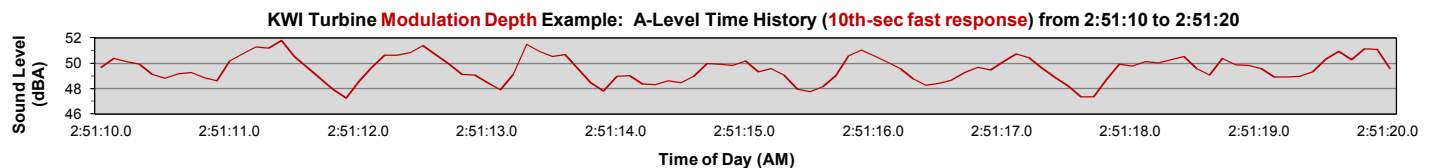
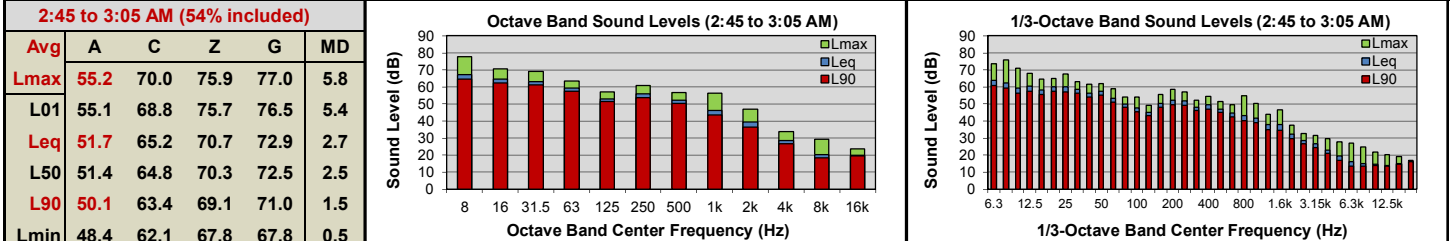
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (100% included)						2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	60.2	72.6	76.8	81.0	5.9	Lmax	60.1	72.2	76.2	82.2	5.9	Lmax	64.6	75.3	76.5	76.2	9.6	Lmax	55.8	73.7	78.7	78.6	5.7
L01	59.8	71.4	76.3	78.9	4.6	L01	58.4	69.6	75.8	80.4	5.3	L01	62.7	70.7	73.8	74.8	5.7	L01	55.1	70.9	75.8	77.5	5.1
Leq	53.2	65.6	70.9	73.1	2.1	Leq	52.9	65.5	71.0	73.3	2.4	Leq	53.9	65.6	70.4	72.6	2.3	Leq	52.0	65.7	71.0	73.2	2.6
L50	52.2	64.9	70.4	72.6	2.0	L50	52.4	65.0	70.4	72.6	2.2	L50	52.1	64.8	70.1	72.3	2.2	L50	51.7	65.2	70.6	72.7	2.4
L90	50.8	63.3	68.9	70.8	1.1	L90	50.6	63.4	69.0	70.9	1.2	L90	50.1	63.4	69.1	71.1	1.2	L90	50.2	63.8	69.3	71.3	1.3
Lmin	48.4	62.1	67.8	69.2	0.4	Lmin	48.6	61.1	67.8	67.8	0.4	Lmin	48.5	62.2	68.2	69.5	0.5	Lmin	49.0	62.4	68.2	69.7	0.6



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

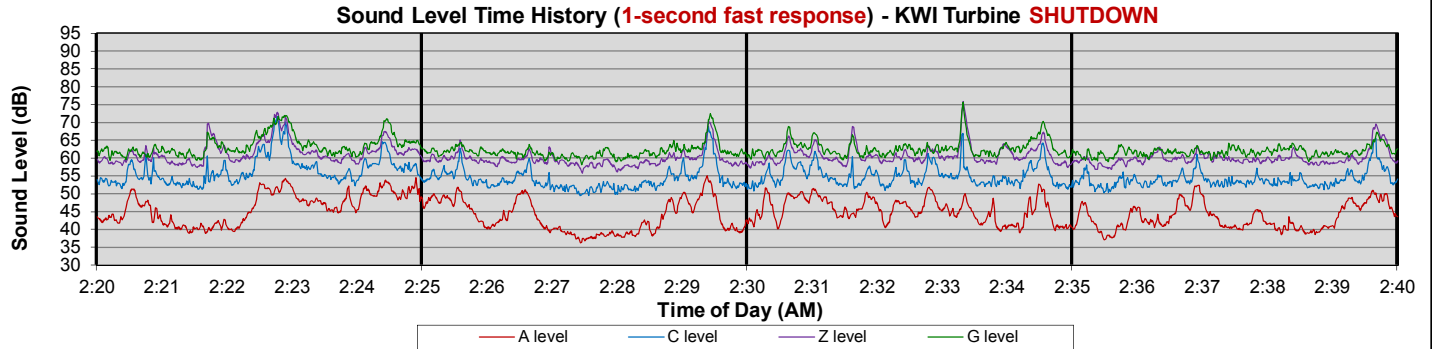
2:45 to 2:50 AM (45% included)						2:50 to 2:55 AM (50% included)						2:55 to 3:00 AM (48% included)						3:00 to 3:05 AM (72% included)					
10.3 m/s	A	C	Z	G	MD	10.4 m/s	A	C	Z	G	MD	10.3 m/s	A	C	Z	G	MD	9.9 m/s	A	C	Z	G	MD
Lmax	54.4	68.4	76.8	76.4	5.9	Lmax	56.9	69.1	76.0	76.7	5.9	Lmax	55.0	68.7	72.1	76.2	5.7	Lmax	54.4	73.7	78.7	78.6	5.7
L01	54.3	67.7	75.5	75.7	5.4	L01	56.3	68.6	75.2	76.1	5.6	L01	54.3	68.1	71.6	74.8	5.5	L01	54.1	70.8	77.1	77.8	5.1
Leq	51.8	64.9	70.7	72.6	2.5	Leq	52.3	65.4	71.0	73.0	2.7	Leq	51.2	64.9	70.1	72.5	2.6	Leq	51.5	65.6	70.9	73.1	2.7
L50	51.5	64.7	70.3	72.4	2.4	L50	51.8	65.1	70.6	72.8	2.6	L50	50.9	64.6	70.0	72.2	2.5	L50	51.3	65.1	70.4	72.6	2.6
L90	50.6	63.3	68.9	70.7	1.4	L90	50.4	63.3	69.4	71.2	1.5	L90	49.8	63.3	69.0	71.1	1.5	L90	50.0	63.6	69.1	71.2	1.5
Lmin	48.4	62.1	67.8	69.5	0.7	Lmin	48.6	62.4	68.1	67.8	0.5	Lmin	48.5	62.2	68.3	69.5	0.5	Lmin	49.0	62.4	68.2	69.7	0.8



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-53: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 1: **13 Schofield Rd.** on **3/15/2014** from **2:20 to 2:40 AM** with KWI Turbine **SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>740 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>10.0 m/s</b>	Wind Direction: <b>178°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>40 °F</b>
Wind Speed Range: <b>0-3 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>10.3 m/s</b>	Wind Direction: <b>177°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>40 °F</b>

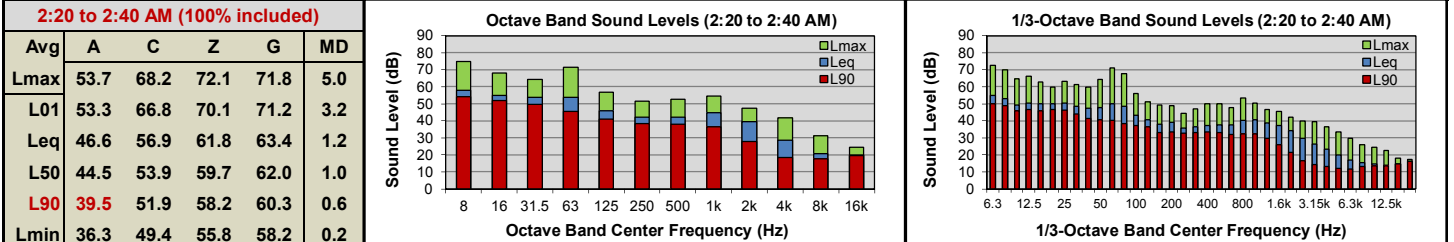


**Event Log**

Traffic on Route 3 **throughout**

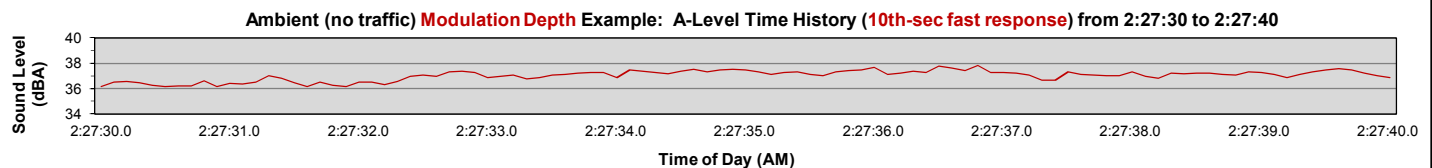
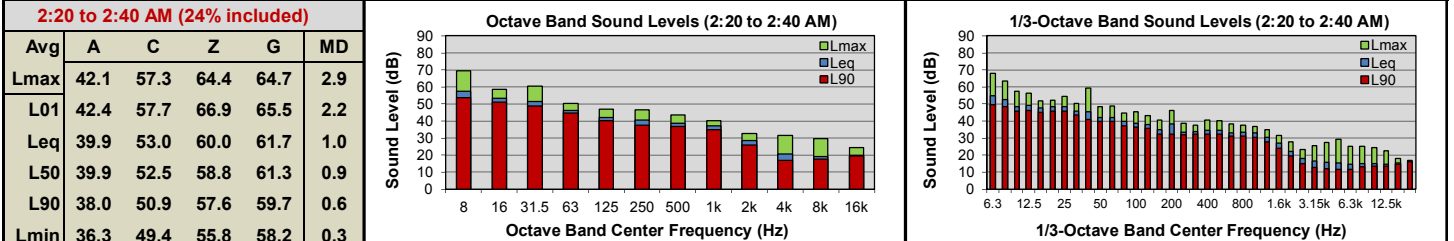
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (100% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.6	71.6	72.8	71.9	4.9	Lmax	55.0	68.9	70.1	72.4	4.2	Lmax	52.8	66.8	75.8	75.6	6.0	Lmax	52.3	65.5	69.5	67.3	4.8
L01	53.9	70.1	71.6	71.7	3.6	L01	53.7	66.3	68.7	70.8	2.9	L01	51.7	63.8	72.5	70.5	3.7	L01	52.1	61.7	68.2	66.0	3.0
Leq	48.3	59.3	63.1	64.8	1.2	Leq	46.0	55.8	60.3	62.5	1.1	Leq	46.7	56.3	62.4	63.8	1.3	Leq	45.0	54.8	60.6	62.0	1.2
L50	46.8	55.5	60.9	62.7	1.0	L50	42.2	53.2	59.2	61.5	1.0	L50	45.5	54.5	60.2	62.2	1.1	L50	42.2	53.5	59.5	61.6	1.0
L90	40.4	52.6	58.5	60.7	0.6	L90	38.2	51.0	57.7	60.0	0.6	L90	40.8	52.1	58.5	60.6	0.6	L90	39.4	51.9	58.3	60.2	0.6
Lmin	38.9	51.3	57.4	59.4	0.2	Lmin	36.3	49.4	55.8	58.2	0.3	Lmin	39.1	50.8	57.3	59.4	0.3	Lmin	37.1	50.1	56.8	59.0	0.3



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (20% included)						2:25 to 2:30 AM (41% included)						2:30 to 2:35 AM (8% included)						2:35 to 2:40 AM (29% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	42.8	60.7	69.7	67.3	2.2	Lmax	42.4	55.9	63.1	63.0	3.2	Lmax	41.7	56.7	64.0	64.4	2.8	Lmax	41.4	56.0	60.7	64.3	3.3
L01	42.7	59.9	69.5	67.0	2.1	L01	42.2	54.3	62.3	63.0	2.1	L01	41.7	56.3	64.0	64.3	2.6	L01	41.3	55.8	60.7	64.0	2.2
Leq	40.6	54.5	62.3	62.6	1.0	Leq	39.4	52.0	58.6	60.8	1.0	Leq	40.7	53.7	61.7	62.9	1.1	Leq	39.9	52.8	59.0	61.7	1.0
L50	40.4	53.4	59.4	61.9	0.9	L50	39.1	51.9	58.5	60.7	0.9	L50	40.8	53.6	61.5	62.9	1.0	L50	39.9	52.7	58.9	61.5	1.0
L90	39.3	51.9	57.8	60.0	0.6	L90	37.5	50.4	57.2	59.5	0.6	L90	39.6	52.5	59.6	61.8	0.7	L90	38.3	51.5	57.7	60.0	0.6
Lmin	38.9	51.3	57.4	59.4	0.4	Lmin	36.3	49.4	55.8	58.2	0.3	Lmin	39.1	51.4	59.4	61.0	0.4	Lmin	37.1	50.1	56.8	59.0	0.3



# **Detailed Acoustical Monitoring Data**

## **3 Leland Road**

### **April 7, 2014**

Slow-response data: Pages D-55 to D-60

Fast-response data: Pages D-61 to D-66

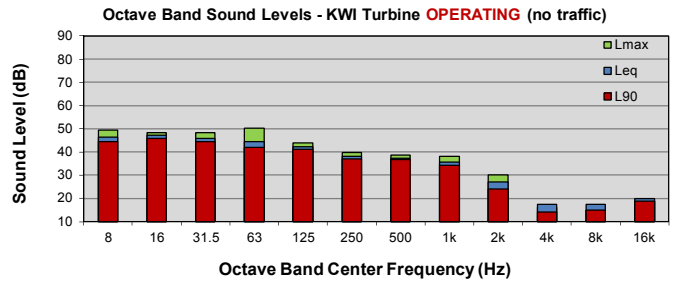
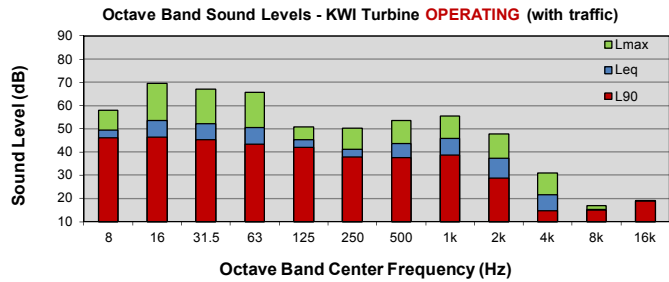
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-55: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 2: 3 Leland Rd. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 5.1 m/s	Wind Direction: 257°	Average Power Level: 189 kW	Air Temperature: 52 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 4.5 m/s	Wind Direction: 269°	Average Power Level: 177 kW	Air Temperature: 53 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 4.5 m/s	Wind Direction: 280°	Average Power Level: 173 kW	Air Temperature: 53 °F

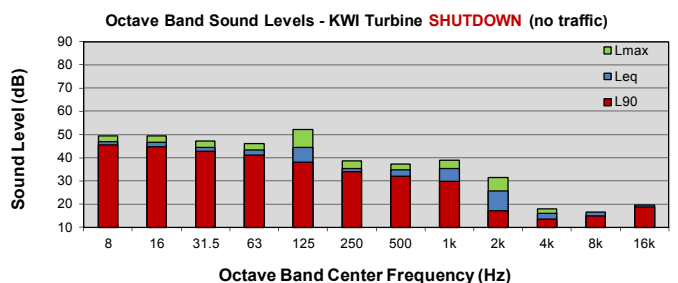
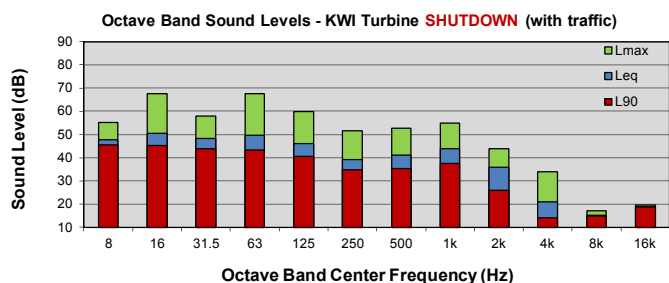
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:25 to 1:45 AM (100% included)						1:25 to 1:45 AM (4% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.4	65.0	69.1	73.8	6.5	Avg Lmax	40.0	50.4	53.8	56.3	2.2
L01	54.0	63.7	68.1	72.1	4.7	L01	40.6	51.9	54.5	56.5	2.2
Leq	47.7	55.1	58.5	61.7	1.5	Leq	39.2	49.1	52.9	55.3	1.0
L50	46.3	52.7	55.9	57.7	0.7	L50	39.1	48.7	52.8	55.3	1.0
L90	41.4	49.7	53.2	54.8	0.7	L90	38.4	48.2	52.0	54.0	0.6
Lmin	38.3	47.7	51.7	52.7	0.3	Lmin	38.3	47.7	51.7	53.3	0.4



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 6.9 m/s	Wind Direction: 263°	Average Power Level: 000 kW	Air Temperature: 52 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 6.7 m/s	Wind Direction: 264°	Average Power Level: 000 kW	Air Temperature: 52 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (100% included)						1:00 to 1:20 AM (7% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.1	60.8	63.8	67.0	6.7	Avg Lmax	39.5	50.1	53.6	55.8	2.2
L01	52.6	61.3	63.9	68.7	4.6	L01	40.5	52.7	54.6	56.9	2.0
Leq	45.8	53.3	56.2	58.3	1.5	Leq	38.1	48.8	52.6	54.3	1.1
L50	44.7	51.5	54.6	55.3	1.3	L50	37.4	48.3	52.6	54.0	1.0
L90	39.8	48.8	52.4	53.3	0.7	L90	35.4	47.0	51.6	52.9	0.6
Lmin	33.8	46.5	50.9	51.6	0.2	Lmin	33.8	46.5	50.9	51.7	0.4





Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-56: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.3	2.8	9.6	10.6	15.6	21.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.5	-0.5	1.9	2.6	4.6	6.2
	L01	0.9	1.4	8.2	9.2	14.2	20.2		L01	1.1	0.1	2.5	3.2	5.2	6.8
	Leq	-5.4	-4.9	1.9	2.9	7.9	13.9		Leq	-0.3	-1.3	1.1	1.8	3.8	5.5
	L50	-6.9	-6.3	0.4	1.5	6.5	12.5		L50	-0.4	-1.4	1.0	1.7	3.7	5.4
	L90	-11.7	-11.1	-4.4	-3.3	1.7	7.7		L90	-1.1	-2.0	0.3	1.0	3.0	4.7
	Lmin	-14.9	-14.3	-7.5	-6.5	-1.5	4.5		Lmin	-1.3	-2.2	0.2	0.9	2.9	4.5
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Including traffic on Route 3:							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING	NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN					
KWI Turbine OPERATING (no traffic)	Avg Lmax	-13.1	-12.6	-5.8	-4.8	0.2	6.2	L90 Pure-tone?		NO	L90 Pure-tone?	NO			
	L01	-12.6	-12.0	-5.2	-4.2	0.8	6.8	Excluding traffic on Route 3:							
	Leq	-13.9	-13.4	-6.6	-5.5	-0.5	5.5								
	L50	-14.0	-13.4	-6.7	-5.6	-0.6	5.4	Leq Octave Band Check: KWI Turbine ONLY	NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)					
	L90	-14.7	-14.1	-7.4	-6.3	-1.3	4.7	L90 Pure-tone?		NO	L90 Pure-tone?	NO			
	Lmin	-14.9	-14.3	-7.5	-6.5	-1.5	4.5	L90 Octave Band Check KWI Turbine ONLY	NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)					
L90 Pure-tone?	NO	L90 Pure-tone?	NO												

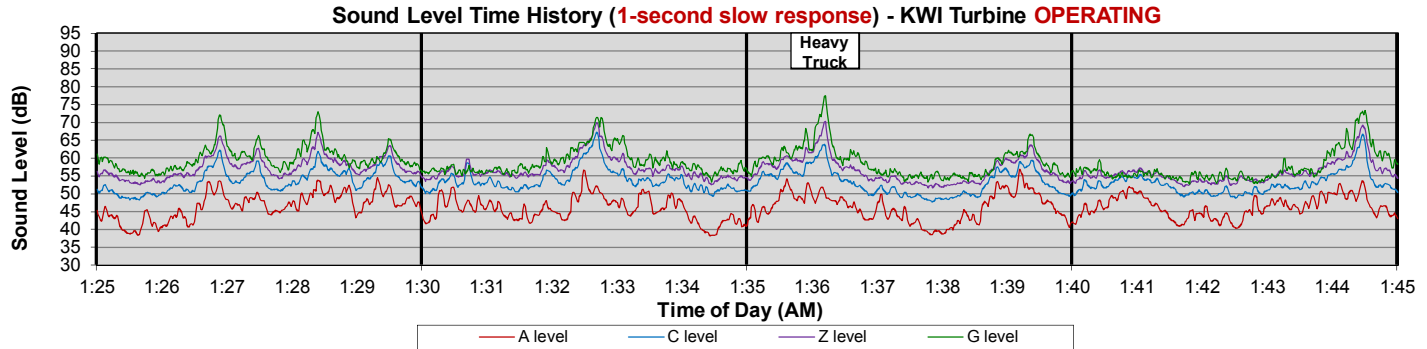
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-57: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	4.1	3.6	11.7	13.4	16.2	18.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	5.4	5.2	13.0	14.6	16.8	18.2
	L01	2.9	2.4	10.4	12.2	15.0	17.2		L01	4.3	4.2	11.9	13.5	15.7	17.2
	Leq	-5.8	-6.3	1.8	3.5	6.3	8.5		Leq	-5.3	-5.5	2.3	3.9	6.1	7.5
	L50	-8.1	-8.6	-0.6	1.2	4.0	6.2		L50	-7.8	-8.0	-0.3	1.4	3.6	5.0
	L90	-11.2	-11.7	-3.7	-1.9	0.9	3.1		L90	-10.6	-10.8	-3.0	-1.4	0.8	2.2
	Lmin	-13.1	-13.6	-5.6	-3.8	-1.1	1.2		Lmin	-12.1	-12.3	-4.5	-2.9	-0.7	0.7
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.2	-2.4	1.6	2.1	3.4	3.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.2	-0.9	1.1	1.2	2.2	2.8
	L01	1.7	-0.9	3.1	3.6	4.9	5.4		L01	0.9	-0.1	1.9	1.9	3.0	3.6
	Leq	-1.0	-3.6	0.4	0.8	2.2	2.6		Leq	-0.7	-1.7	0.3	0.3	1.3	2.0
	L50	-1.4	-4.0	-0.1	0.4	1.7	2.2		L50	-0.8	-1.8	0.2	0.2	1.2	1.9
	L90	-1.9	-4.5	-0.6	-0.1	1.2	1.7		L90	-1.6	-2.7	-0.7	-0.6	0.4	1.0
	Lmin	-2.5	-5.0	-1.1	-0.6	0.7	1.2		Lmin	-1.9	-3.0	-1.0	-1.0	0.1	0.7
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.5	-11.0	-3.0	-1.2	1.6	3.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.0	-10.2	-2.4	-0.8	1.4	2.8
	L01	-9.0	-9.5	-1.4	0.3	3.1	5.4		L01	-9.2	-9.4	-1.7	0.0	2.2	3.6
	Leq	-11.7	-12.2	-4.2	-2.4	0.4	2.6		Leq	-10.9	-11.0	-3.3	-1.7	0.5	2.0
	L50	-12.1	-12.6	-4.6	-2.8	0.0	2.2		L50	-11.0	-11.1	-3.4	-1.8	0.4	1.9
	L90	-12.6	-13.1	-5.1	-3.3	-0.5	1.7		L90	-11.8	-12.0	-4.2	-2.6	-0.4	1.0
	Lmin	-13.1	-13.6	-5.6	-3.8	-1.1	1.2		Lmin	-12.1	-12.3	-4.5	-2.9	-0.7	0.7

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-58: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	6.8	5.0	15.4	18.5	20.5	22.2	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.3	1.9	5.0	5.2	5.8	6.3
	L01	5.2	3.4	13.8	16.9	18.8	20.6		L01	-2.1	0.1	3.2	3.4	4.0	4.5
	Leq	-5.2	-7.0	3.4	6.5	8.4	10.2		Leq	-5.2	-3.1	0.0	0.3	0.8	1.4
	L50	-9.3	-11.1	-0.7	2.4	4.4	6.1		L50	-6.0	-3.9	-0.8	-0.5	0.0	0.6
	L90	-12.2	-14.0	-3.6	-0.5	1.5	3.2		L90	-6.1	-3.9	-0.8	-0.6	0.0	0.5
	Lmin	-14.3	-16.0	-5.6	-2.5	-0.6	1.2		Lmin	-6.5	-4.3	-1.2	-1.0	-0.4	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.5	-0.6	2.0	2.3	3.4	4.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.0	0.2	1.1	1.2	1.6	1.8
	L01	0.8	-0.4	2.2	2.5	3.6	4.9		L01	0.0	0.2	1.2	1.2	1.6	1.8
	Leq	-0.5	-1.6	0.9	1.2	2.3	3.6		Leq	-1.1	-1.0	0.0	0.0	0.4	0.6
	L50	-0.4	-1.6	1.0	1.3	2.4	3.7		L50	-1.1	-1.0	0.0	0.0	0.4	0.6
	L90	-1.8	-2.9	-0.4	-0.1	1.0	2.3		L90	-1.6	-1.4	-0.5	-0.5	-0.1	0.2
	Lmin	-2.4	-3.6	-1.0	-0.7	0.4	1.7		Lmin	-1.8	-1.7	-0.7	-0.7	-0.3	0.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.7	-12.4	-2.0	1.1	3.0	4.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.5	-2.4	0.7	0.9	1.5	2.0
	L01	-10.4	-12.2	-1.8	1.3	3.3	5.0		L01	-4.5	-2.4	0.7	1.0	1.5	2.1
	Leq	-11.7	-13.5	-3.1	0.0	2.0	3.7		Leq	-5.7	-3.6	-0.4	-0.2	0.3	0.9
	L50	-11.6	-13.4	-3.0	0.1	2.0	3.8		L50	-5.7	-3.6	-0.5	-0.2	0.3	0.9
	L90	-13.0	-14.8	-4.4	-1.3	0.7	2.4		L90	-6.2	-4.0	-0.9	-0.7	-0.1	0.4
	Lmin	-13.6	-15.4	-5.0	-1.9	0.0	1.8		Lmin	-6.4	-4.2	-1.1	-0.9	-0.3	0.2

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-59: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 4/7/2014 from 1:25 to 1:45 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>5.1 m/s</b>	Wind Direction: <b>257°</b>	Avg Power Level: <b>189 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>4.5 m/s</b>	Wind Direction: <b>269°</b>	Avg Power Level: <b>177 kW</b>	Air Temperature: <b>53 °F</b>
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>4.5 m/s</b>	Wind Direction: <b>280°</b>	Avg Power Level: <b>173 kW</b>	Air Temperature: <b>53 °F</b>

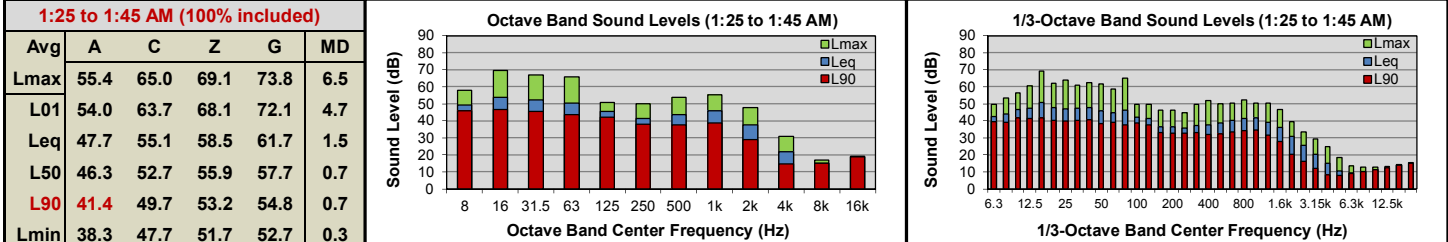


**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**

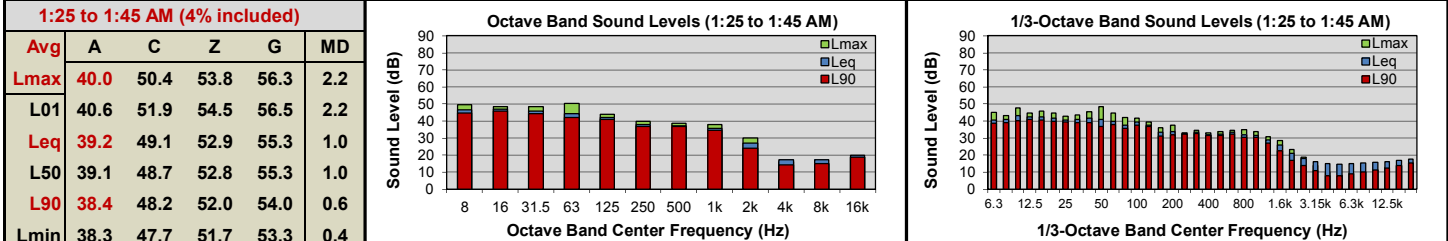
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (100% included)						1:30 to 1:35 AM (100% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.5	62.2	67.2	73.0	6.1	Lmax	56.6	67.2	69.9	71.4	7.4	Lmax	56.9	63.8	70.2	77.4	6.2	Lmax	53.6	66.6	69.2	73.3	6.2
L01	53.7	61.5	66.2	71.8	4.2	L01	54.5	65.7	68.2	71.2	5.1	L01	55.2	63.3	68.4	74.8	4.7	L01	52.8	65.0	68.1	72.6	4.5
Leq	48.0	55.0	58.7	62.1	1.6	Leq	47.1	55.7	58.8	61.0	1.5	Leq	48.1	54.9	58.7	62.7	1.5	Leq	47.4	54.6	57.7	61.0	1.4
L50	46.9	53.3	56.8	59.3	1.4	L50	45.4	53.0	56.1	57.6	1.2	L50	46.3	52.4	56.0	58.1	1.3	L50	46.4	52.2	55.3	55.8	1.2
L90	41.0	49.7	53.6	56.2	0.8	L90	41.7	50.9	54.4	55.8	0.6	L90	40.5	48.9	52.7	54.6	0.7	L90	42.3	49.8	53.1	54.0	0.7
Lmin	38.4	48.2	52.5	54.3	0.3	Lmin	38.3	49.4	52.6	53.3	0.3	Lmin	38.5	47.7	51.7	53.3	0.3	Lmin	40.4	48.9	51.9	52.7	0.3

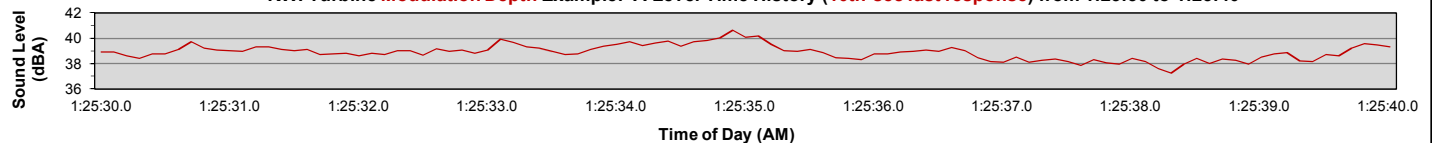


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (6% included)						1:30 to 1:35 AM (3% included)						1:35 to 1:40 AM (6% included)						1:40 to 1:45 AM (0% included)					
4.7 m/s	A	C	Z	G	MD	4.8 m/s	A	C	Z	G	MD	4.7 m/s	A	C	Z	G	MD		A	C	Z	G	MD
Lmax	40.6	50.4	53.8	56.6	2.5	Lmax	39.3	51.9	54.6	56.1	2.5	Lmax	40.1	48.8	52.9	56.2	1.6	Lmax	-	-	-	-	-
L01	40.6	50.3	53.8	56.6	2.3	L01	39.3	51.9	54.6	56.1	2.5	L01	40.1	48.8	52.9	56.2	1.6	L01	-	-	-	-	-
Leq	39.3	49.0	53.2	55.7	1.1	Leq	38.7	50.5	53.5	55.1	1.0	Leq	39.3	48.4	52.3	54.8	0.9	Leq	-	-	-	-	-
L50	39.1	48.7	53.1	55.7	1.2	L50	38.4	50.2	53.2	55.1	1.0	L50	39.2	48.5	52.3	54.6	1.0	L50	-	-	-	-	-
L90	38.7	48.4	52.6	55.0	0.6	L90	38.4	49.4	52.7	54.4	0.6	L90	38.6	47.9	51.8	53.8	0.5	L90	-	-	-	-	-
Lmin	38.4	48.2	52.5	54.8	0.4	Lmin	38.3	49.4	52.6	53.3	0.4	Lmin	38.5	47.7	51.7	53.6	0.4	Lmin	-	-	-	-	-



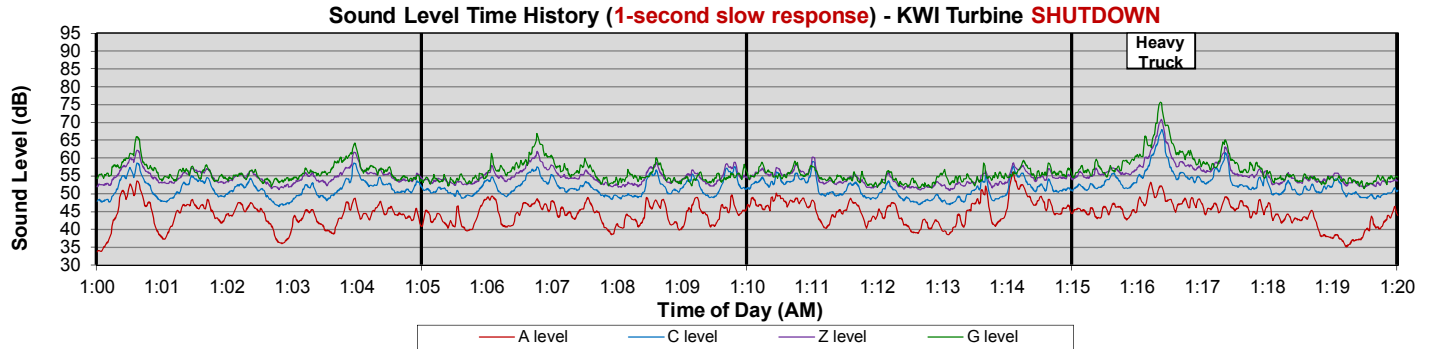
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:25:30 to 1:25:40**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-60: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 4/7/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>6.9 m/s</b>	Wind Direction: <b>263°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>6.7 m/s</b>	Wind Direction: <b>264°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>

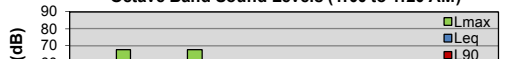
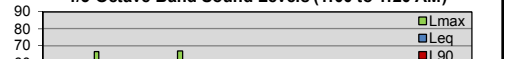


**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**  
HMMH consultant makes noise from **1:05:08 to 1:05:10 (EXCLUDE)**

**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

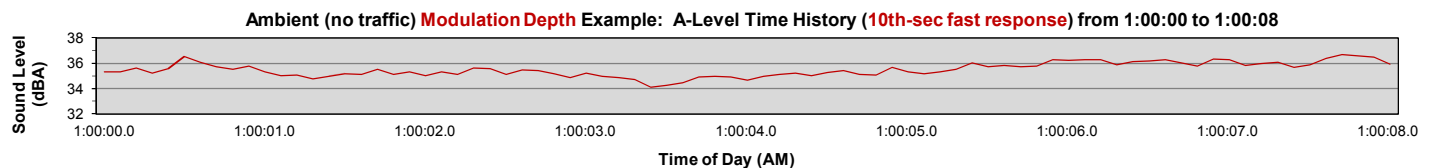
1:00 to 1:05 AM (100% included)						1:05 to 1:10 AM (99% included)						1:10 to 1:15 AM (100% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	53.6	58.7	62.2	66.1	5.1	Lmax	49.7	57.6	61.9	66.9	7.2	Lmax	56.0	59.1	60.2	59.3	8.9	Lmax	53.3	68.0	70.8	75.6	5.7
L01	52.6	58.4	61.6	65.0	3.4	L01	49.2	57.4	60.2	64.3	5.3	L01	53.9	57.8	58.6	58.8	5.5	L01	52.1	66.5	69.6	73.6	4.1
Leq	45.4	52.2	55.5	57.2	1.3	Leq	45.1	52.5	55.3	56.9	1.6	Leq	46.8	52.0	54.6	55.2	1.6	Leq	45.7	55.5	58.3	61.4	1.4
L50	44.3	51.2	54.7	55.7	1.1	L50	44.6	51.4	54.3	54.9	1.3	L50	45.6	51.0	53.9	54.8	1.4	L50	45.0	52.2	55.4	56.4	1.2
L90	38.0	48.0	52.6	53.8	0.6	L90	40.6	49.3	52.6	53.2	0.7	L90	40.6	48.0	51.8	52.7	0.7	L90	38.0	49.8	52.9	53.5	0.7
Lmin	33.8	46.5	51.1	52.0	0.3	Lmin	38.6	48.5	51.8	52.1	0.2	Lmin	38.5	46.9	50.9	51.6	0.3	Lmin	35.2	48.6	52.0	51.6	0.2

1:00 to 1:20 AM (100% included)						Octave Band Sound Levels (1:00 to 1:20 AM)												1/3-Octave Band Sound Levels (1:00 to 1:20 AM)											
Avg	A	C	Z	G	MD																								
Lmax	53.1	60.8	63.8	67.0	6.7																								
L01	52.6	61.3	63.9	68.7	4.6																								
Leq	45.8	53.3	56.2	58.3	1.5																								
L50	44.7	51.5	54.6	55.3	1.3																								
L90	39.8	48.8	52.4	53.3	0.7																								
Lmin	33.8	46.5	50.9	51.6	0.2																								

**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (12% included)						1:05 to 1:10 AM (3% included)						1:10 to 1:15 AM (5% included)						1:15 to 1:20 AM (7% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	39.9	49.7	53.9	57.2	2.2	Lmax	40.6	49.7	53.0	54.5	2.3	Lmax	40.2	48.3	52.6	56.8	2.1	Lmax	37.3	53.0	54.9	54.5	2.1
L01	39.9	49.6	53.8	57.1	2.0	L01	40.6	49.7	53.0	54.5	2.1	L01	40.1	48.3	52.5	56.7	1.9	L01	37.3	52.9	54.8	54.5	1.8
Leq	37.5	47.9	52.6	54.8	1.0	Leq	40.0	49.3	52.8	53.6	1.3	Leq	39.2	47.6	51.8	54.3	1.1	Leq	36.7	50.4	53.1	53.5	1.1
L50	37.2	47.9	52.6	54.5	0.9	L50	40.0	49.4	52.8	53.6	1.2	L50	39.1	47.6	51.7	54.1	1.1	L50	37.0	50.0	53.1	53.5	1.0
L90	34.1	46.9	51.8	53.5	0.6	L90	39.6	49.0	52.6	52.9	0.9	L90	38.7	47.1	51.2	52.4	0.7	L90	35.4	49.3	52.2	52.9	0.6
Lmin	33.8	46.5	51.1	53.1	0.4	Lmin	39.6	48.8	52.6	52.9	0.7	Lmin	38.5	46.9	50.9	51.7	0.4	Lmin	35.2	49.0	52.0	52.1	0.4

1:00 to 1:20 AM (7% included)						Octave Band Sound Levels (1:00 to 1:20 AM)												1/3-Octave Band Sound Levels (1:00 to 1:20 AM)											
Avg	A	C	Z	G	MD																								
Lmax	39.5	50.1	53.6	55.8	2.2																								
L01	40.5	52.7	54.6	56.9	2.0																								
Leq	38.1	48.8	52.6	54.3	1.1																								
L50	37.4	48.3	52.6	54.0	1.0																								
L90	35.4	47.0	51.6	52.9	0.6																								
Lmin	33.8	46.5	50.9	51.7	0.4																								



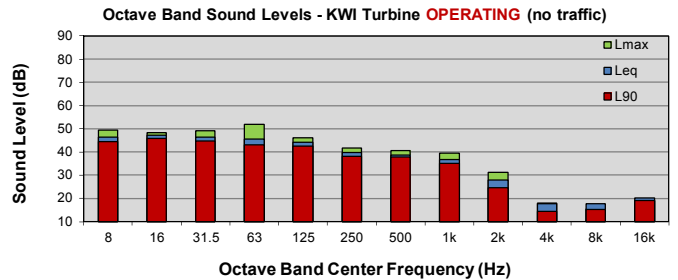
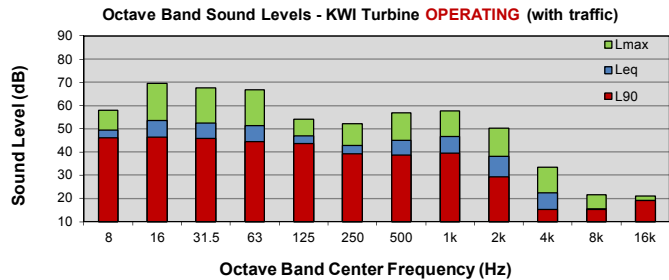
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-61: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 2: 3 Leland Rd. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 5.1 m/s	Wind Direction: 257°	Average Power Level: 189 kW	Air Temperature: 52 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 4.5 m/s	Wind Direction: 269°	Average Power Level: 177 kW	Air Temperature: 53 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 4.5 m/s	Wind Direction: 280°	Average Power Level: 173 kW	Air Temperature: 53 °F

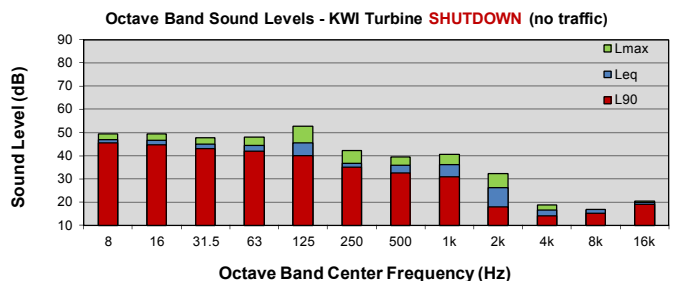
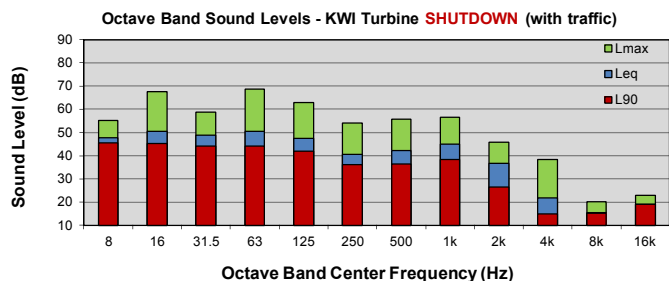
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:25 to 1:45 AM (100% included)						1:25 to 1:45 AM (4% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	57.6	65.9	69.5	73.9	6.5	Avg Lmax	41.6	51.8	54.5	56.4	2.2
L01	55.5	64.4	68.4	72.2	4.7	L01	42.1	52.9	55.3	56.6	2.2
Leq	48.7	56.0	59.0	61.8	1.5	Leq	40.4	50.2	53.5	55.3	1.0
L50	47.1	53.7	56.5	57.7	0.7	L50	40.2	49.8	53.3	55.4	1.0
L90	42.2	50.7	53.8	54.8	0.7	L90	39.5	49.3	52.6	54.0	0.6
Lmin	39.1	48.9	52.2	52.9	0.3	Lmin	39.1	48.9	52.2	53.3	0.4



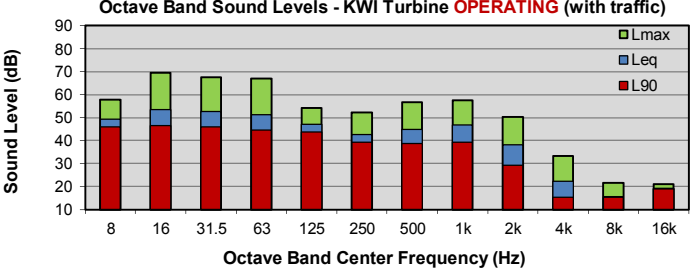
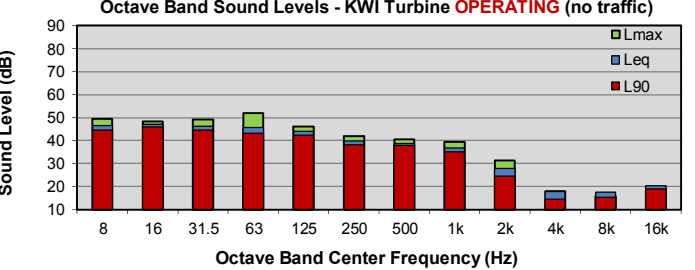
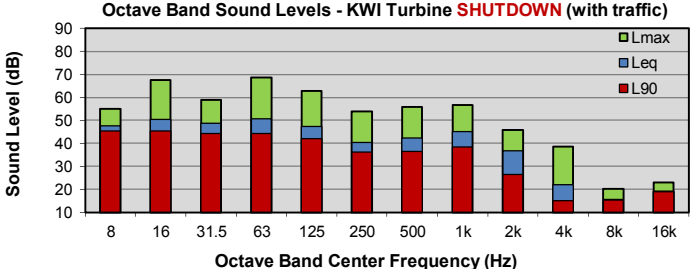
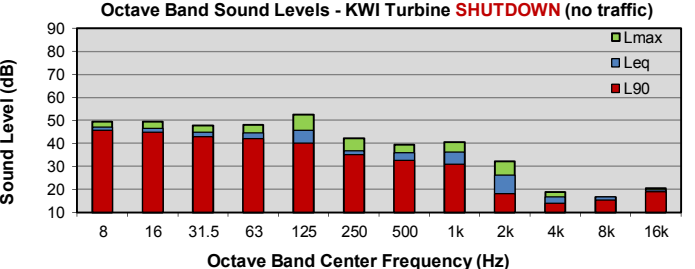
**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 6.9 m/s	Wind Direction: 263°	Average Power Level: 000 kW	Air Temperature: 52 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 6.7 m/s	Wind Direction: 264°	Average Power Level: 000 kW	Air Temperature: 52 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (100% included)						1:00 to 1:20 AM (7% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.2	62.6	64.9	67.0	6.7	Avg Lmax	40.7	51.1	54.1	55.8	2.2
L01	54.2	62.0	64.5	68.7	4.6	L01	41.6	53.0	54.8	57.0	2.0
Leq	46.9	54.3	56.8	58.4	1.5	Leq	39.1	49.7	53.1	54.4	1.1
L50	45.6	52.5	55.2	55.3	1.3	L50	38.6	49.3	53.1	54.1	1.0
L90	40.7	49.6	52.9	53.4	0.7	L90	36.4	47.9	52.0	52.9	0.6
Lmin	34.5	47.4	51.3	51.6	0.2	Lmin	34.5	47.4	51.3	51.7	0.4





Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-62: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.4	3.3	10.7	11.9	16.9	23.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.8	0.0	2.5	2.9	5.2	7.1
	L01	0.3	1.2	8.6	9.9	14.8	21.0		L01	1.4	0.5	3.0	3.5	5.7	7.6
	Leq	-6.5	-5.5	1.9	3.1	8.1	14.3		Leq	-0.3	-1.2	1.3	1.8	4.0	5.9
	L50	-8.1	-7.2	0.2	1.4	6.4	12.6		L50	-0.6	-1.4	1.1	1.5	3.7	5.7
	L90	-12.9	-12.0	-4.6	-3.4	1.6	7.8		L90	-1.2	-2.1	0.4	0.9	3.1	5.0
	Lmin	-16.1	-15.1	-7.7	-6.5	-1.5	4.7		Lmin	-1.6	-2.5	0.1	0.5	2.7	4.7
															
															
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-13.6	-12.7	-5.3	-4.1	0.9	7.1	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-13.1	-12.2	-4.8	-3.6	1.4	7.6	Excluding traffic on Route 3:							
	Leq	-14.8	-13.9	-6.5	-5.3	-0.3	5.9	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L50	-15.0	-14.1	-6.7	-5.5	-0.5	5.7	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L90	-15.7	-14.7	-7.4	-6.1	-1.2	5.0	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
	Lmin	-16.1	-15.1	-7.7	-6.5	-1.5	4.7	L90 Pure-tone?	NO		L90 Pure-tone?	NO			



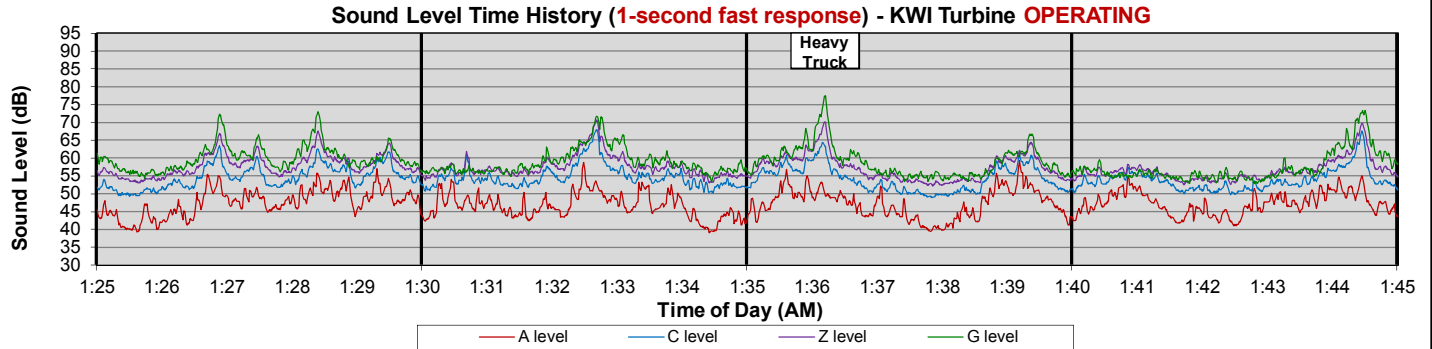
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-63: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	3.3	3.9	11.6	13.4	16.3	18.5	KWI Turbine OPERATING (with traffic)	Avg Lmax	4.6	5.0	12.7	14.4	16.7	18.2
	L01	1.9	2.4	10.2	11.9	14.9	17.1		L01	3.5	3.9	11.6	13.2	15.5	17.0
	Leq	-6.6	-6.1	1.7	3.4	6.4	8.6		Leq	-5.9	-5.5	2.2	3.8	6.1	7.6
	L50	-8.9	-8.3	-0.6	1.2	4.1	6.3		L50	-8.4	-8.0	-0.3	1.4	3.7	5.2
	L90	-11.9	-11.4	-3.6	-1.9	1.1	3.3		L90	-11.2	-10.8	-3.0	-1.4	0.9	2.4
	Lmin	-13.7	-13.1	-5.4	-3.6	-0.7	1.5		Lmin	-12.7	-12.3	-4.6	-2.9	-0.6	0.9
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.7	-1.2	2.1	2.5	3.8	4.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.4	-0.3	1.5	1.4	2.6	3.2
	L01	1.8	-0.1	3.2	3.7	5.0	5.5		L01	1.2	0.5	2.2	2.1	3.3	3.9
	Leq	-0.8	-2.7	0.6	1.0	2.3	2.9		Leq	-0.6	-1.3	0.4	0.4	1.5	2.1
	L50	-1.3	-3.2	0.1	0.5	1.8	2.4		L50	-0.8	-1.5	0.2	0.2	1.3	1.9
	L90	-1.8	-3.7	-0.4	0.1	1.4	1.9		L90	-1.5	-2.2	-0.5	-0.5	0.7	1.3
	Lmin	-2.2	-4.1	-0.8	-0.4	0.9	1.5		Lmin	-1.9	-2.6	-0.8	-0.9	0.3	0.9
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.8	-10.3	-2.5	-0.8	2.2	4.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.4	-10.0	-2.3	-0.6	1.7	3.2
	L01	-9.7	-9.1	-1.4	0.4	3.3	5.5		L01	-9.7	-9.3	-1.5	0.1	2.4	3.9
	Leq	-12.3	-11.8	-4.0	-2.3	0.7	2.9		Leq	-11.4	-11.0	-3.3	-1.7	0.6	2.1
	L50	-12.8	-12.2	-4.5	-2.7	0.2	2.4		L50	-11.6	-11.2	-3.5	-1.9	0.4	1.9
	L90	-13.3	-12.7	-5.0	-3.2	-0.3	1.9		L90	-12.3	-11.9	-4.2	-2.5	-0.2	1.3
	Lmin	-13.7	-13.1	-5.4	-3.6	-0.7	1.5		Lmin	-12.7	-12.3	-4.6	-2.9	-0.6	0.9

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-64: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	6.9	5.2	15.5	18.6	20.5	22.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.3	1.9	5.0	5.2	5.8	6.3
	L01	5.2	3.5	13.8	16.9	18.8	20.6		L01	-2.1	0.1	3.2	3.4	4.0	4.5
	Leq	-5.2	-6.9	3.4	6.5	8.4	10.2		Leq	-5.2	-3.1	0.0	0.3	0.8	1.4
	L50	-9.3	-11.0	-0.7	2.4	4.4	6.1		L50	-6.0	-3.9	-0.8	-0.5	0.0	0.6
	L90	-12.2	-13.9	-3.6	-0.5	1.4	3.2		L90	-6.1	-3.9	-0.8	-0.6	0.0	0.5
	Lmin	-14.1	-15.8	-5.5	-2.5	-0.5	1.3		Lmin	-6.5	-4.3	-1.2	-1.0	-0.4	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.6	-0.6	2.0	2.3	3.4	4.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.0	0.2	1.1	1.2	1.6	1.8
	L01	0.8	-0.4	2.3	2.5	3.7	4.9		L01	0.0	0.2	1.2	1.2	1.6	1.8
	Leq	-0.5	-1.7	1.0	1.2	2.4	3.6		Leq	-1.1	-1.0	0.0	0.0	0.4	0.6
	L50	-0.5	-1.7	1.0	1.3	2.4	3.6		L50	-1.1	-1.0	0.0	0.0	0.4	0.6
	L90	-1.8	-3.0	-0.3	-0.1	1.1	2.3		L90	-1.6	-1.4	-0.5	-0.5	-0.1	0.2
	Lmin	-2.5	-3.7	-1.1	-0.8	0.3	1.5		Lmin	-1.8	-1.7	-0.7	-0.7	-0.3	0.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.6	-12.3	-2.0	1.1	3.0	4.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.5	-2.4	0.7	0.9	1.5	2.0
	L01	-10.4	-12.1	-1.7	1.3	3.3	5.0		L01	-4.5	-2.4	0.7	1.0	1.5	2.1
	Leq	-11.7	-13.4	-3.1	0.0	1.9	3.7		Leq	-5.7	-3.6	-0.4	-0.2	0.3	0.9
	L50	-11.6	-13.4	-3.0	0.0	2.0	3.8		L50	-5.7	-3.6	-0.5	-0.2	0.3	0.9
	L90	-13.0	-14.7	-4.4	-1.3	0.7	2.4		L90	-6.2	-4.0	-0.9	-0.7	-0.1	0.4
	Lmin	-13.7	-15.4	-5.1	-2.0	-0.1	1.7		Lmin	-6.4	-4.2	-1.1	-0.9	-0.3	0.2

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-65: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 4/7/2014 from 1:25 to 1:45 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>5.1 m/s</b>	Wind Direction: <b>257°</b>	Avg Power Level: <b>189 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>4.5 m/s</b>	Wind Direction: <b>269°</b>	Avg Power Level: <b>177 kW</b>	Air Temperature: <b>53 °F</b>
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>4.5 m/s</b>	Wind Direction: <b>280°</b>	Avg Power Level: <b>173 kW</b>	Air Temperature: <b>53 °F</b>

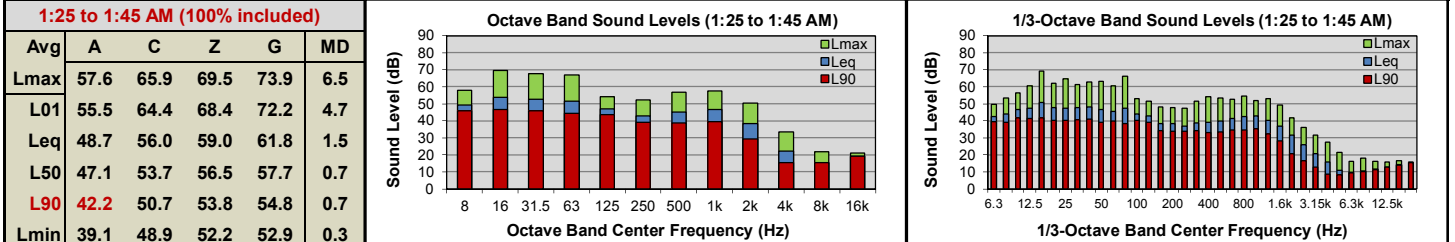


**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**

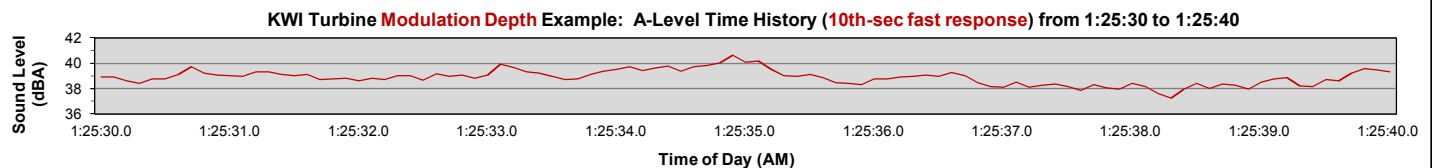
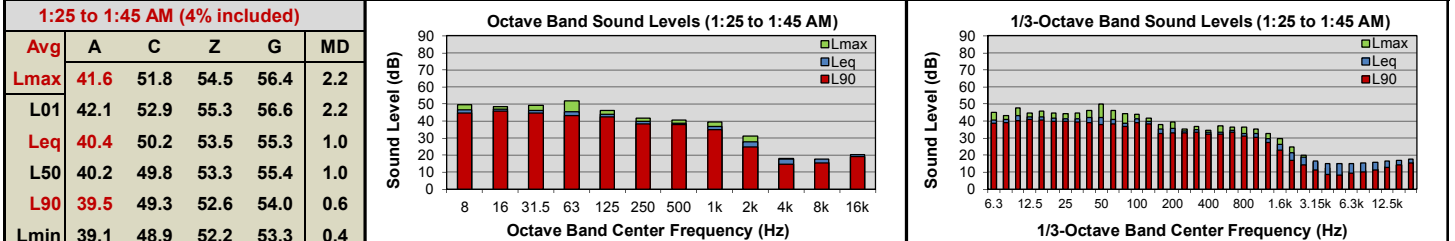
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (100% included)						1:30 to 1:35 AM (100% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	57.1	63.5	67.6	73.0	6.1	Lmax	58.8	68.0	70.6	71.8	7.4	Lmax	59.3	64.4	70.2	77.4	6.2	Lmax	55.0	67.7	69.8	73.3	6.2
L01	55.4	62.5	66.5	71.8	4.2	L01	54.0	66.9	69.2	71.4	5.1	L01	56.6	63.1	68.4	74.8	4.7	L01	54.5	65.8	68.5	72.7	4.5
Leq	49.1	55.9	59.2	62.2	1.6	Leq	48.1	56.6	59.3	61.1	1.5	Leq	49.2	55.8	59.1	62.7	1.5	Leq	48.4	55.5	58.2	61.0	1.4
L50	47.8	54.3	57.4	59.3	1.4	L50	46.2	53.9	56.7	57.7	1.2	L50	47.5	53.6	56.5	58.1	1.3	L50	47.2	53.2	55.8	55.8	1.2
L90	42.0	50.9	54.2	56.3	0.8	L90	42.5	51.8	54.9	55.8	0.6	L90	41.4	50.0	53.2	54.6	0.7	L90	43.1	50.8	53.6	54.0	0.7
Lmin	39.3	49.3	53.0	54.4	0.3	Lmin	39.1	50.2	53.2	53.3	0.3	Lmin	39.4	48.9	52.2	53.4	0.3	Lmin	41.1	49.7	52.5	52.9	0.3



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

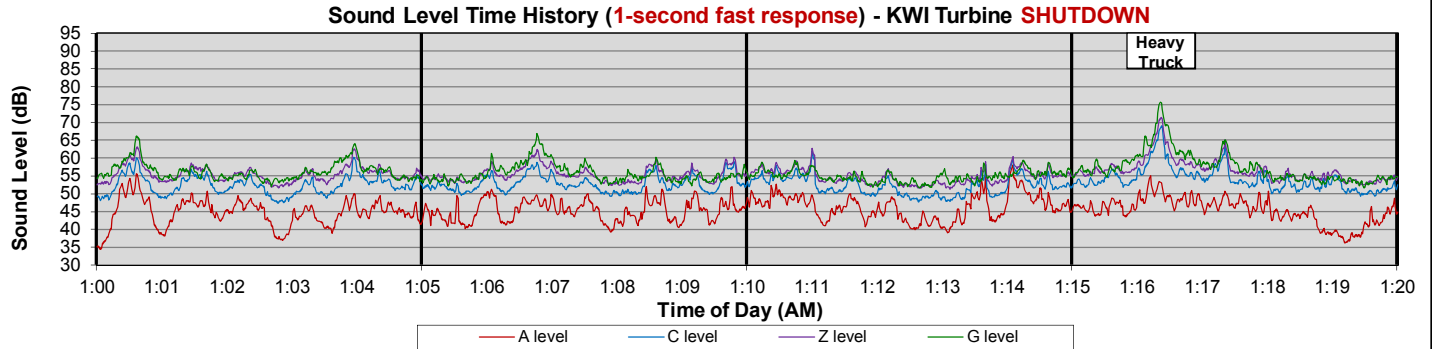
1:25 to 1:30 AM (6% included)						1:30 to 1:35 AM (3% included)						1:35 to 1:40 AM (6% included)						1:40 to 1:45 AM (0% included)					
4.7 m/s	A	C	Z	G	MD	4.8 m/s	A	C	Z	G	MD	4.7 m/s	A	C	Z	G	MD		A	C	Z	G	MD
Lmax	42.2	52.0	54.5	56.7	2.5	Lmax	40.7	53.2	55.5	56.2	2.5	Lmax	41.8	50.1	53.6	56.2	1.6	Lmax	-	-	-	-	-
L01	42.2	51.8	54.5	56.7	2.3	L01	40.7	53.1	55.5	56.2	2.5	L01	41.7	50.1	53.5	56.2	1.6	L01	-	-	-	-	-
Leq	40.6	50.1	53.7	55.8	1.1	Leq	39.9	51.5	54.1	55.2	1.0	Leq	40.4	49.6	52.8	54.9	0.9	Leq	-	-	-	-	-
L50	40.3	49.8	53.7	55.7	1.2	L50	39.7	50.7	53.5	55.1	1.0	L50	40.2	49.6	52.9	54.6	1.0	L50	-	-	-	-	-
L90	39.7	49.4	53.2	55.0	0.6	L90	39.4	50.3	53.3	54.4	0.6	L90	39.6	49.0	52.5	53.9	0.5	L90	-	-	-	-	-
Lmin	39.3	49.3	53.0	54.9	0.4	Lmin	39.1	50.2	53.2	53.3	0.4	Lmin	39.4	48.9	52.2	53.7	0.4	Lmin	-	-	-	-	-



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-66: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 4/7/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>6.9 m/s</b>	Wind Direction: <b>263°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>6.7 m/s</b>	Wind Direction: <b>264°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>



**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**  
HMMH consultant makes noise from **1:05:08 to 1:05:10 (EXCLUDE)**

**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

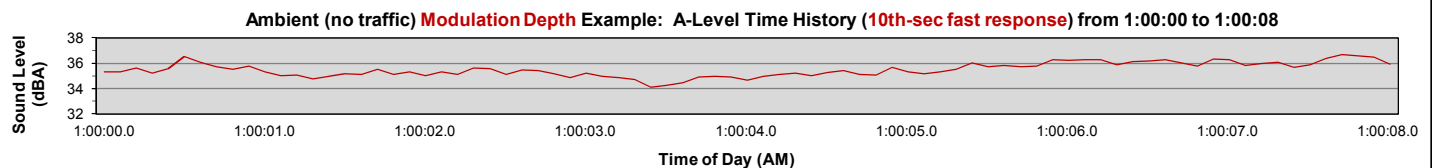
1:00 to 1:05 AM (100% included)						1:05 to 1:10 AM (99% included)						1:10 to 1:15 AM (100% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	55.6	60.3	63.0	66.1	5.1	Lmax	52.1	59.0	62.5	66.9	7.2	Lmax	58.1	62.0	62.8	59.4	8.9	Lmax	55.1	69.0	71.4	75.6	5.7
L01	54.3	59.6	62.6	65.1	3.4	L01	51.3	58.3	60.8	64.3	5.3	L01	55.6	59.8	60.6	58.8	5.5	L01	53.2	67.7	70.5	73.6	4.1
Leq	46.4	53.3	56.1	57.2	1.3	Leq	46.2	53.4	55.9	56.9	1.6	Leq	47.9	53.1	55.3	55.2	1.6	Leq	46.7	56.4	58.9	61.5	1.4
L50	45.2	52.3	55.2	55.7	1.1	L50	45.3	52.3	54.9	55.0	1.3	L50	46.5	51.9	54.5	54.9	1.4	L50	45.9	53.3	56.0	56.5	1.2
L90	38.7	49.0	53.1	53.9	0.6	L90	41.5	50.2	53.1	53.3	0.7	L90	41.3	48.9	52.4	52.8	0.7	L90	39.2	50.7	53.6	53.5	0.7
Lmin	34.5	47.4	51.6	52.0	0.3	Lmin	39.2	49.2	52.3	52.2	0.2	Lmin	39.2	47.7	51.3	51.7	0.3	Lmin	36.2	49.3	52.5	51.6	0.2

1:00 to 1:20 AM (100% included)						Octave Band Sound Levels (1:00 to 1:20 AM)												1/3-Octave Band Sound Levels (1:00 to 1:20 AM)											
Avg	A	C	Z	G	MD																								
Lmax	55.2	62.6	64.9	67.0	6.7																								
L01	54.2	62.0	64.5	68.7	4.6																								
Leq	46.9	54.3	56.8	58.4	1.5																								
L50	45.6	52.5	55.2	55.3	1.3																								
L90	40.7	49.6	52.9	53.4	0.7																								
Lmin	34.5	47.4	51.3	51.6	0.2																								

**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (12% included)						1:05 to 1:10 AM (3% included)						1:10 to 1:15 AM (5% included)						1:15 to 1:20 AM (7% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	40.9	50.8	54.3	57.3	2.2	Lmax	42.1	50.9	53.8	54.5	2.3	Lmax	40.7	49.1	53.0	56.9	2.1	Lmax	39.1	53.6	55.3	54.6	2.1
L01	40.8	50.6	54.3	57.1	2.0	L01	42.1	50.9	53.7	54.5	2.1	L01	40.7	49.1	53.0	56.8	1.9	L01	39.0	53.5	55.2	54.5	1.8
Leq	38.4	48.9	53.0	54.9	1.0	Leq	41.2	50.5	53.4	53.7	1.3	Leq	40.2	48.4	52.2	54.4	1.1	Leq	37.8	51.2	53.6	53.6	1.1
L50	38.3	48.9	53.1	54.5	0.9	L50	41.1	50.5	53.4	53.7	1.2	L50	40.3	48.5	52.2	54.2	1.1	L50	37.9	51.1	53.6	53.6	1.0
L90	35.2	47.9	52.2	53.6	0.6	L90	40.6	50.2	53.3	52.9	0.9	L90	39.4	47.9	51.6	52.4	0.7	L90	36.4	50.2	52.7	53.0	0.6
Lmin	34.5	47.4	51.6	53.1	0.4	Lmin	40.2	49.9	53.2	52.9	0.7	Lmin	39.2	47.7	51.3	51.7	0.4	Lmin	36.2	49.4	52.5	52.1	0.4

1:00 to 1:20 AM (7% included)						Octave Band Sound Levels (1:00 to 1:20 AM)												1/3-Octave Band Sound Levels (1:00 to 1:20 AM)											
Avg	A	C	Z	G	MD																								
Lmax	40.7	51.1	54.1	55.8	2.2																								
L01	41.6	53.0	54.8	57.0	2.0																								
Leq	39.1	49.7	53.1	54.4	1.1																								
L50	38.6	49.3	53.1	54.1	1.0																								
L90	36.4	47.9	52.0	52.9	0.6																								
Lmin	34.5	47.4	51.3	51.7	0.4																								



**Detailed Acoustical Monitoring Data**  
**3 Leland Road**  
**March 22, 2014**

Slow-response data: Pages D-68 to D-73

Fast-response data: Pages D-74 to D-79

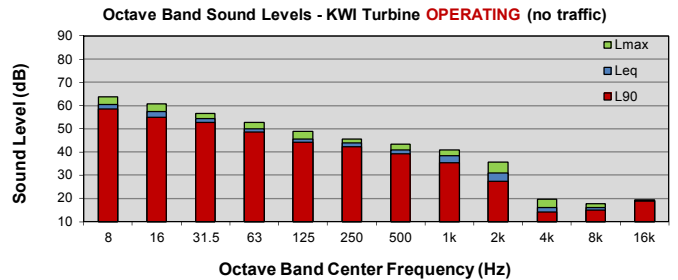
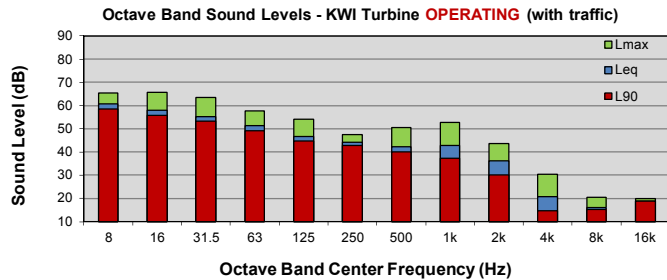
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-68: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 2: 3 Leland Rd. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 7.6 m/s	Wind Direction: 230°	Average Power Level: 614 kW	Air Temperature: 32 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 228°	Average Power Level: 819 kW	Air Temperature: 32 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 229°	Average Power Level: 586 kW	Air Temperature: 32 °F

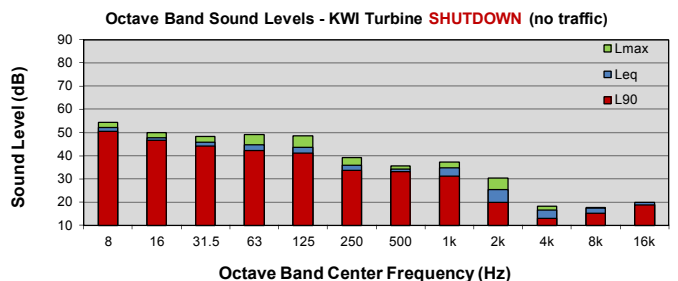
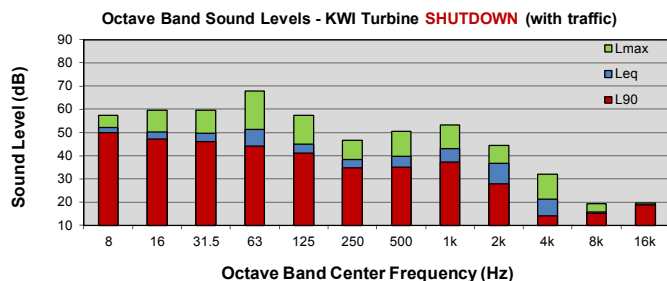
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:25 to 1:45 AM (100% included)						1:25 to 1:45 AM (25% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	51.8	60.8	67.1	70.1	4.2	Avg Lmax	44.0	57.3	65.2	67.8	3.3
L01	50.9	60.6	66.9	69.8	3.0	L01	44.0	57.4	65.2	67.6	3.4
Leq	45.5	56.6	63.8	65.8	1.3	Leq	42.3	55.5	63.2	65.2	1.5
L50	44.8	56.3	63.6	65.5	0.8	L50	42.3	55.5	63.1	65.1	1.4
L90	41.7	54.9	62.1	63.9	0.7	L90	40.7	54.3	61.7	63.5	0.8
Lmin	39.7	53.2	60.3	61.6	0.2	Lmin	39.7	53.2	60.5	61.6	0.4

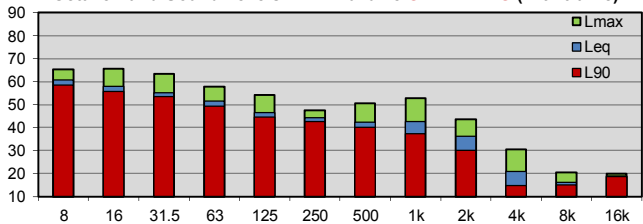
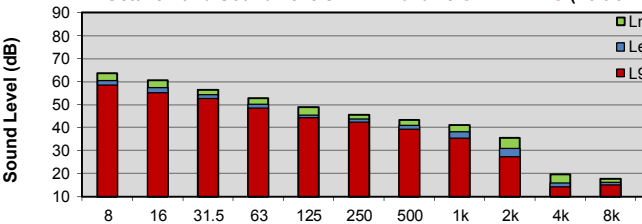
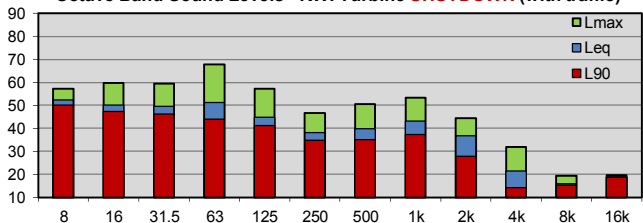
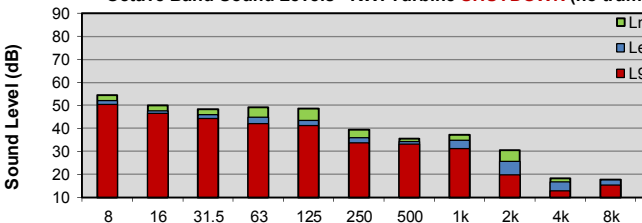


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 227°	Average Power Level: 000 kW	Air Temperature: 32 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 228°	Average Power Level: 000 kW	Air Temperature: 32 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (97% included)						1:00 to 1:20 AM (5% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	51.7	62.1	64.3	64.9	4.9	Avg Lmax	38.2	49.8	55.6	56.8	2.1
L01	50.5	63.3	65.2	65.1	3.6	L01	39.5	50.9	56.4	57.2	2.2
Leq	45.0	53.6	57.6	58.3	1.2	Leq	37.4	49.0	55.0	55.6	0.9
L50	43.8	51.8	56.6	57.2	1.1	L50	36.7	48.9	55.0	55.5	0.8
L90	39.8	49.3	54.7	55.3	0.6	L90	34.8	47.7	54.0	54.7	0.5
Lmin	34.4	47.0	53.5	53.6	0.2	Lmin	34.4	47.0	53.5	54.3	0.3



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-69: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.1	1.3	6.8	8.0	12.0	17.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	5.8	4.6	6.7	7.3	9.2	9.7
	L01	-0.8	0.4	5.9	7.2	11.2	16.6		L01	5.8	4.5	6.6	7.3	9.1	9.6
	Leq	-6.2	-5.0	0.5	1.7	5.8	11.1		Leq	4.1	2.9	5.0	5.6	7.5	8.0
	L50	-6.9	-5.7	-0.2	1.0	5.0	10.4		L50	4.1	2.8	4.9	5.5	7.4	7.9
	L90	-10.0	-8.8	-3.3	-2.1	2.0	7.3		L90	2.5	1.2	3.3	3.9	5.8	6.3
	Lmin	-12.0	-10.8	-5.3	-4.1	0.0	5.3		Lmin	1.5	0.3	2.4	3.0	4.9	5.3
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-7.7	-6.5	-1.0	0.3	4.3	9.7								
	L01	-7.7	-6.5	-1.0	0.2	4.2	9.6								
	Leq	-9.3	-8.2	-2.7	-1.4	2.6	8.0								
	L50	-9.4	-8.2	-2.7	-1.5	2.5	7.9								
	L90	-11.0	-9.8	-4.3	-3.1	0.9	6.3								
	Lmin	-12.0	-10.8	-5.3	-4.1	0.0	5.3								
								Including traffic on Route 3:							
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
								Excluding traffic on Route 3:							
Leq Octave Band Check: KWI Turbine ONLY				NO KWI PURE TONE		Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check KWI Turbine ONLY				NO KWI PURE TONE		L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-70: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.4	-2.6	7.1	9.0	11.5	13.8	KWI Turbine OPERATING (with traffic)	Avg Lmax	2.8	1.9	9.6	10.6	12.4	13.6
	L01	-1.6	-2.7	6.9	8.8	11.3	13.6		L01	2.6	1.8	9.4	10.4	12.2	13.4
	Leq	-5.6	-6.8	2.9	4.8	7.3	9.6		Leq	-0.6	-1.4	6.2	7.2	9.1	10.2
	L50	-5.9	-7.1	2.6	4.5	7.0	9.3		L50	-0.7	-1.6	6.0	7.0	8.9	10.0
	L90	-7.2	-8.4	1.3	3.1	5.6	7.9		L90	-2.2	-3.1	4.5	5.5	7.4	8.6
	Lmin	-8.9	-10.1	-0.4	1.4	3.9	6.2		Lmin	-4.0	-4.9	2.7	3.7	5.6	6.7
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	7.5	6.4	8.3	8.4	9.6	10.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	9.6	8.8	10.1	10.1	11.2	11.6
	L01	7.6	6.5	8.4	8.5	9.7	10.4		L01	9.7	8.8	10.2	10.2	11.3	11.7
	Leq	5.7	4.6	6.5	6.6	7.9	8.5		Leq	7.6	6.8	8.1	8.2	9.2	9.6
	L50	5.7	4.5	6.4	6.6	7.8	8.5		L50	7.5	6.7	8.1	8.1	9.1	9.6
	L90	4.5	3.3	5.2	5.4	6.6	7.3		L90	6.1	5.3	6.7	6.7	7.7	8.1
	Lmin	3.4	2.3	4.2	4.3	5.5	6.2		Lmin	5.0	4.1	5.5	5.5	6.5	7.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.8	-6.0	3.7	5.5	8.0	10.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.9	0.0	7.6	8.6	10.5	11.6
	L01	-4.7	-5.9	3.8	5.6	8.1	10.4		L01	0.9	0.1	7.7	8.7	10.5	11.7
	Leq	-6.6	-7.8	1.9	3.7	6.2	8.5		Leq	-1.1	-2.0	5.6	6.6	8.5	9.6
	L50	-6.7	-7.9	1.8	3.7	6.2	8.5		L50	-1.2	-2.1	5.5	6.5	8.4	9.6
	L90	-7.9	-9.1	0.6	2.5	5.0	7.3		L90	-2.6	-3.5	4.1	5.1	7.0	8.1
	Lmin	-8.9	-10.1	-0.4	1.4	3.9	6.2		Lmin	-3.8	-4.7	3.0	4.0	5.8	7.0

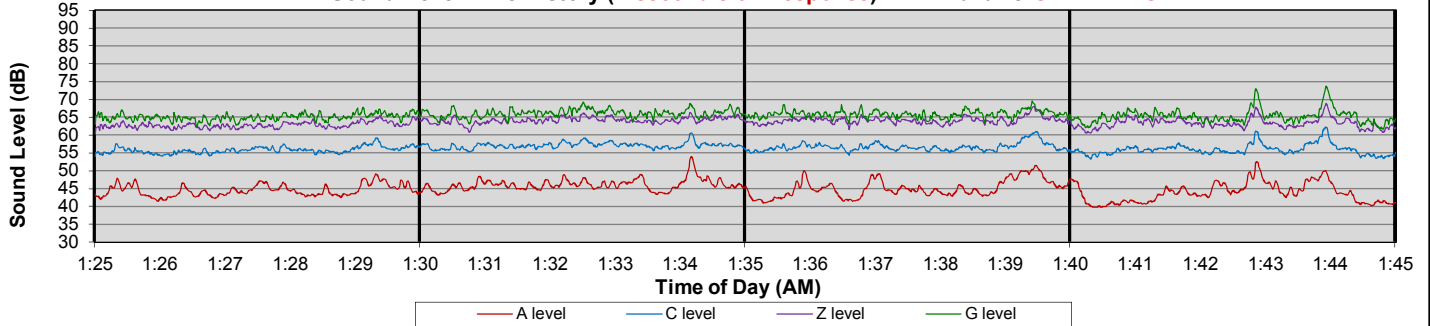
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-71: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	5.2	5.0	11.8	12.8	14.7	16.5	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.7	0.6	3.0	3.2	3.6	4.0
	L01	4.9	4.8	11.6	12.6	14.5	16.3		L01	-1.9	-0.6	1.8	2.0	2.4	2.8
	Leq	0.9	0.8	7.6	8.6	10.5	12.3		Leq	-3.6	-2.3	0.1	0.2	0.7	1.1
	L50	0.6	0.4	7.2	8.3	10.2	12.0		L50	-4.1	-2.8	-0.5	-0.3	0.1	0.6
	L90	-1.0	-1.1	5.7	6.7	8.6	10.4		L90	-4.2	-2.9	-0.5	-0.3	0.1	0.5
	Lmin	-3.3	-3.5	3.3	4.4	6.3	8.1		Lmin	-4.7	-3.4	-1.0	-0.8	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	11.0	10.6	12.2	12.3	13.0	13.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	1.2	1.1	2.4	2.5	2.8	3.0
	L01	10.8	10.4	12.1	12.2	12.9	13.4		L01	1.3	1.3	2.5	2.6	2.9	3.2
	Leq	8.4	8.0	9.7	9.8	10.5	11.0		Leq	-0.6	-0.7	0.6	0.7	1.0	1.2
	L50	8.3	7.9	9.5	9.6	10.4	10.8		L50	-0.7	-0.8	0.5	0.6	0.9	1.1
	L90	6.7	6.3	7.9	8.0	8.8	9.2		L90	-1.3	-1.3	-0.1	0.0	0.3	0.5
	Lmin	4.8	4.4	6.0	6.1	6.9	7.3		Lmin	-1.8	-1.8	-0.5	-0.5	-0.2	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	2.9	2.7	9.5	10.5	12.4	14.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.6	-0.3	2.1	2.3	2.7	3.1
	L01	2.7	2.6	9.4	10.4	12.3	14.1		L01	-1.5	-0.2	2.2	2.4	2.8	3.3
	Leq	0.3	0.2	7.0	8.0	9.9	11.7		Leq	-3.4	-2.1	0.3	0.5	0.9	1.3
	L50	0.2	0.0	6.8	7.9	9.7	11.5		L50	-3.5	-2.2	0.2	0.3	0.8	1.2
	L90	-1.4	-1.6	5.2	6.3	8.1	9.9		L90	-4.1	-2.8	-0.4	-0.2	0.2	0.7
	Lmin	-3.3	-3.5	3.3	4.4	6.3	8.1		Lmin	-4.5	-3.2	-0.9	-0.7	-0.3	0.2

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-72: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/22/2014 from 1:25 to 1:45 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>7.6 m/s</b>	Wind Direction: <b>230°</b>	Avg Power Level: <b>614 kW</b>	Air Temperature: <b>32 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>228°</b>	Avg Power Level: <b>819 kW</b>	Air Temperature: <b>32 °F</b>
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>7.1 m/s</b>	Wind Direction: <b>229°</b>	Avg Power Level: <b>586 kW</b>	Air Temperature: <b>32 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**

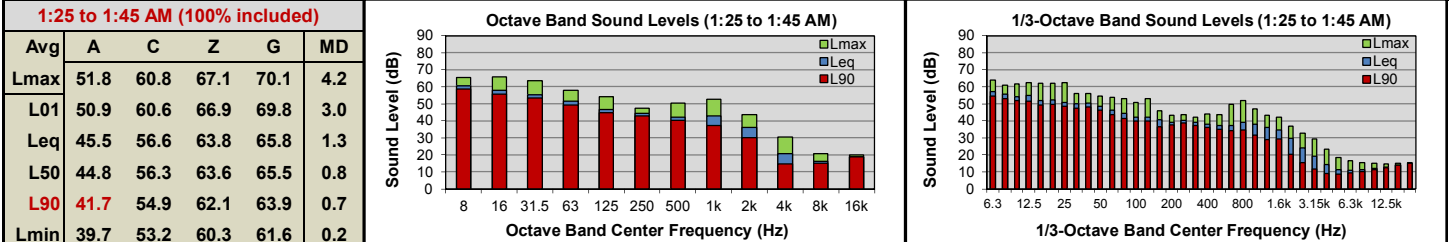


**Event Log**

Traffic on Route 3 **throughout**  
HMMH consultant makes noise from **1:32:11 to 1:32:14 (EXCLUDE)**  
Local vehicle from **1:34:24 to 1:34:26 (EXCLUDE)**

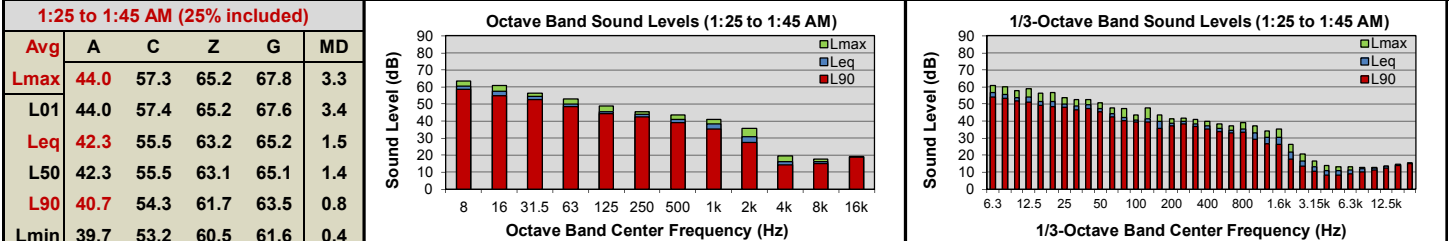
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (100% included)						1:30 to 1:35 AM (98% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	49.1	59.2	65.4	67.8	3.2	Lmax	53.9	60.6	66.4	69.2	5.7	Lmax	51.5	61.0	67.9	69.5	3.4	Lmax	52.6	62.3	68.8	73.6	4.6
L01	48.4	58.4	65.1	67.2	2.6	L01	52.9	60.1	66.0	68.7	2.5	L01	50.7	60.6	67.2	68.7	3.0	L01	51.1	61.8	67.7	72.9	3.5
Leq	44.8	55.9	62.9	65.2	1.3	Leq	46.4	57.1	64.2	66.2	1.2	Leq	45.8	56.8	64.2	66.0	1.3	Leq	44.8	56.3	63.6	65.9	1.3
L50	44.1	55.7	62.7	65.0	1.2	L50	45.9	57.0	64.1	66.1	1.2	L50	44.7	56.5	64.1	65.9	1.2	L50	43.5	55.8	63.2	65.1	1.2
L90	42.7	54.6	61.8	63.8	0.7	L90	44.1	56.0	63.1	64.7	0.7	L90	41.9	55.6	63.0	64.6	0.7	L90	40.6	54.3	61.6	63.2	0.7
Lmin	41.5	54.1	60.3	62.1	0.3	Lmin	43.2	55.2	60.9	63.1	0.3	Lmin	40.9	54.3	61.5	63.0	0.2	Lmin	39.7	53.2	60.5	61.6	0.3

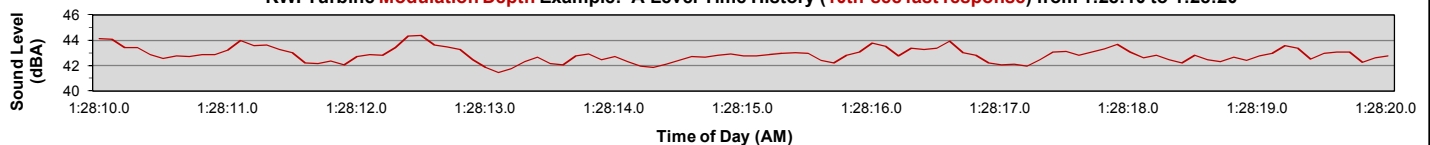


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (30% included)						1:30 to 1:35 AM (8% included)						1:35 to 1:40 AM (24% included)						1:40 to 1:45 AM (40% included)					
7.6 m/s	A	C	Z	G	MD	7.6 m/s	A	C	Z	G	MD	7.9 m/s	A	C	Z	G	MD	7.4 m/s	A	C	Z	G	MD
Lmax	44.2	57.0	65.1	67.6	3.0	Lmax	44.3	57.5	64.7	67.4	2.3	Lmax	43.7	57.6	65.2	68.5	3.2	Lmax	43.9	57.1	65.7	67.6	4.6
L01	44.1	57.0	64.9	67.1	3.0	L01	44.3	57.4	64.7	67.3	2.3	L01	43.7	57.5	65.1	68.5	3.2	L01	43.8	57.0	65.6	67.4	4.2
Leq	43.0	55.4	62.9	65.2	1.4	Leq	43.7	56.4	63.7	65.6	1.3	Leq	42.3	55.9	63.6	65.8	1.7	Leq	41.3	55.2	63.0	64.8	1.5
L50	43.1	55.2	62.7	65.1	1.3	L50	43.7	56.3	63.8	65.5	1.3	L50	42.1	55.8	63.4	65.7	1.5	L50	41.0	55.0	62.9	64.6	1.4
L90	42.1	54.5	62.0	64.2	0.8	L90	43.5	55.8	62.9	63.7	0.7	L90	41.5	55.2	62.7	64.3	1.0	L90	40.1	53.9	61.2	62.7	0.8
Lmin	41.5	54.2	61.4	62.1	0.5	Lmin	43.2	55.5	62.7	63.5	0.4	Lmin	40.9	54.3	61.5	63.0	0.6	Lmin	39.7	53.2	60.5	61.6	0.4



**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:28:10 to 1:28:20**



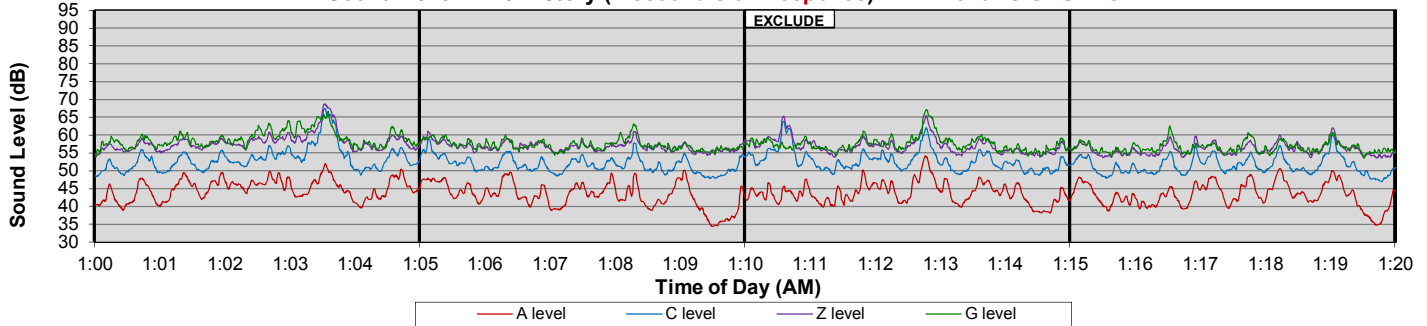
Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-73: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown

HMMH Project # 305270.001

Measurement at Site 2: 3 Leland Rd. on 3/22/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 990 ft	Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 227°	Avg Power Level: 000 kW	Air Temperature: 32 °F
Wind Speed Range: 0-1 m/s	Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 228°	Avg Power Level: 000 kW	Air Temperature: 32 °F

Sound Level Time History (1-second slow response) - KWI Turbine SHUTDOWN



Event Log

Traffic on Route 3 throughout

HMMH consultant makes noise from 1:09:35 to 1:09:38 (EXCLUDE)

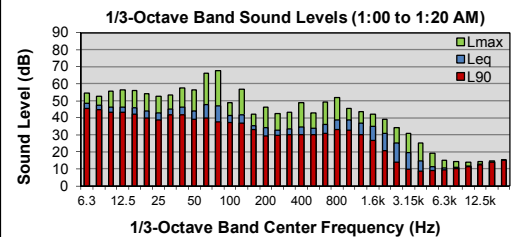
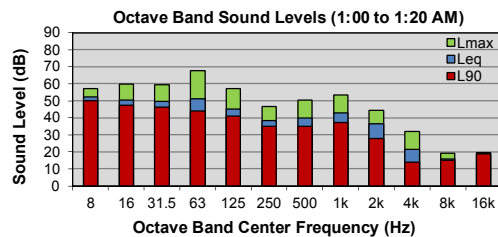
Local vehicle from 1:10:19 to 1:10:48 (EXCLUDE)

Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN

1:00 to 1:05 AM (100% included)						1:05 to 1:10 AM (99% included)						1:10 to 1:15 AM (90% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	52.0	67.5	68.7	66.7	3.7	Lmax	50.1	59.0	61.1	63.2	6.0	Lmax	54.1	62.0	65.4	67.1	5.6	Lmax	50.5	60.1	62.0	62.6	4.3
L01	50.8	65.9	68.0	65.2	3.1	L01	49.5	57.7	60.9	62.4	3.9	L01	53.5	60.5	64.0	65.9	3.9	L01	50.0	58.6	60.7	60.7	2.8
Leq	45.8	55.8	59.2	59.8	1.2	Leq	44.5	52.3	56.9	57.5	1.2	Leq	45.1	53.2	57.3	58.4	1.4	Leq	44.4	52.2	56.3	56.8	1.1
L50	45.2	52.8	57.6	58.6	1.0	L50	43.2	51.3	56.7	57.0	1.0	L50	43.8	52.0	56.3	57.3	1.1	L50	43.0	50.8	55.7	56.2	1.0
L90	41.0	49.8	55.7	56.5	0.6	L90	38.8	49.2	55.3	55.7	0.6	L90	40.1	49.8	54.7	55.5	0.6	L90	39.3	48.7	54.2	54.9	0.6
Lmin	38.9	48.5	53.8	54.0	0.2	Lmin	34.4	47.9	54.4	54.3	0.3	Lmin	38.1	48.7	53.8	54.1	0.3	Lmin	34.8	47.0	53.5	53.6	0.3

1:00 to 1:20 AM (97% included)

Avg	A	C	Z	G	MD
Lmax	51.7	62.1	64.3	64.9	4.9
L01	50.5	63.3	65.2	65.1	3.6
Leq	45.0	53.6	57.6	58.3	1.2
L50	43.8	51.8	56.6	57.2	1.1
L90	39.8	49.3	54.7	55.3	0.6
Lmin	34.4	47.0	53.5	53.6	0.2

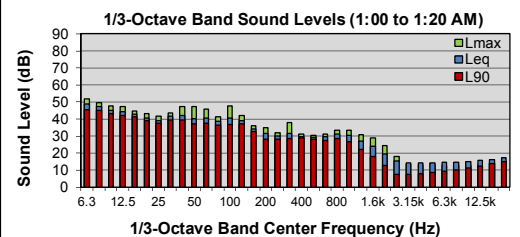
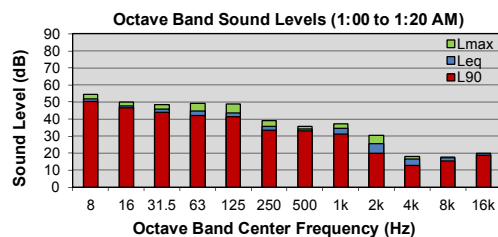


Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN

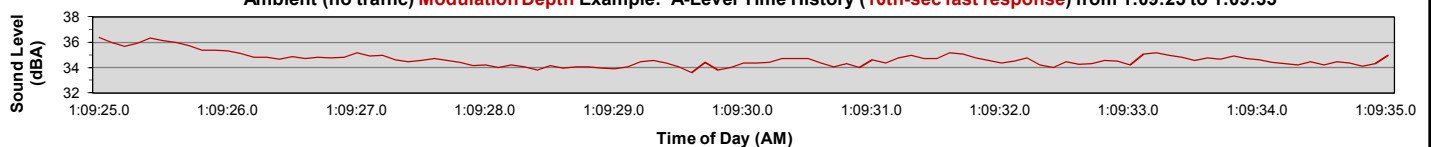
1:00 to 1:05 AM (0% included)						1:05 to 1:10 AM (12% included)						1:10 to 1:15 AM (5% included)						1:15 to 1:20 AM (4% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	-	-	-	-	-	Lmax	39.5	50.5	56.5	57.2	2.4	Lmax	38.8	51.0	55.5	57.2	2.2	Lmax	36.3	48.0	54.7	56.0	1.9
L01	-	-	-	-	-	L01	39.5	50.4	56.4	57.2	2.2	L01	38.8	51.0	55.5	57.1	2.2	L01	36.3	47.9	54.6	56.0	1.8
Leq	-	-	-	-	-	Leq	37.3	49.1	55.5	55.7	0.9	Leq	38.5	49.9	54.7	55.5	0.9	Leq	35.5	47.5	54.1	55.3	0.9
L50	-	-	-	-	-	L50	36.6	48.8	55.4	55.8	0.8	L50	38.5	49.8	54.7	55.5	0.7	L50	35.3	47.6	54.2	55.1	0.8
L90	-	-	-	-	-	L90	34.7	48.1	54.7	55.1	0.6	L90	38.3	48.9	54.0	54.3	0.5	L90	34.8	47.0	53.6	54.9	0.5
Lmin	-	-	-	-	-	Lmin	34.4	47.9	54.4	54.3	0.3	Lmin	38.1	48.7	53.9	54.3	0.4	Lmin	34.8	47.0	53.5	54.8	0.3

1:00 to 1:20 AM (5% included)

Avg	A	C	Z	G	MD
Lmax	38.2	49.8	55.6	56.8	2.1
L01	39.5	50.9	56.4	57.2	2.2
Leq	37.4	49.0	55.0	55.6	0.9
L50	36.7	48.9	55.0	55.5	0.8
L90	34.8	47.7	54.0	54.7	0.5
Lmin	34.4	47.0	53.5	54.3	0.3



Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:09:25 to 1:09:35



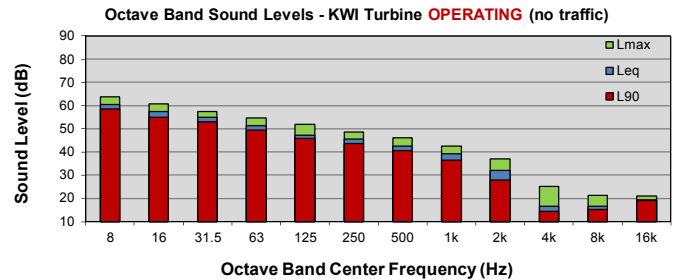
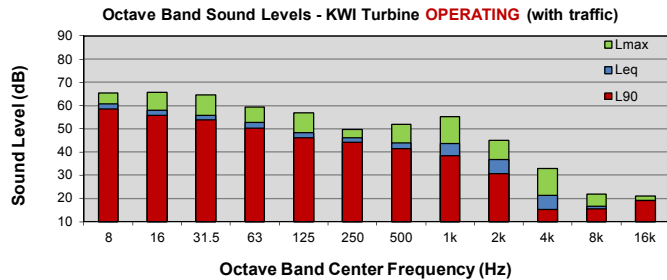
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-74: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 2: 3 Leland Rd. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 7.6 m/s	Wind Direction: 230°	Average Power Level: 614 kW	Air Temperature: 32 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 228°	Average Power Level: 819 kW	Air Temperature: 32 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 229°	Average Power Level: 586 kW	Air Temperature: 32 °F

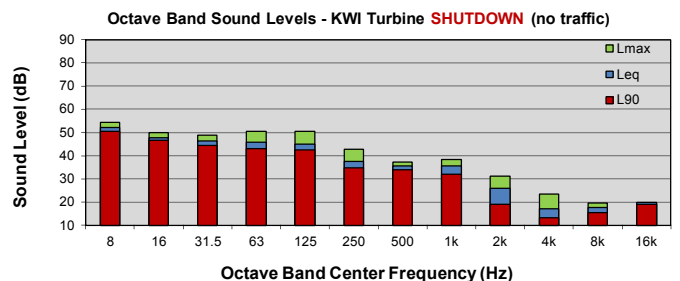
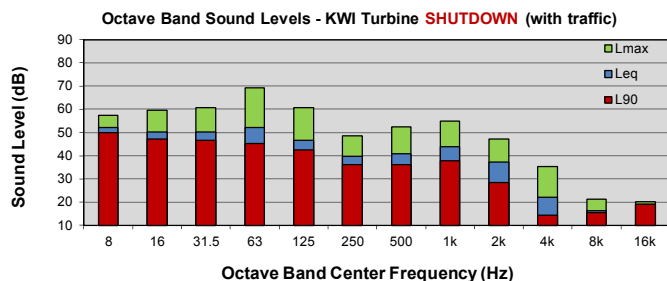
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:25 to 1:45 AM (100% included)						1:25 to 1:45 AM (25% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.0	62.6	67.5	70.2	4.2	Avg Lmax	45.0	60.1	65.4	67.8	3.3
L01	51.2	61.8	67.1	69.9	3.0	L01	45.0	59.8	65.4	67.7	3.4
Leq	46.0	58.0	64.0	65.9	1.3	Leq	43.1	57.1	63.4	65.3	1.5
L50	45.2	57.7	63.8	65.6	0.8	L50	43.0	57.0	63.3	65.2	1.4
L90	42.4	56.1	62.4	64.0	0.7	L90	41.1	55.4	62.0	63.6	0.8
Lmin	39.9	53.2	60.5	61.6	0.2	Lmin	39.9	53.2	60.6	61.6	0.4

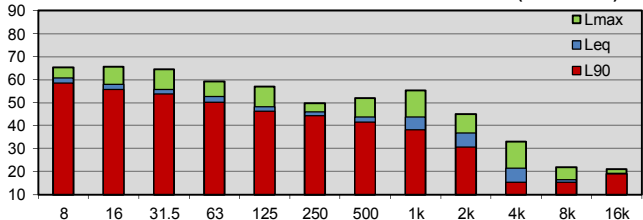
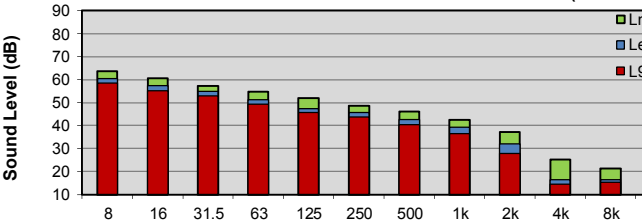
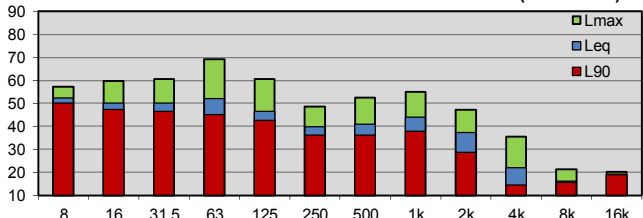
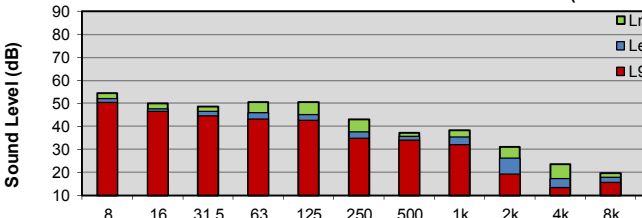


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 227°	Average Power Level: 000 kW	Air Temperature: 32 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 228°	Average Power Level: 000 kW	Air Temperature: 32 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (97% included)						1:00 to 1:20 AM (5% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.1	64.3	65.7	64.9	4.9	Avg Lmax	39.1	51.2	55.9	56.9	2.1
L01	51.8	63.4	65.7	65.1	3.6	L01	40.1	52.3	56.7	57.3	2.2
Leq	45.4	54.7	58.1	58.3	1.2	Leq	37.8	50.1	55.4	55.6	0.9
L50	44.0	52.7	57.0	57.3	1.1	L50	37.1	49.9	55.4	55.5	0.8
L90	39.9	50.2	55.1	55.4	0.6	L90	35.2	48.4	54.4	54.7	0.5
Lmin	34.4	47.5	53.9	53.7	0.2	Lmin	34.4	47.5	53.9	54.3	0.3



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-75: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.0	1.2	7.6	9.0	13.1	18.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	5.9	4.9	7.2	7.9	9.8	10.6
	L01	-1.9	-0.7	5.7	7.2	11.3	16.7		L01	5.9	4.9	7.2	7.8	9.8	10.5
	Leq	-7.1	-5.8	0.6	2.0	6.1	11.6		Leq	4.0	3.0	5.3	5.9	7.9	8.6
	L50	-7.8	-6.6	-0.2	1.2	5.3	10.8		L50	3.9	2.9	5.2	5.9	7.8	8.6
	L90	-10.7	-9.5	-3.1	-1.6	2.4	7.9		L90	2.1	1.1	3.4	4.0	6.0	6.7
	Lmin	-13.2	-12.0	-5.6	-4.1	0.0	5.5		Lmin	0.8	-0.2	2.1	2.8	4.7	5.5
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.1	-6.9	-0.5	1.0	5.1	10.6								
	L01	-8.1	-6.9	-0.5	1.0	5.0	10.5								
	Leq	-10.0	-8.8	-2.4	-0.9	3.1	8.6								
	L50	-10.1	-8.8	-2.4	-1.0	3.1	8.6								
	L90	-11.9	-10.7	-4.3	-2.9	1.2	6.7								
	Lmin	-13.2	-12.0	-5.6	-4.1	0.0	5.5								
								Including traffic on Route 3:							
								L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
								L90 Pure-tone?	NO		L90 Pure-tone?	NO			
								Excluding traffic on Route 3:							
								Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
								Leq Pure-tone?	NO		Leq Pure-tone?	NO			
								L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
								L90 Pure-tone?	NO		L90 Pure-tone?	NO			



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-76: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.7	-0.9	7.8	9.8	12.4	15.1	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.8	1.8	9.4	10.5	12.4	13.7
	L01	-2.5	-1.6	7.1	9.1	11.6	14.3		L01	1.4	1.3	9.0	10.1	12.0	13.2
	Leq	-6.3	-5.4	3.3	5.3	7.8	10.5		Leq	-1.7	-1.7	5.9	7.0	8.9	10.1
	L50	-6.6	-5.8	2.9	4.9	7.5	10.2		L50	-1.8	-1.9	5.8	6.9	8.8	10.0
	L90	-8.2	-7.4	1.3	3.3	5.9	8.6		L90	-3.3	-3.4	4.3	5.4	7.3	8.5
	Lmin	-11.1	-10.2	-1.5	0.5	3.0	5.7		Lmin	-5.2	-5.2	2.4	3.5	5.4	6.6
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.9	7.8	10.0	10.2	11.7	12.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	9.5	8.7	10.0	10.0	11.0	11.5
	L01	8.6	7.5	9.7	10.0	11.4	12.3		L01	9.5	8.7	10.1	10.1	11.0	11.6
	Leq	5.9	4.8	7.0	7.2	8.7	9.6		Leq	7.5	6.7	8.0	8.0	9.0	9.5
	L50	5.8	4.7	6.9	7.1	8.6	9.5		L50	7.4	6.6	8.0	8.0	8.9	9.5
	L90	4.3	3.2	5.4	5.6	7.1	8.0		L90	6.1	5.3	6.6	6.6	7.6	8.1
	Lmin	2.0	0.9	3.1	3.3	4.8	5.7		Lmin	4.7	3.9	5.3	5.3	6.2	6.8
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.2	-3.4	5.3	7.3	9.9	12.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.3	-0.4	7.3	8.4	10.3	11.5
	L01	-4.5	-3.6	5.1	7.1	9.6	12.3		L01	-0.2	-0.3	7.4	8.5	10.4	11.6
	Leq	-7.2	-6.4	2.3	4.3	6.9	9.6		Leq	-2.3	-2.3	5.3	6.4	8.3	9.5
	L50	-7.3	-6.5	2.2	4.2	6.8	9.5		L50	-2.3	-2.4	5.3	6.4	8.3	9.5
	L90	-8.8	-8.0	0.7	2.7	5.2	8.0		L90	-3.7	-3.7	3.9	5.0	6.9	8.1
	Lmin	-11.1	-10.2	-1.5	0.5	3.0	5.7		Lmin	-5.0	-5.1	2.6	3.6	5.6	6.8



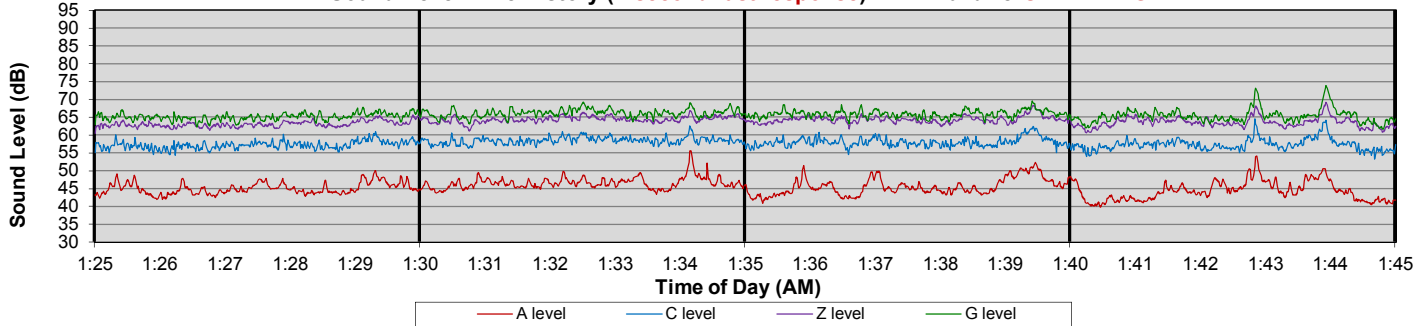
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-77: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	5.2	5.0	11.8	12.9	14.8	16.5	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.7	0.6	3.0	3.2	3.6	4.0
	L01	5.0	4.8	11.6	12.6	14.5	16.3		L01	-1.9	-0.6	1.8	2.0	2.4	2.8
	Leq	1.0	0.8	7.6	8.6	10.5	12.2		Leq	-3.6	-2.3	0.1	0.2	0.7	1.1
	L50	0.6	0.5	7.2	8.3	10.2	11.9		L50	-4.1	-2.8	-0.5	-0.3	0.1	0.6
	L90	-1.0	-1.1	5.6	6.7	8.6	10.3		L90	-4.2	-2.9	-0.5	-0.3	0.1	0.5
	Lmin	-3.3	-3.5	3.3	4.3	6.2	8.0		Lmin	-4.7	-3.4	-1.0	-0.8	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	11.0	10.6	12.2	12.3	13.1	13.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	1.2	1.1	2.4	2.5	2.8	3.0
	L01	10.8	10.4	12.1	12.2	13.0	13.4		L01	1.3	1.3	2.5	2.6	2.9	3.2
	Leq	8.4	8.0	9.7	9.7	10.6	11.0		Leq	-0.6	-0.7	0.6	0.7	1.0	1.2
	L50	8.3	7.9	9.6	9.6	10.5	10.9		L50	-0.7	-0.8	0.5	0.6	0.9	1.1
	L90	6.7	6.3	7.9	8.0	8.8	9.2		L90	-1.3	-1.3	-0.1	0.0	0.3	0.5
	Lmin	4.8	4.4	6.0	6.1	6.9	7.3		Lmin	-1.8	-1.8	-0.5	-0.5	-0.2	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	2.9	2.7	9.5	10.6	12.4	14.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.6	-0.3	2.1	2.3	2.7	3.1
	L01	2.8	2.6	9.4	10.4	12.3	14.0		L01	-1.5	-0.2	2.2	2.4	2.8	3.3
	Leq	0.3	0.2	7.0	8.0	9.9	11.6		Leq	-3.4	-2.1	0.3	0.5	0.9	1.3
	L50	0.2	0.1	6.9	7.9	9.8	11.5		L50	-3.5	-2.2	0.2	0.3	0.8	1.2
	L90	-1.4	-1.6	5.2	6.3	8.2	9.9		L90	-4.1	-2.8	-0.4	-0.2	0.2	0.7
	Lmin	-3.3	-3.5	3.3	4.3	6.2	8.0		Lmin	-4.5	-3.2	-0.9	-0.7	-0.3	0.2

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-78: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/22/2014 from 1:25 to 1:45 AM with KWI Turbine OPERATING**

Site data	Supervisory Control and Data Acquisition (SCADA) data				
Distance from KWI: <b>990 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>7.6 m/s</b>	Wind Direction: <b>230°</b>	Avg Power Level: <b>614 kW</b>	Air Temperature: <b>32 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>228°</b>	Avg Power Level: <b>819 kW</b>	Air Temperature: <b>32 °F</b>
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>7.1 m/s</b>	Wind Direction: <b>229°</b>	Avg Power Level: <b>586 kW</b>	Air Temperature: <b>32 °F</b>

**Sound Level Time History (1-second fast response) - KWI Turbine OPERATING**

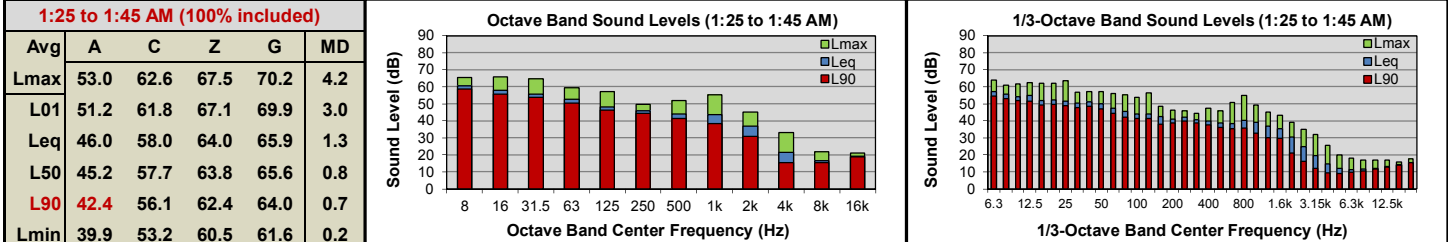


**Event Log**

Traffic on Route 3 **throughout**  
HMMH consultant makes noise from **1:32:11 to 1:32:14 (EXCLUDE)**  
Local vehicle from **1:34:24 to 1:34:26 (EXCLUDE)**

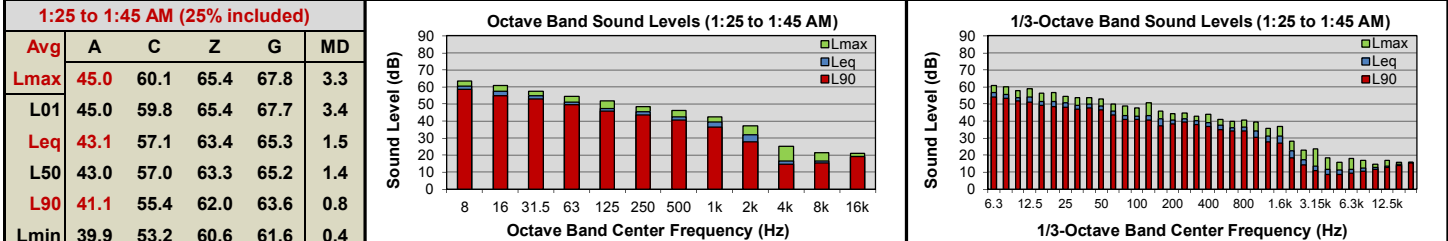
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

	1:25 to 1:30 AM (100% included)						1:30 to 1:35 AM (98% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)				
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	50.0	60.9	65.6	67.9	3.2	Lmax	55.6	62.6	66.9	69.3	5.7	Lmax	52.3	62.3	68.2	69.6	3.4	Lmax	54.2	64.5	69.2	73.9	4.6
L01	49.1	60.2	65.3	67.2	2.6	L01	52.4	61.1	66.3	68.8	2.5	L01	51.4	61.8	67.5	68.8	3.0	L01	51.2	63.5	68.1	72.9	3.5
Leq	45.4	57.4	63.1	65.2	1.3	Leq	46.9	58.6	64.5	66.3	1.2	Leq	46.3	58.2	64.5	66.1	1.3	Leq	45.3	57.7	63.8	65.9	1.3
L50	44.7	57.2	62.9	65.1	1.2	L50	46.4	58.5	64.4	66.2	1.2	L50	45.1	57.8	64.3	65.9	1.2	L50	44.0	57.2	63.5	65.1	1.2
L90	43.2	55.8	62.1	63.8	0.7	L90	44.7	57.2	63.4	64.8	0.7	L90	42.6	56.5	63.2	64.6	0.7	L90	41.1	55.5	61.9	63.2	0.7
Lmin	41.9	54.3	60.5	62.2	0.3	Lmin	43.5	56.2	61.1	63.1	0.3	Lmin	40.9	54.5	61.7	63.0	0.2	Lmin	39.9	53.2	60.6	61.6	0.3

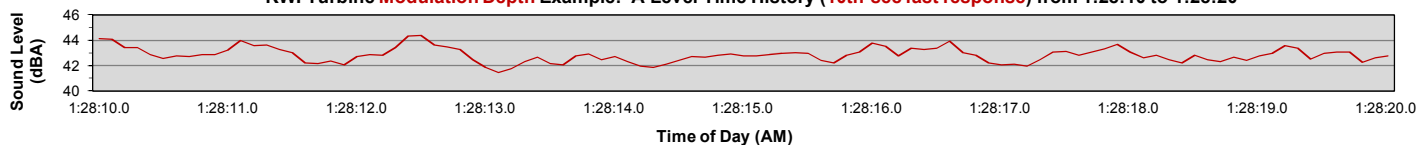


**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

	1:25 to 1:30 AM (30% included)						1:30 to 1:35 AM (8% included)						1:35 to 1:40 AM (24% included)						1:40 to 1:45 AM (40% included)				
7.6 m/s	A	C	Z	G	MD	7.6 m/s	A	C	Z	G	MD	7.9 m/s	A	C	Z	G	MD	7.4 m/s	A	C	Z	G	MD
Lmax	45.0	59.6	65.3	67.6	3.0	Lmax	45.0	60.7	64.9	67.5	2.3	Lmax	45.3	60.1	65.4	68.5	3.2	Lmax	44.7	59.8	65.9	67.7	4.6
L01	44.9	59.0	65.2	67.1	3.0	L01	45.0	60.3	64.9	67.4	2.3	L01	44.9	59.9	65.2	68.5	3.2	L01	44.3	59.0	65.7	67.5	4.2
Leq	43.8	56.9	63.1	65.3	1.4	Leq	44.4	58.1	64.0	65.7	1.3	Leq	43.1	57.5	63.8	65.8	1.7	Leq	42.0	56.6	63.3	64.9	1.5
L50	43.8	56.7	62.9	65.1	1.3	L50	44.4	58.0	64.0	65.5	1.3	L50	43.0	57.3	63.7	65.8	1.5	L50	41.7	56.5	63.2	64.7	1.4
L90	42.6	55.5	62.3	64.3	0.8	L90	43.9	56.8	63.2	63.8	0.7	L90	42.1	56.3	62.9	64.4	1.0	L90	40.7	54.9	61.4	62.7	0.8
Lmin	41.9	54.5	61.6	62.2	0.5	Lmin	43.5	56.6	63.0	63.6	0.4	Lmin	40.9	54.5	61.7	63.0	0.6	Lmin	39.9	53.2	60.6	61.6	0.4



**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:28:10 to 1:28:20**

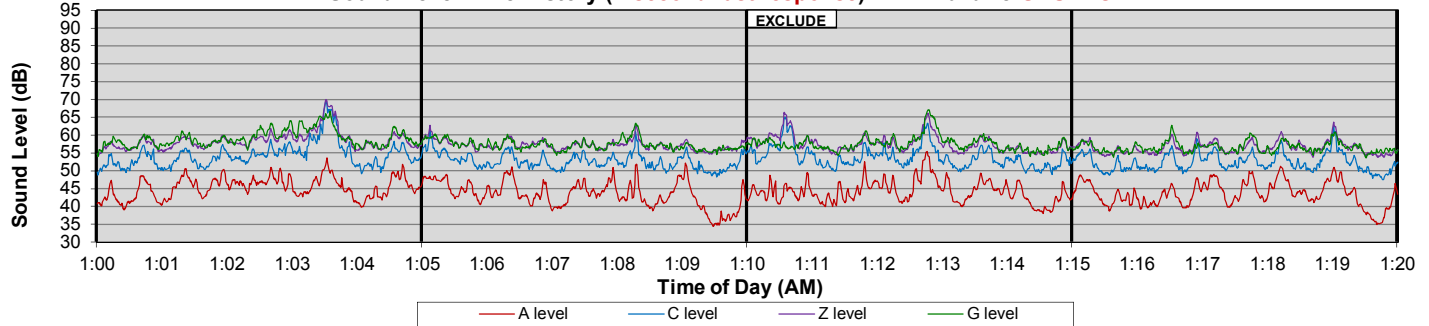


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-79: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/22/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>227°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>32 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>228°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>32 °F</b>

**Sound Level Time History (1-second fast response) - KWI Turbine SHUTDOWN**



**Event Log**

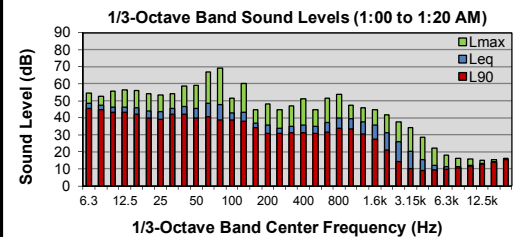
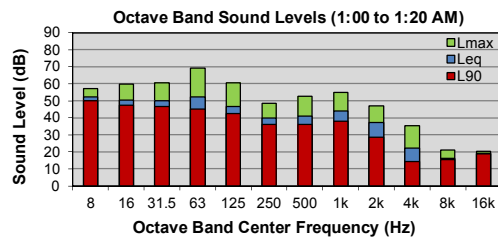
Traffic on Route 3 **throughout**  
HMMH consultant makes noise from **1:09:35 to 1:09:38 (EXCLUDE)**  
Local vehicle from **1:10:19 to 1:10:48 (EXCLUDE)**

**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (100% included)						1:05 to 1:10 AM (99% included)						1:10 to 1:15 AM (90% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	53.6	69.5	70.0	66.7	3.7	Lmax	52.1	61.7	62.8	63.2	6.0	Lmax	55.4	63.4	66.2	67.1	5.6	Lmax	51.2	62.5	63.7	62.7	4.3
L01	51.7	67.3	68.2	65.2	3.1	L01	51.2	59.2	61.2	62.5	3.9	L01	54.0	62.3	64.8	66.0	3.9	L01	50.8	59.8	61.7	60.8	2.8
Leq	46.2	56.9	59.7	59.9	1.2	Leq	44.9	53.4	57.4	57.6	1.2	Leq	45.7	54.3	57.8	58.5	1.4	Leq	44.8	53.2	56.8	56.9	1.1
L50	45.5	53.9	58.0	58.6	1.0	L50	43.4	52.3	57.1	57.0	1.0	L50	43.8	52.8	56.7	57.3	1.1	L50	43.3	51.6	56.1	56.3	1.0
L90	41.3	50.7	56.1	56.5	0.6	L90	38.8	50.3	55.6	55.7	0.6	L90	40.4	50.6	55.0	55.5	0.6	L90	39.6	49.5	54.5	54.9	0.6
Lmin	39.1	48.8	54.2	54.0	0.2	Lmin	34.4	48.2	54.7	54.4	0.3	Lmin	38.0	49.0	54.4	54.1	0.3	Lmin	34.9	47.5	53.9	53.7	0.3

**1:00 to 1:20 AM (97% included)**

Avg	A	C	Z	G	MD
Lmax	53.1	64.3	65.7	64.9	4.9
L01	51.8	63.4	65.7	65.1	3.6
Leq	45.4	54.7	58.1	58.3	1.2
L50	44.0	52.7	57.0	57.3	1.1
L90	39.9	50.2	55.1	55.4	0.6
Lmin	34.4	47.5	53.9	53.7	0.2

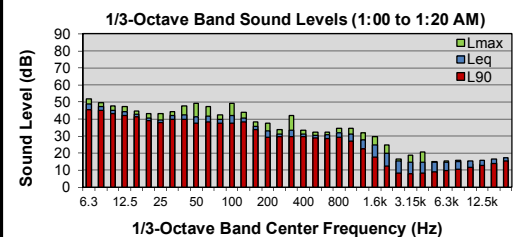
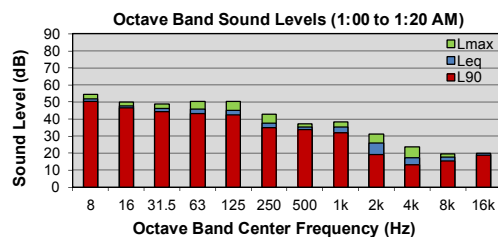


**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

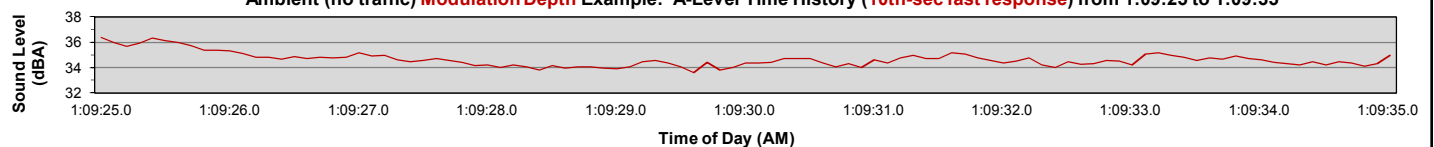
1:00 to 1:05 AM (0% included)						1:05 to 1:10 AM (12% included)						1:10 to 1:15 AM (5% included)						1:15 to 1:20 AM (4% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	-	-	-	-	-	Lmax	40.2	52.0	56.8	57.3	2.4	Lmax	40.0	52.4	55.9	57.3	2.2	Lmax	37.0	49.1	54.9	56.0	1.9
L01	-	-	-	-	-	L01	40.1	52.0	56.8	57.3	2.2	L01	39.9	52.4	55.9	57.1	2.2	L01	37.0	49.1	54.9	56.0	1.8
Leq	-	-	-	-	-	Leq	37.7	50.2	55.8	55.8	0.9	Leq	39.0	50.8	55.1	55.5	0.9	Leq	35.9	48.4	54.3	55.3	0.9
L50	-	-	-	-	-	L50	37.0	50.0	55.7	55.8	0.8	L50	38.9	50.4	55.2	55.5	0.7	L50	35.7	48.5	54.4	55.1	0.8
L90	-	-	-	-	-	L90	34.9	49.1	55.0	55.1	0.6	L90	38.4	49.6	54.5	54.4	0.5	L90	35.1	47.6	53.9	54.9	0.5
Lmin	-	-	-	-	-	Lmin	34.4	48.2	54.7	54.4	0.3	Lmin	38.0	49.3	54.5	54.3	0.4	Lmin	34.9	47.5	53.9	54.8	0.3

**1:00 to 1:20 AM (5% included)**

Avg	A	C	Z	G	MD
Lmax	39.1	51.2	55.9	56.9	2.1
L01	40.1	52.3	56.7	57.3	2.2
Leq	37.8	50.1	55.4	55.6	0.9
L50	37.1	49.9	55.4	55.5	0.8
L90	35.2	48.4	54.4	54.7	0.5
Lmin	34.4	47.5	53.9	54.3	0.3



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:09:25 to 1:09:35**



**Detailed Acoustical Monitoring Data**  
**3 Leland Road**  
**March 2, 2014**

Slow-response data: Pages D-81 to D-86

Fast-response data: Pages D-87 to D-92

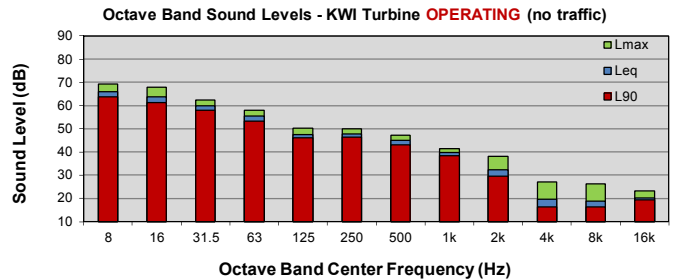
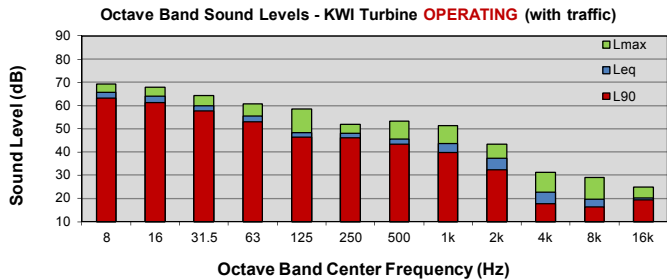
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-81: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 2: 3 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 199°	Average Power Level: 827 kW	Air Temperature: 33 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 200°	Average Power Level: 1054 kW	Air Temperature: 33 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 8.8 m/s	Wind Direction: 199°	Average Power Level: 1139 kW	Air Temperature: 33 °F

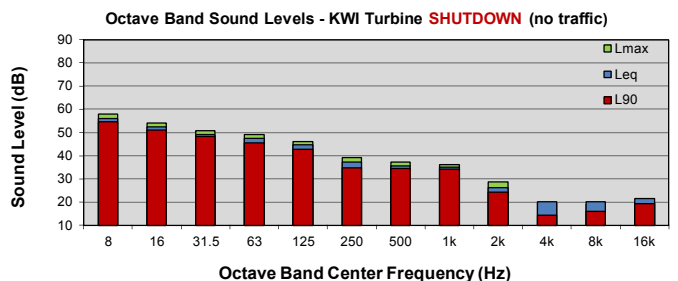
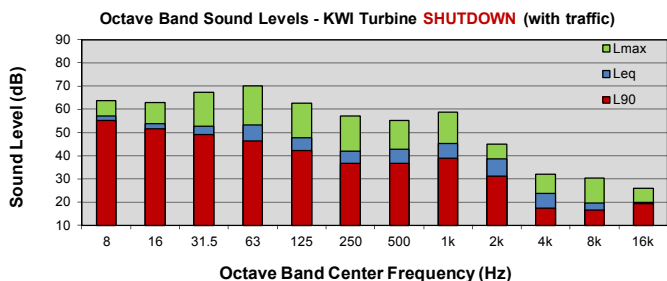
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:30 to 1:50 AM (100% included)						1:30 to 1:50 AM (16% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	51.7	63.3	71.5	74.6	4.6	Avg Lmax	46.0	62.1	70.6	73.7	4.3
L01	51.0	63.3	71.4	74.3	3.6	L01	46.6	62.4	71.2	74.1	4.3
Leq	47.4	61.0	68.9	71.5	1.7	Leq	45.4	60.7	69.0	71.4	2.2
L50	46.9	60.9	68.8	71.3	0.9	L50	45.4	60.7	68.8	71.3	2.2
L90	45.2	59.0	66.9	69.2	0.8	L90	44.3	59.2	67.3	69.3	1.4
Lmin	42.2	57.1	63.8	66.1	0.3	Lmin	42.2	57.9	66.6	68.2	0.7



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 197°	Average Power Level: 000 kW	Air Temperature: 33 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 196°	Average Power Level: 000 kW	Air Temperature: 33 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (97% included)						1:00 to 1:20 AM (2% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	54.3	64.8	67.6	67.7	5.7	Avg Lmax	38.8	51.7	58.9	60.8	1.7
L01	54.9	64.5	67.0	66.4	3.7	L01	38.9	52.7	59.8	61.5	2.4
Leq	47.3	56.1	61.1	61.7	1.2	Leq	38.1	51.5	58.8	60.2	0.8
L50	46.1	54.2	60.4	61.2	1.1	L50	38.0	51.3	58.9	60.0	0.8
L90	41.2	51.4	58.7	59.6	0.6	L90	37.4	50.2	57.5	59.0	0.5
Lmin	37.2	49.9	57.2	57.9	0.2	Lmin	37.2	50.0	57.2	58.4	0.3



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-82: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)							Operating - Shutdown Differences (excluding traffic on Route 3)								
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-2.6	-3.3	4.3	5.5	10.4	14.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.3	7.2	7.9	8.1	8.7	8.9
	L01	-3.3	-3.9	3.7	4.9	9.8	13.9		L01	7.9	7.8	8.5	8.7	9.2	9.5
	Leq	-6.9	-7.5	0.1	1.3	6.2	10.3		Leq	6.6	6.5	7.3	7.4	8.0	8.2
	L50	-7.4	-8.0	-0.4	0.8	5.7	9.8		L50	6.6	6.5	7.3	7.4	8.0	8.2
	L90	-9.2	-9.8	-2.2	-1.0	3.9	8.0		L90	5.5	5.4	6.2	6.3	6.9	7.1
	Lmin	-12.1	-12.7	-5.1	-3.9	1.0	5.0		Lmin	3.4	3.3	4.1	4.2	4.8	5.0
Operating - Shutdown Differences: Overall Comparison							Octave Band Sound Level Comparison: Pure-tone Check								
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.3	-8.9	-1.3	-0.1	4.8	8.9	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-7.7	-8.3	-0.7	0.5	5.4	9.5	Excluding traffic on Route 3:							
	Leq	-8.9	-9.5	-1.9	-0.7	4.2	8.2	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L50	-8.9	-9.5	-1.9	-0.7	4.2	8.2	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L90	-10.0	-10.6	-3.0	-1.8	3.1	7.1	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
	Lmin	-12.1	-12.7	-5.1	-3.9	1.0	5.0	L90 Pure-tone?	NO		L90 Pure-tone?	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-83: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.4	-1.1	7.2	9.1	11.9	13.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	3.9	4.5	10.4	11.1	12.7	14.3
	L01	-1.4	-1.2	7.2	9.1	11.9	13.4		L01	3.8	4.4	10.3	10.9	12.6	14.2
	Leq	-3.8	-3.5	4.9	6.8	9.6	11.0		Leq	1.3	1.9	7.8	8.5	10.2	11.7
	L50	-3.8	-3.6	4.8	6.7	9.5	11.0		L50	1.3	1.9	7.8	8.4	10.1	11.7
	L90	-5.8	-5.5	2.9	4.8	7.6	9.1		L90	-0.7	-0.1	5.8	6.5	8.1	9.7
	Lmin	-7.7	-7.4	1.0	2.9	5.7	7.1		Lmin	-3.8	-3.2	2.7	3.4	5.0	6.6
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	10.4	9.4	10.6	10.9	11.9	12.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	11.7	10.8	11.8	11.7	13.1	13.5
	L01	10.7	9.7	10.9	11.2	12.2	12.5		L01	12.3	11.4	12.4	12.3	13.7	14.1
	Leq	9.0	8.0	9.2	9.5	10.6	10.8		Leq	10.1	9.2	10.2	10.1	11.4	11.8
	L50	9.0	8.0	9.2	9.5	10.5	10.8		L50	9.9	9.0	10.1	9.9	11.3	11.7
	L90	7.5	6.5	7.7	8.0	9.0	9.3		L90	8.4	7.5	8.5	8.4	9.7	10.1
	Lmin	6.2	5.2	6.4	6.7	7.8	8.0		Lmin	7.7	6.8	7.8	7.7	9.1	9.5
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.6	-2.3	6.0	7.9	10.7	12.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.1	3.7	9.6	10.2	11.9	13.5
	L01	-2.3	-2.0	6.3	8.2	11.0	12.5		L01	3.7	4.3	10.2	10.8	12.5	14.1
	Leq	-4.0	-3.7	4.7	6.5	9.3	10.8		Leq	1.4	2.0	7.9	8.6	10.2	11.8
	L50	-4.0	-3.7	4.6	6.5	9.3	10.8		L50	1.3	1.9	7.8	8.4	10.1	11.7
	L90	-5.5	-5.2	3.1	5.0	7.8	9.3		L90	-0.3	0.3	6.2	6.8	8.5	10.1
	Lmin	-6.8	-6.5	1.9	3.7	6.5	8.0		Lmin	-1.0	-0.3	5.5	6.2	7.9	9.5



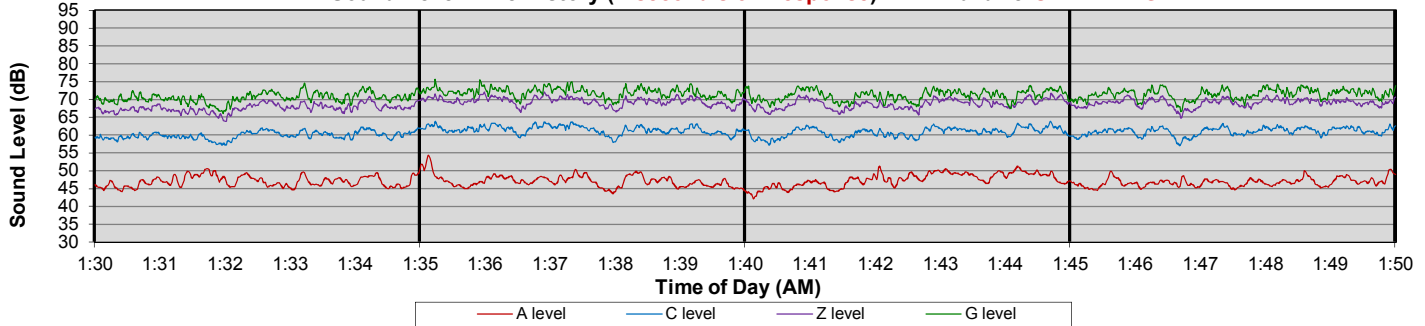
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-84: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	6.9	8.2	12.9	13.4	15.0	16.6	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.1	0.9	3.3	3.5	4.0	4.4
	L01	6.6	7.9	12.6	13.1	14.7	16.3		L01	-2.0	0.0	2.4	2.6	3.0	3.4
	Leq	3.8	5.1	9.8	10.3	11.9	13.6		Leq	-4.0	-2.0	0.4	0.6	1.1	1.5
	L50	3.6	5.0	9.7	10.1	11.7	13.4		L50	-4.8	-2.8	-0.4	-0.2	0.3	0.7
	L90	1.5	2.8	7.5	8.0	9.6	11.3		L90	-4.8	-2.8	-0.4	-0.2	0.2	0.6
	Lmin	-1.6	-0.3	4.4	4.9	6.5	8.1		Lmin	-5.4	-3.4	-1.0	-0.8	-0.3	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	12.9	12.1	13.4	13.7	14.7	15.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.6	1.9	3.4	3.5	3.8	4.0
	L01	13.3	12.5	13.8	14.1	15.1	15.6		L01	2.6	2.0	3.5	3.5	3.9	4.1
	Leq	10.6	9.9	11.2	11.4	12.4	13.0		Leq	0.5	-0.1	1.4	1.4	1.8	2.0
	L50	10.5	9.7	11.0	11.3	12.3	12.8		L50	0.5	-0.2	1.3	1.3	1.7	1.9
	L90	8.6	7.8	9.1	9.4	10.4	10.9		L90	-0.3	-1.0	0.6	0.6	0.9	1.2
	Lmin	7.4	6.7	8.0	8.3	9.3	9.8		Lmin	-1.0	-1.7	-0.1	-0.1	0.2	0.5
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	6.0	7.3	12.0	12.5	14.1	15.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.4	0.6	3.0	3.2	3.7	4.1
	L01	6.4	7.7	12.4	12.9	14.5	16.1		L01	-1.3	0.7	3.1	3.3	3.7	4.1
	Leq	3.7	5.0	9.7	10.2	11.8	13.5		Leq	-3.4	-1.4	1.0	1.2	1.6	2.0
	L50	3.6	4.9	9.6	10.0	11.6	13.3		L50	-3.5	-1.5	0.9	1.1	1.6	1.9
	L90	1.7	3.0	7.7	8.1	9.7	11.4		L90	-4.2	-2.3	0.2	0.3	0.8	1.2
	Lmin	0.5	1.9	6.6	7.0	8.6	10.3		Lmin	-5.0	-3.0	-0.5	-0.4	0.1	0.5

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-85: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/2/2014 from 1:30 to 1:50 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data					
Distance from KWI: <b>990 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>8.4 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>827 kW</b>	Air Temperature: <b>33 °F</b>		
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>8.5 m/s</b>	Wind Direction: <b>200°</b>	Avg Power Level: <b>1054 kW</b>	Air Temperature: <b>33 °F</b>		
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>8.8 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>1139 kW</b>	Air Temperature: <b>33 °F</b>		

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**

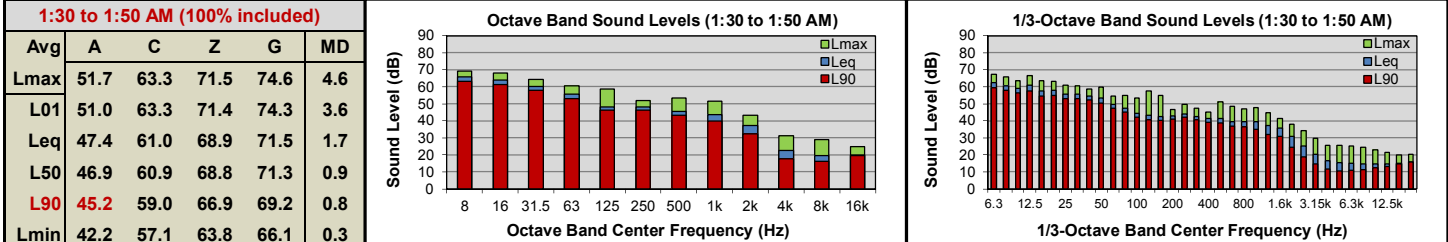


**Event Log**

Traffic on Route 3 **throughout**

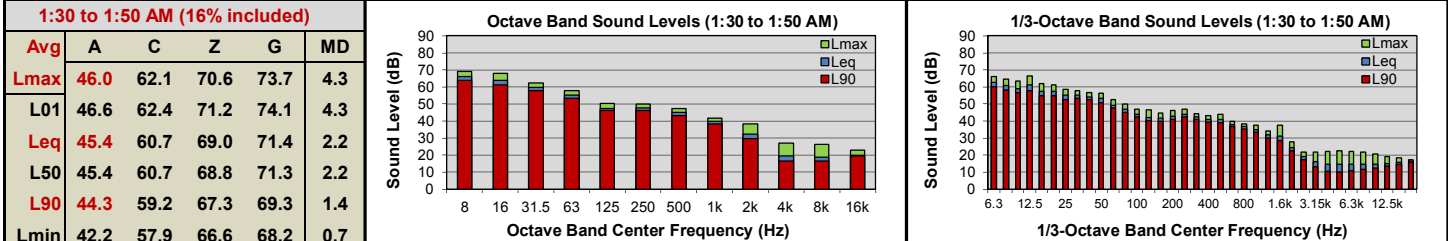
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:30 to 1:35 AM (100% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)						1:45 to 1:50 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	50.6	62.3	70.9	74.6	3.8	Lmax	54.4	63.8	72.1	75.6	5.0	Lmax	51.3	63.9	71.7	73.9	4.5	Lmax	50.4	63.3	71.3	74.2	5.0
L01	50.4	62.1	70.0	73.6	3.3	L01	52.9	63.7	71.6	74.8	4.3	L01	51.0	63.1	71.3	73.7	3.6	L01	50.0	62.9	71.0	74.1	3.5
Leq	47.3	60.0	67.7	70.7	1.4	Leq	47.5	61.7	69.6	72.2	1.8	Leq	47.9	60.9	68.9	71.4	1.6	Leq	46.9	61.1	69.2	71.7	1.9
L50	46.8	59.9	67.5	70.4	1.3	L50	47.0	61.6	69.6	72.1	1.7	L50	47.6	61.0	68.7	71.3	1.5	L50	46.6	61.2	69.2	71.6	1.8
L90	45.3	58.6	66.0	68.7	0.7	L90	45.2	59.9	67.8	70.1	0.9	L90	44.5	58.8	67.0	68.9	0.8	L90	45.3	59.4	67.6	69.5	1.0
Lmin	44.2	57.1	63.8	66.1	0.3	Lmin	43.7	57.9	66.4	68.5	0.3	Lmin	42.2	57.2	65.7	67.4	0.3	Lmin	44.5	57.1	64.7	66.5	0.4

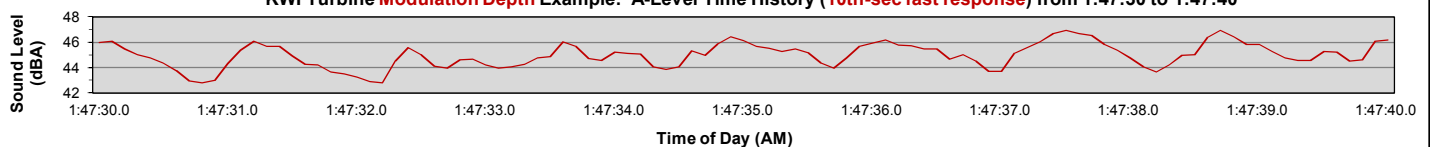


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

1:30 to 1:35 AM (6% included)						1:35 to 1:40 AM (21% included)						1:40 to 1:45 AM (8% included)						1:45 to 1:50 AM (28% included)					
8.4 m/s	A	C	Z	G	MD	8.1 m/s	A	C	Z	G	MD	8.5 m/s	A	C	Z	G	MD	8.8 m/s	A	C	Z	G	MD
Lmax	46.2	61.7	69.8	72.8	3.1	Lmax	46.6	62.4	71.4	74.1	5.0	Lmax	44.7	61.5	70.0	73.6	4.0	Lmax	46.8	62.9	71.3	74.2	5.0
L01	46.1	61.6	69.8	72.8	3.1	L01	46.5	62.3	71.3	73.5	5.0	L01	44.7	61.5	70.0	73.6	4.0	L01	46.7	62.6	71.2	74.1	4.3
Leq	45.5	60.7	68.5	71.3	1.9	Leq	45.3	60.9	69.0	71.5	2.2	Leq	44.1	59.8	67.9	71.1	2.1	Leq	45.7	60.9	69.3	71.4	2.3
L50	45.5	60.5	68.3	71.4	1.8	L50	45.3	61.0	68.9	71.6	2.1	L50	44.2	59.5	67.6	70.6	2.1	L50	45.7	60.7	69.2	71.1	2.3
L90	44.7	59.6	67.3	69.9	1.2	L90	44.4	59.2	67.1	69.4	1.4	L90	43.4	58.6	66.7	69.0	1.3	L90	44.9	59.4	67.7	69.4	1.6
Lmin	44.6	59.3	67.1	69.5	1.1	Lmin	43.7	57.9	66.7	68.5	0.7	Lmin	42.2	58.4	66.6	68.9	0.8	Lmin	44.5	58.9	67.3	68.2	0.7



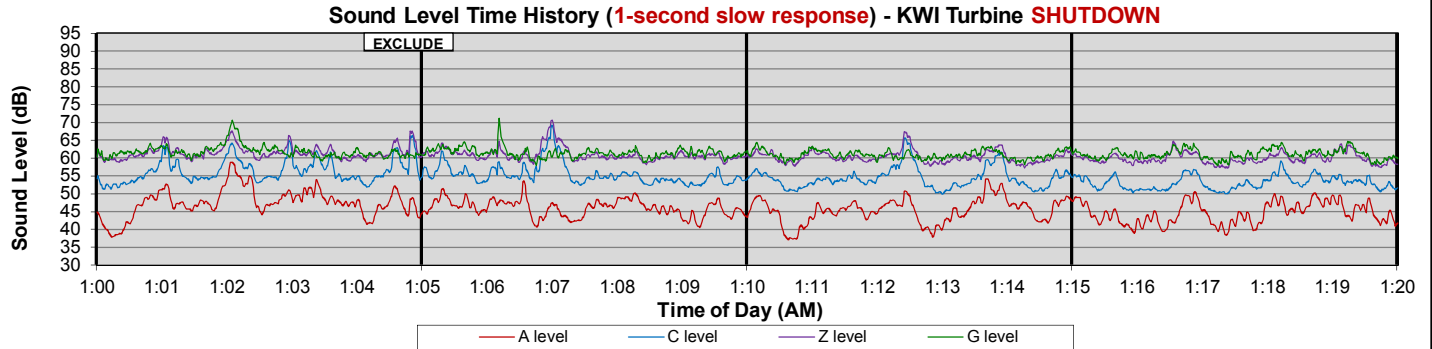
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:47:30 to 1:47:40**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-86: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/2/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>8.9 m/s</b>	Wind Direction: <b>197°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>8.5 m/s</b>	Wind Direction: <b>196°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>

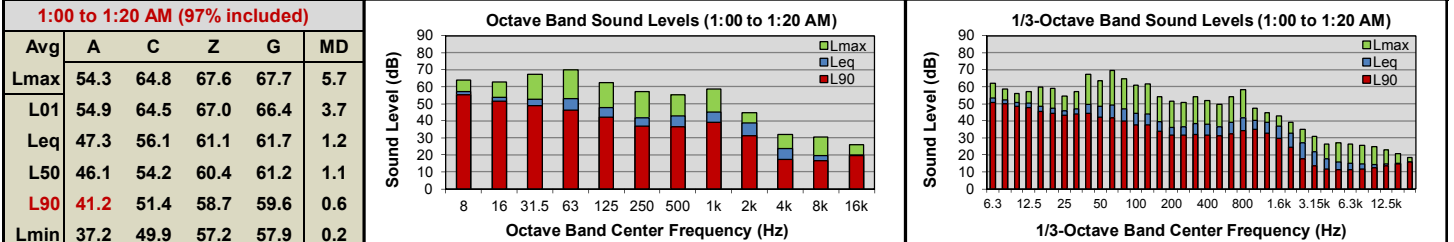


**Event Log**

Traffic on Route 3 **throughout**  
Local vehicle from **1:04:32 to 1:05:06 (EXCLUDE)**  
Loud animal in leaves noise from **1:12:15 to 1:12:22 (EXCLUDE)**

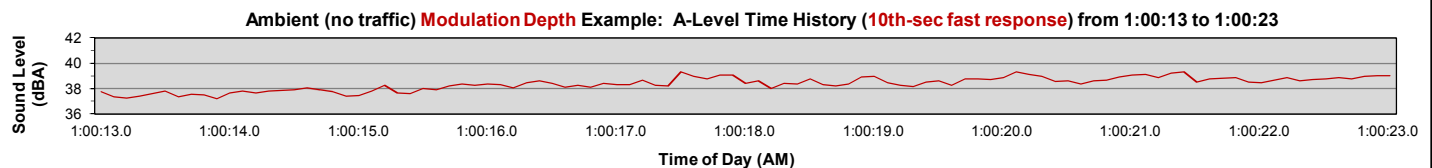
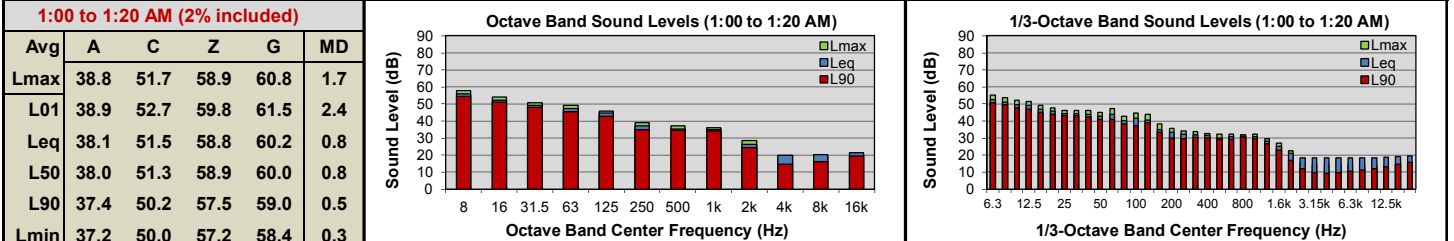
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (91% included)						1:05 to 1:10 AM (98% included)						1:10 to 1:15 AM (98% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	58.9	65.0	67.5	70.6	5.7	Lmax	53.6	69.3	70.6	71.1	6.7	Lmax	54.2	65.6	67.4	64.4	6.0	Lmax	50.6	59.1	64.8	64.7	4.3
L01	58.5	64.1	66.7	69.1	4.0	L01	51.5	66.0	68.8	65.9	3.3	L01	53.7	64.2	66.3	63.3	3.2	L01	50.2	57.0	63.8	64.3	3.6
Leq	49.5	57.2	61.7	62.4	1.3	Leq	46.7	57.1	61.6	61.7	1.2	Leq	46.6	55.7	60.7	61.1	1.1	Leq	45.6	53.5	60.1	61.3	1.3
L50	47.5	54.9	61.0	61.6	1.2	L50	46.3	54.7	60.5	61.3	1.0	L50	45.7	53.8	60.0	60.8	1.0	L50	44.5	52.8	59.6	60.9	1.1
L90	41.8	52.8	59.5	60.3	0.6	L90	42.6	52.8	59.4	59.8	0.6	L90	40.5	51.0	58.4	59.5	0.6	L90	40.7	51.0	58.2	59.4	0.6
Lmin	37.8	51.3	58.7	59.1	0.3	Lmin	40.5	51.8	58.1	57.9	0.2	Lmin	37.2	49.9	57.3	58.1	0.2	Lmin	38.5	50.0	57.2	58.0	0.2



**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (3% included)						1:05 to 1:10 AM (0% included)						1:10 to 1:15 AM (4% included)						1:15 to 1:20 AM (1% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	38.9	52.8	59.8	61.6	1.3	Lmax	-	-	-	-	-	Lmax	38.7	52.3	59.4	61.4	2.5	Lmax	38.7	50.1	57.5	59.4	1.3
L01	38.9	52.7	59.8	61.6	1.3	L01	-	-	-	-	-	L01	38.6	52.3	59.4	61.2	2.5	L01	38.7	50.0	57.5	59.4	1.3
Leq	38.4	52.2	59.3	61.0	0.9	Leq	-	-	-	-	-	Leq	37.7	51.3	58.7	59.9	0.8	Leq	38.6	50.0	57.3	58.9	0.8
L50	38.6	52.0	59.3	61.1	0.9	L50	-	-	-	-	-	L50	37.5	51.1	58.8	59.8	0.7	L50	38.5	50.0	57.2	58.7	0.8
L90	37.9	51.6	58.9	60.2	0.6	L90	-	-	-	-	-	L90	37.3	50.8	57.9	59.3	0.5	L90	38.5	50.0	57.2	58.5	0.4
Lmin	37.8	51.4	58.8	60.0	0.5	Lmin	-	-	-	-	-	Lmin	37.2	50.7	57.8	58.9	0.3	Lmin	38.5	50.0	57.2	58.4	0.4



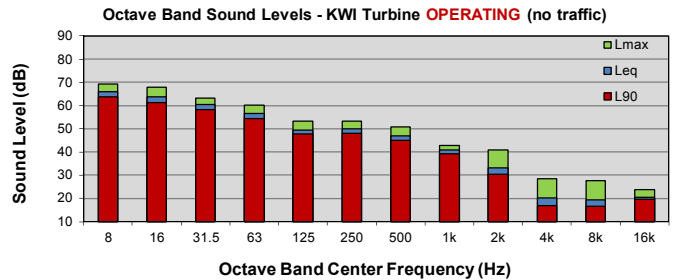
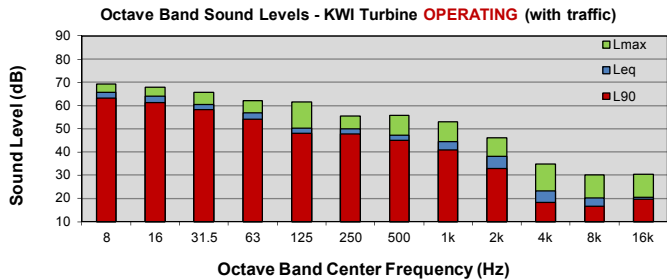
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-87: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 2: 3 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 199°	Average Power Level: 827 kW	Air Temperature: 33 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 200°	Average Power Level: 1054 kW	Air Temperature: 33 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 8.8 m/s	Wind Direction: 199°	Average Power Level: 1139 kW	Air Temperature: 33 °F

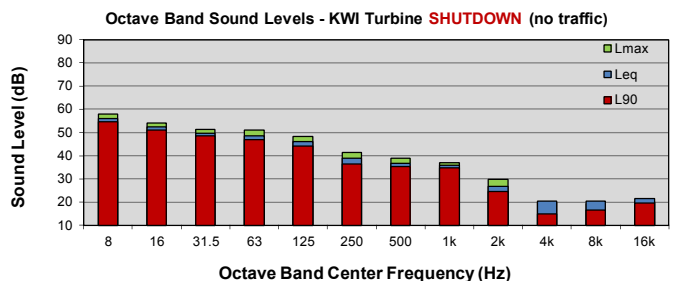
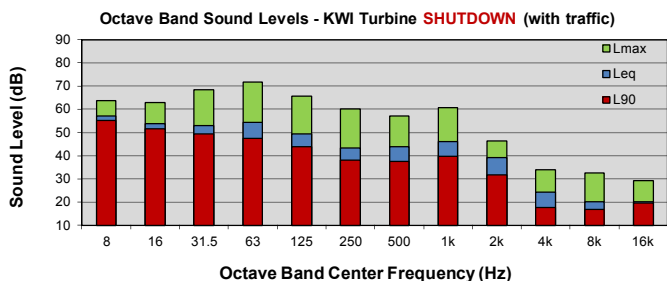
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:30 to 1:50 AM (100% included)						1:30 to 1:50 AM (16% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.0	66.5	71.7	74.6	4.6	Avg Lmax	47.9	64.5	70.8	73.7	4.3
L01	51.7	66.0	71.5	74.4	3.6	L01	48.5	65.1	71.4	74.1	4.3
Leq	48.1	62.7	69.1	71.6	1.7	Leq	46.4	62.5	69.2	71.4	2.2
L50	47.7	62.5	69.0	71.4	0.9	L50	46.4	62.4	69.0	71.3	2.2
L90	45.9	60.2	67.1	69.3	0.8	L90	45.0	60.3	67.4	69.4	1.4
Lmin	43.2	58.0	64.0	66.1	0.3	Lmin	43.2	58.0	66.8	68.3	0.7



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 197°	Average Power Level: 000 kW	Air Temperature: 33 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 196°	Average Power Level: 000 kW	Air Temperature: 33 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (97% included)						1:00 to 1:20 AM (2% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	56.2	66.9	68.6	67.7	5.7	Avg Lmax	39.4	53.6	59.2	60.9	1.7
L01	56.0	66.3	67.9	66.4	3.7	L01	39.6	55.1	60.1	61.6	2.4
Leq	47.8	57.3	61.5	61.7	1.2	Leq	38.5	52.9	59.0	60.3	0.8
L50	46.5	55.2	60.7	61.3	1.1	L50	38.3	52.5	59.1	60.0	0.8
L90	41.5	52.6	59.0	59.7	0.6	L90	37.7	51.4	57.8	59.0	0.5
Lmin	37.4	50.5	57.5	58.0	0.2	Lmin	37.4	50.9	57.5	58.5	0.3



**HMMH Project # 305270.001**

<b>L90</b> Pure-tone?	NO
-----------------------	----

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-89: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.5	0.2	9.2	11.2	13.9	16.0	KWI Turbine OPERATING (with traffic)	Avg Lmax	3.1	3.8	10.2	11.0	12.7	14.2
	L01	-1.0	-0.3	8.7	10.7	13.4	15.5		L01	2.9	3.6	10.0	10.8	12.6	14.1
	Leq	-4.2	-3.5	5.4	7.5	10.1	12.2		Leq	0.5	1.2	7.6	8.4	10.1	11.6
	L50	-4.5	-3.8	5.2	7.2	9.9	12.0		L50	0.4	1.1	7.5	8.3	10.1	11.6
	L90	-6.7	-6.0	3.0	5.0	7.7	9.8		L90	-1.5	-0.8	5.6	6.4	8.1	9.6
	Lmin	-8.9	-8.2	0.7	2.8	5.5	7.6		Lmin	-4.7	-4.0	2.5	3.2	5.0	6.5
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	10.8	9.3	11.5	12.0	13.1	13.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	11.6	10.7	11.8	11.7	13.0	13.3
	L01	11.5	10.0	12.2	12.6	13.7	14.2		L01	12.2	11.3	12.3	12.2	13.6	13.9
	Leq	8.8	7.3	9.5	10.0	11.1	11.6		Leq	10.0	9.1	10.1	10.0	11.4	11.7
	L50	8.7	7.2	9.4	9.9	11.0	11.5		L50	9.8	8.9	10.0	9.9	11.2	11.6
	L90	6.7	5.2	7.4	7.9	8.9	9.4		L90	8.2	7.3	8.4	8.3	9.6	9.9
	Lmin	4.4	2.9	5.1	5.6	6.6	7.1		Lmin	7.6	6.7	7.7	7.7	9.0	9.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.4	-1.8	7.2	9.2	11.9	14.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.2	2.9	9.3	10.1	11.8	13.3
	L01	-1.8	-1.2	7.8	9.9	12.5	14.6		L01	2.8	3.5	9.9	10.7	12.4	13.9
	Leq	-4.5	-3.8	5.2	7.2	9.9	12.0		Leq	0.6	1.3	7.7	8.5	10.2	11.7
	L50	-4.6	-3.9	5.1	7.1	9.8	11.9		L50	0.4	1.1	7.5	8.3	10.1	11.6
	L90	-6.6	-5.9	3.0	5.1	7.8	9.9		L90	-1.2	-0.5	5.9	6.7	8.4	9.9
	Lmin	-8.9	-8.2	0.7	2.8	5.5	7.6		Lmin	-1.8	-1.1	5.3	6.1	7.8	9.3



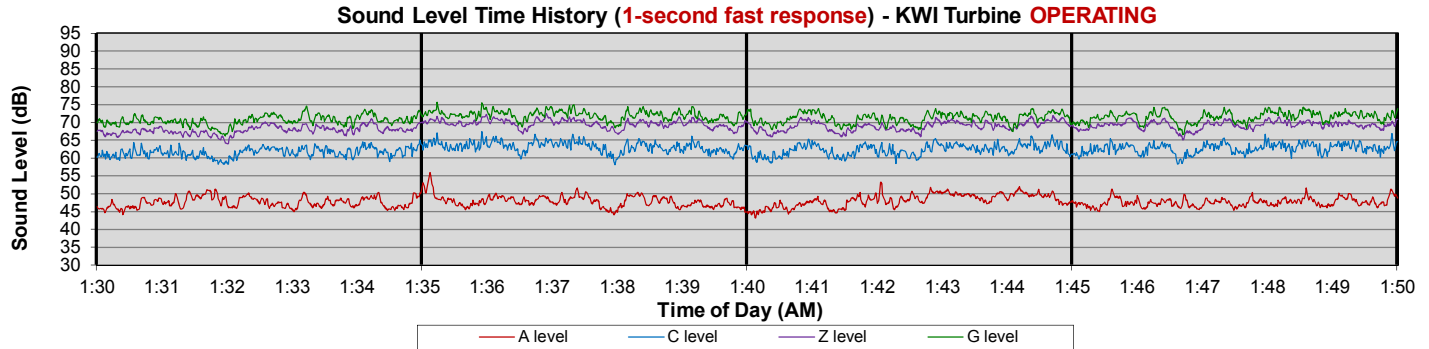
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-90: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	6.9	8.2	12.9	13.4	15.0	16.6	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.1	0.9	3.3	3.5	4.0	4.4
	L01	6.7	8.0	12.7	13.1	14.7	16.4		L01	-2.0	0.0	2.4	2.6	3.0	3.4
	Leq	3.8	5.1	9.8	10.3	11.9	13.6		Leq	-4.0	-2.0	0.4	0.6	1.1	1.5
	L50	3.7	5.0	9.7	10.1	11.7	13.4		L50	-4.8	-2.8	-0.4	-0.2	0.3	0.7
	L90	1.5	2.8	7.5	8.0	9.6	11.3		L90	-4.8	-2.8	-0.4	-0.2	0.2	0.6
	Lmin	-1.6	-0.3	4.4	4.9	6.5	8.1		Lmin	-5.4	-3.4	-1.0	-0.8	-0.3	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	12.9	12.1	13.5	13.7	14.8	15.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.6	1.9	3.4	3.5	3.8	4.0
	L01	13.2	12.5	13.8	14.1	15.1	15.6		L01	2.6	2.0	3.5	3.5	3.9	4.1
	Leq	10.6	9.8	11.2	11.5	12.5	12.9		Leq	0.5	-0.1	1.4	1.4	1.8	2.0
	L50	10.5	9.7	11.1	11.3	12.4	12.8		L50	0.5	-0.2	1.3	1.3	1.7	1.9
	L90	8.5	7.8	9.1	9.4	10.4	10.9		L90	-0.3	-1.0	0.6	0.6	0.9	1.2
	Lmin	7.4	6.7	8.0	8.3	9.3	9.8		Lmin	-1.0	-1.7	-0.1	-0.1	0.2	0.5
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	6.0	7.3	12.0	12.5	14.1	15.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.4	0.6	3.0	3.2	3.7	4.1
	L01	6.4	7.7	12.4	12.8	14.4	16.1		L01	-1.3	0.7	3.1	3.3	3.7	4.1
	Leq	3.7	5.0	9.7	10.2	11.8	13.5		Leq	-3.4	-1.4	1.0	1.2	1.6	2.0
	L50	3.6	4.9	9.6	10.1	11.7	13.3		L50	-3.5	-1.5	0.9	1.1	1.6	1.9
	L90	1.7	3.0	7.7	8.1	9.7	11.4		L90	-4.2	-2.3	0.2	0.3	0.8	1.2
	Lmin	0.5	1.8	6.5	7.0	8.6	10.3		Lmin	-5.0	-3.0	-0.5	-0.4	0.1	0.5



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-91: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/2/2014 from 1:30 to 1:50 AM with KWI Turbine OPERATING**

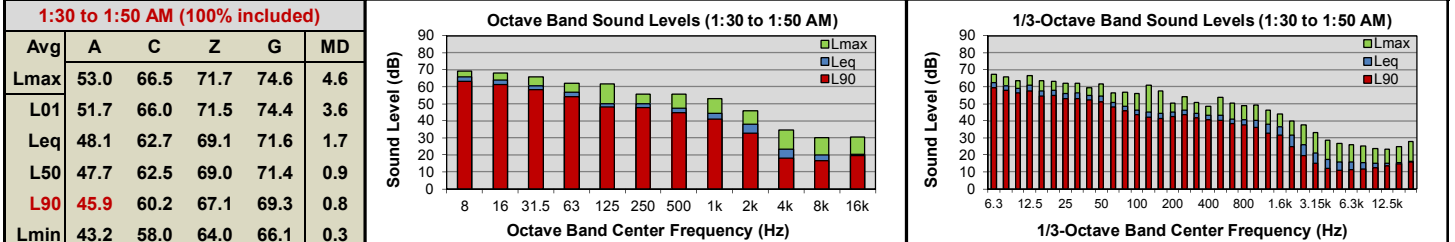
Site data		Supervisory Control and Data Acquisition (SCADA) data					
Distance from KWI: <b>990 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>8.4 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>827 kW</b>	Air Temperature: <b>33 °F</b>		
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>8.5 m/s</b>	Wind Direction: <b>200°</b>	Avg Power Level: <b>1054 kW</b>	Air Temperature: <b>33 °F</b>		
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>8.8 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>1139 kW</b>	Air Temperature: <b>33 °F</b>		



Event Log	
Traffic on Route 3 throughout	

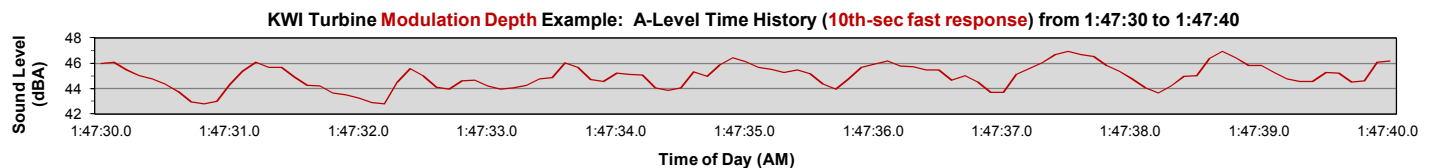
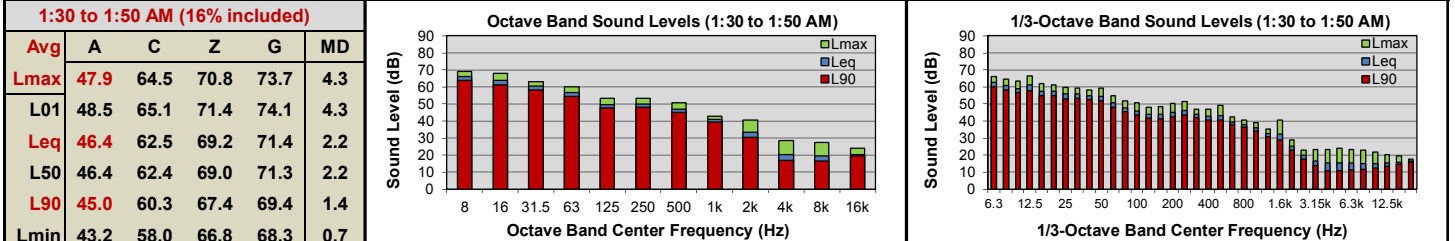
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:30 to 1:35 AM (100% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)						1:45 to 1:50 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	51.2	65.1	71.0	74.6	3.8	Lmax	55.9	67.3	72.4	75.7	5.0	Lmax	53.2	66.6	71.9	73.9	4.5	Lmax	51.6	66.8	71.5	74.3	5.0
L01	51.0	64.4	70.1	73.6	3.3	L01	53.2	66.7	71.7	74.8	4.3	L01	51.9	65.8	71.4	73.8	3.6	L01	51.1	65.6	71.2	74.2	3.5
Leq	47.8	61.7	67.9	70.7	1.4	Leq	48.3	63.4	69.8	72.2	1.8	Leq	48.6	62.6	69.1	71.4	1.6	Leq	47.8	62.9	69.3	71.7	1.9
L50	47.4	61.6	67.7	70.4	1.3	L50	47.8	63.3	69.8	72.1	1.7	L50	48.4	62.4	68.9	71.3	1.5	L50	47.5	62.8	69.4	71.6	1.8
L90	45.8	59.7	66.2	68.7	0.7	L90	46.1	61.3	67.9	70.2	0.9	L90	45.5	60.0	67.2	69.0	0.8	L90	46.3	60.8	67.8	69.5	1.0
Lmin	44.1	58.2	64.0	66.1	0.3	Lmin	44.2	58.0	66.7	68.4	0.3	Lmin	43.2	58.4	65.9	67.4	0.3	Lmin	45.0	58.3	65.0	66.5	0.4



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

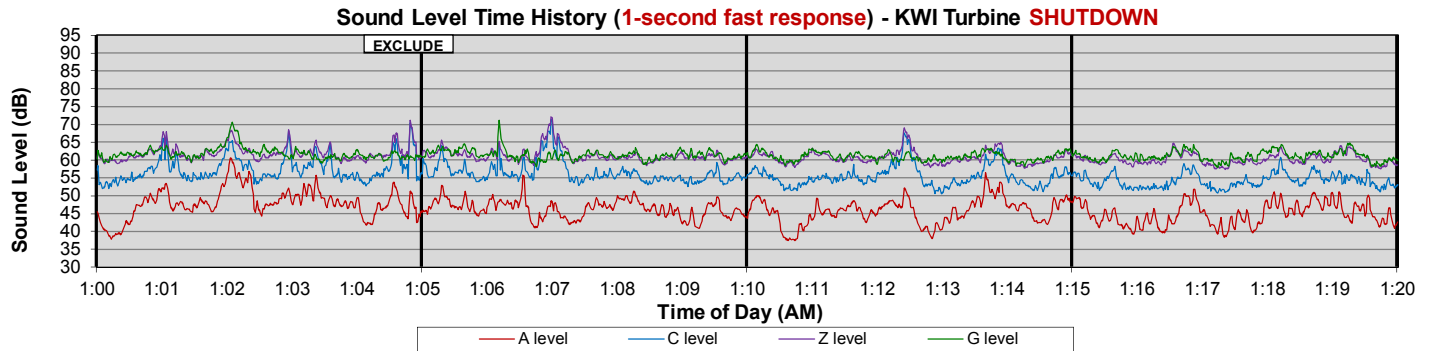
1:30 to 1:35 AM (6% included)						1:35 to 1:40 AM (21% included)						1:40 to 1:45 AM (8% included)						1:45 to 1:50 AM (28% included)					
8.4 m/s	A	C	Z	G	MD	8.1 m/s	A	C	Z	G	MD	8.5 m/s	A	C	Z	G	MD	8.8 m/s	A	C	Z	G	MD
Lmax	47.4	63.4	70.0	72.8	3.1	Lmax	48.5	65.4	71.5	74.1	5.0	Lmax	46.3	63.6	70.1	73.7	4.0	Lmax	49.4	65.6	71.5	74.3	5.0
L01	47.4	63.4	70.0	72.8	3.1	L01	48.3	65.2	71.3	73.5	5.0	L01	46.1	63.5	70.0	73.7	4.0	L01	48.7	64.9	71.4	74.2	4.3
Leq	46.5	62.4	68.7	71.3	1.9	Leq	46.3	62.7	69.2	71.6	2.2	Leq	45.0	61.5	68.1	71.1	2.1	Leq	46.8	62.6	69.5	71.5	2.3
L50	46.4	62.7	68.5	71.5	1.8	L50	46.3	62.6	69.1	71.7	2.1	L50	45.0	61.2	67.8	70.7	2.1	L50	46.7	62.2	69.4	71.1	2.3
L90	45.7	60.8	67.5	70.0	1.2	L90	44.9	60.2	67.3	69.5	1.4	L90	44.2	59.7	66.9	69.1	1.3	L90	45.8	60.5	67.9	69.4	1.6
Lmin	45.1	60.3	67.2	69.6	1.1	Lmin	44.2	58.0	66.9	68.4	0.7	Lmin	43.2	59.3	66.8	68.9	0.8	Lmin	45.0	60.2	67.4	68.3	0.7



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-92: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/2/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>8.9 m/s</b>	Wind Direction: <b>197°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>8.5 m/s</b>	Wind Direction: <b>196°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>

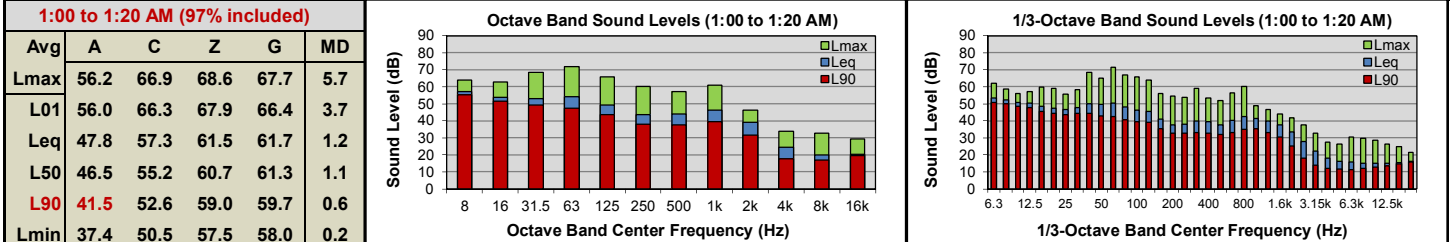


**Event Log**

Traffic on Route 3 **throughout**  
Local vehicle from **1:04:32 to 1:05:06 (EXCLUDE)**  
Loud animal in leaves noise from **1:12:15 to 1:12:22 (EXCLUDE)**

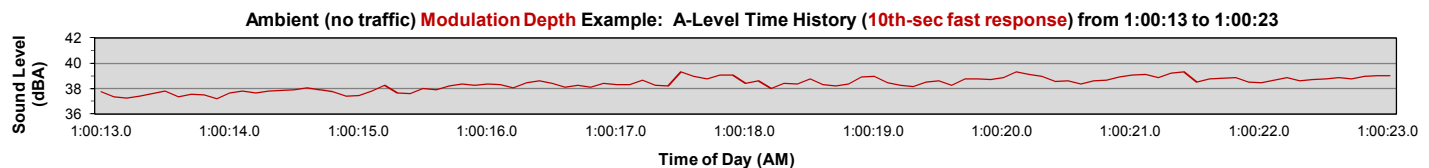
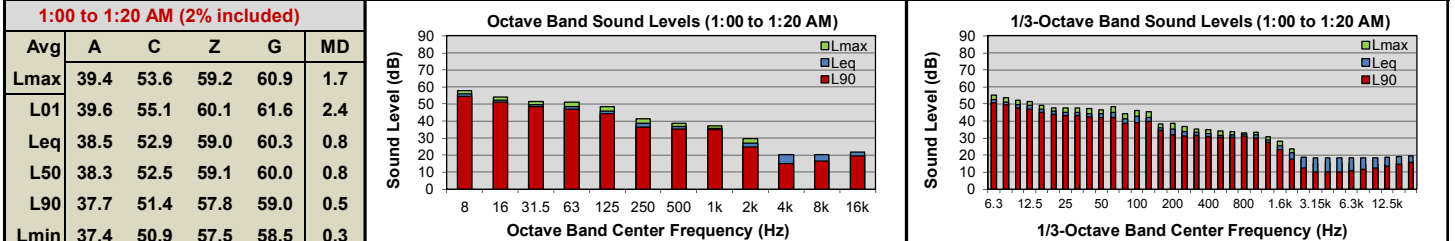
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (91% included)						1:05 to 1:10 AM (98% included)						1:10 to 1:15 AM (98% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	60.6	68.1	68.4	70.7	5.7	Lmax	55.8	71.4	72.1	71.2	6.7	Lmax	56.4	67.5	69.1	64.4	6.0	Lmax	51.8	60.7	64.8	64.7	4.3
L01	59.1	65.9	68.0	69.1	4.0	L01	52.5	68.0	69.7	66.1	3.3	L01	54.3	66.4	67.6	63.4	3.2	L01	51.1	59.0	64.0	64.3	3.6
Leq	50.2	58.4	62.2	62.5	1.3	Leq	47.2	58.4	62.1	61.8	1.2	Leq	47.1	56.9	61.1	61.2	1.1	Leq	46.0	54.7	60.4	61.4	1.3
L50	47.8	56.2	61.4	61.7	1.2	L50	46.7	55.6	60.8	61.4	1.0	L50	46.0	54.9	60.3	60.9	1.0	L50	44.6	53.8	59.8	61.0	1.1
L90	42.0	53.9	59.9	60.3	0.6	L90	42.9	54.0	59.7	59.9	0.6	L90	40.4	52.2	58.7	59.5	0.6	L90	40.7	51.8	58.4	59.4	0.6
Lmin	37.9	51.9	58.9	59.2	0.3	Lmin	40.9	52.5	58.5	58.1	0.2	Lmin	37.4	50.5	57.7	58.1	0.2	Lmin	38.4	50.7	57.5	58.0	0.2



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (3% included)						1:05 to 1:10 AM (0% included)						1:10 to 1:15 AM (4% included)						1:15 to 1:20 AM (1% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	39.6	55.3	60.1	61.6	1.3	Lmax	-	-	-	-	-	Lmax	39.3	54.3	59.6	61.4	2.5	Lmax	39.4	51.4	57.8	59.6	1.3
L01	39.6	55.2	60.1	61.6	1.3	L01	-	-	-	-	-	L01	39.2	54.2	59.6	61.3	2.5	L01	39.4	51.4	57.8	59.6	1.3
Leq	39.0	53.9	59.6	61.0	0.9	Leq	-	-	-	-	-	Leq	38.0	52.4	58.9	59.9	0.8	Leq	39.0	51.1	57.6	59.0	0.8
L50	39.0	53.9	59.6	61.1	0.9	L50	-	-	-	-	-	L50	37.8	52.0	58.9	59.8	0.7	L50	39.0	51.0	57.5	58.7	0.8
L90	38.2	52.7	59.1	60.2	0.6	L90	-	-	-	-	-	L90	37.5	51.7	58.2	59.3	0.5	L90	38.6	50.9	57.5	58.5	0.4
Lmin	37.9	52.5	59.0	60.0	0.5	Lmin	-	-	-	-	-	Lmin	37.4	51.5	57.9	58.9	0.3	Lmin	38.6	50.9	57.5	58.5	0.4



**Detailed Acoustical Monitoring Data**  
**3 Leland Road**  
**March 15, 2014**

Slow-response data: Pages D-94 to D-99

Fast-response data: Pages D-100 to D-105

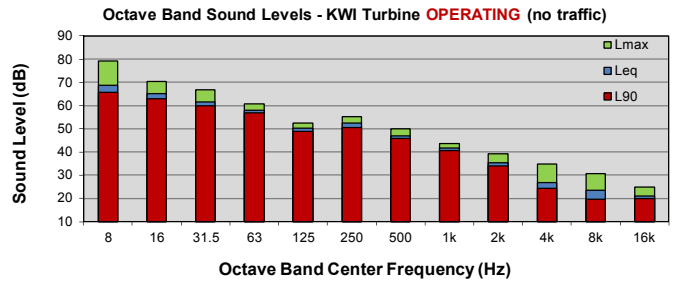
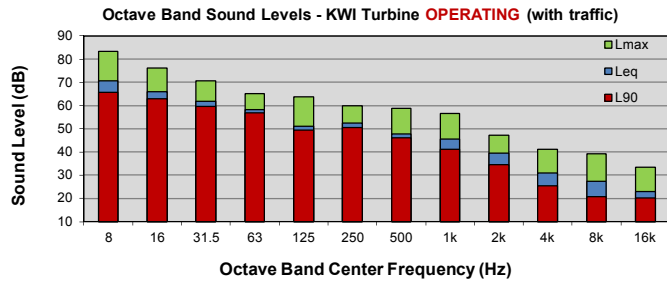
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-94: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 2: 3 Leland Rd. on 3/15/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 176°	Average Power Level: 1505 kW	Air Temperature: 40 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 10.2 m/s	Wind Direction: 177°	Average Power Level: 1805 kW	Air Temperature: 40 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 9.8 m/s	Wind Direction: 179°	Average Power Level: 1624 kW	Air Temperature: 40 °F

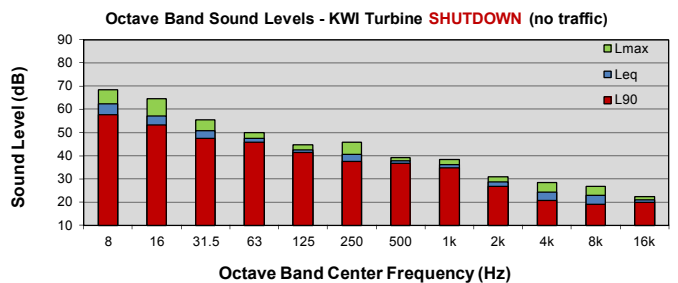
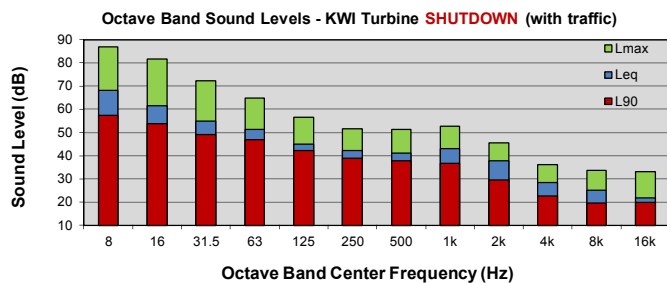
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:50 to 3:10 AM (100% included)						2:50 to 3:10 AM (30% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	54.5	70.6	82.3	82.6	6.4	Avg Lmax	49.3	65.4	75.3	77.1	5.6
L01	56.7	68.3	80.8	80.9	5.2	L01	49.6	65.3	76.9	77.5	5.3
Leq	49.9	63.5	72.6	73.9	2.2	Leq	48.1	62.9	71.2	73.0	2.7
L50	49.2	62.8	70.7	72.9	1.1	L50	48.0	62.7	70.5	72.6	2.6
L90	47.6	61.7	69.2	71.0	1.1	L90	47.1	61.6	69.0	71.0	1.5
Lmin	46.0	59.8	67.0	69.0	0.3	Lmin	46.0	59.8	67.3	69.1	0.4

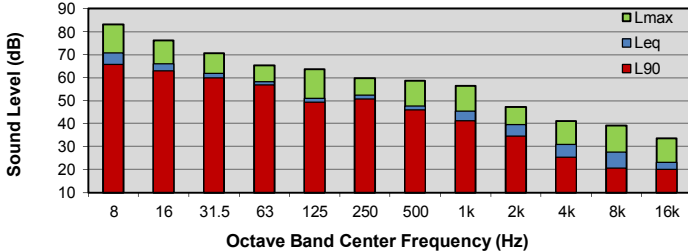
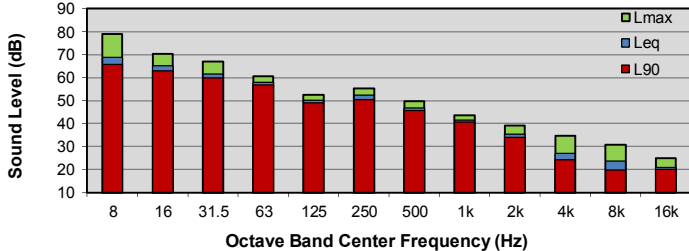
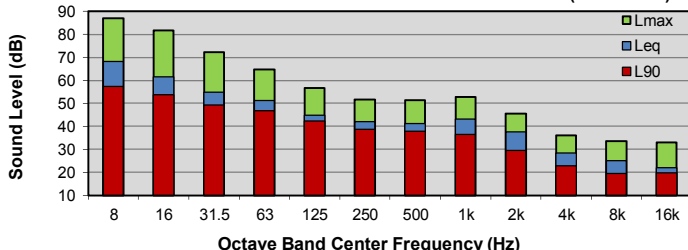
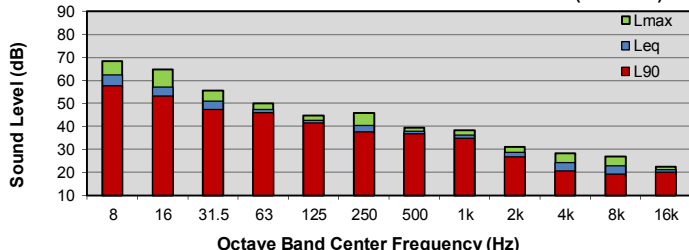


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 10.0 m/s	Wind Direction: 178°	Average Power Level: 000 kW	Air Temperature: 40 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 177°	Average Power Level: 000 kW	Air Temperature: 40 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (99% included)						2:20 to 2:40 AM (8% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	51.8	69.8	82.1	82.1	4.0	Avg Lmax	41.1	56.6	67.5	68.5	1.7
L01	51.5	67.4	80.6	80.1	2.9	L01	41.4	58.9	69.0	71.9	2.0
Leq	45.7	58.1	69.3	69.7	1.0	Leq	39.9	53.6	64.0	65.1	0.9
L50	44.5	54.8	63.9	64.9	0.9	L50	39.8	52.7	62.4	63.3	0.9
L90	40.5	52.4	60.4	61.9	0.5	L90	38.9	51.1	59.9	61.2	0.5
Lmin	38.3	50.1	58.4	59.9	0.2	Lmin	38.3	50.1	59.0	60.1	0.3



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-95: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/15/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.7	3.0	8.8	10.0	14.0	16.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.2	7.9	9.4	9.5	10.3	11.0
	L01	4.9	5.2	11.0	12.3	16.2	18.4		L01	8.5	8.3	9.8	9.9	10.7	11.3
	Leq	-1.8	-1.6	4.2	5.5	9.4	11.6		Leq	7.0	6.7	8.2	8.3	9.2	9.8
	L50	-2.6	-2.3	3.5	4.7	8.7	10.9		L50	6.9	6.6	8.1	8.2	9.0	9.7
	L90	-4.2	-4.0	1.9	3.1	7.1	9.3		L90	6.0	5.7	7.2	7.3	8.1	8.8
	Lmin	-5.8	-5.5	0.3	1.5	5.5	7.7		Lmin	4.9	4.6	6.1	6.2	7.0	7.7
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.5	-2.2	3.6	4.8	8.8	11.0	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-2.1	-1.9	3.9	5.2	9.1	11.3	Excluding traffic on Route 3:							
	Leq	-3.7	-3.4	2.4	3.6	7.6	9.8	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L50	-3.8	-3.5	2.3	3.5	7.5	9.7	Leq Pure-tone?	NO		Leq Pure-tone?	NO			
	L90	-4.7	-4.4	1.4	2.6	6.6	8.8	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
	Lmin	-5.8	-5.5	0.3	1.5	5.5	7.7	L90 Pure-tone?	NO		L90 Pure-tone?	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-96: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/15/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.8	3.2	12.4	15.8	18.1	20.5	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.2	1.7	13.0	18.4	21.9	23.9
	L01	-1.4	1.0	10.2	13.6	15.9	18.2		L01	-1.3	0.2	11.5	16.9	20.5	22.5
	Leq	-6.3	-3.9	5.4	8.7	11.1	13.4		Leq	-9.5	-8.0	3.3	8.7	12.2	14.2
	L50	-6.9	-4.5	4.7	8.1	10.4	12.7		L50	-11.4	-9.9	1.4	6.8	10.4	12.4
	L90	-8.1	-5.7	3.6	6.9	9.3	11.6		L90	-12.9	-11.5	-0.2	5.3	8.8	10.8
	Lmin	-9.9	-7.5	1.7	5.1	7.4	9.7		Lmin	-15.1	-13.6	-2.3	3.1	6.6	8.6
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.7	6.5	11.7	12.6	14.2	15.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.8	6.3	11.3	12.9	15.4	16.3
	L01	8.7	6.4	11.7	12.6	14.2	15.3		L01	9.5	8.0	13.0	14.5	17.1	17.9
	Leq	6.2	4.0	9.2	10.1	11.7	12.8		Leq	3.7	2.2	7.2	8.8	11.3	12.2
	L50	6.1	3.8	9.1	10.0	11.6	12.7		L50	3.0	1.5	6.5	8.1	10.6	11.5
	L90	5.0	2.7	8.0	8.8	10.4	11.5		L90	1.5	0.0	5.1	6.6	9.2	10.0
	Lmin	3.2	0.9	6.2	7.1	8.7	9.7		Lmin	-0.2	-1.7	3.4	4.9	7.5	8.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.4	-2.0	7.2	10.6	12.9	15.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.8	-5.3	6.0	11.4	14.9	16.9
	L01	-4.4	-2.0	7.2	10.6	12.9	15.3		L01	-5.2	-3.7	7.6	13.0	16.6	18.6
	Leq	-6.9	-4.5	4.7	8.1	10.4	12.8		Leq	-10.9	-9.5	1.8	7.3	10.8	12.8
	L50	-7.0	-4.6	4.6	8.0	10.3	12.7		L50	-11.6	-10.1	1.2	6.6	10.1	12.1
	L90	-8.2	-5.8	3.5	6.8	9.2	11.5		L90	-13.1	-11.6	-0.3	5.1	8.7	10.7
	Lmin	-9.9	-7.5	1.7	5.1	7.4	9.7		Lmin	-14.8	-13.3	-2.0	3.4	7.0	8.9

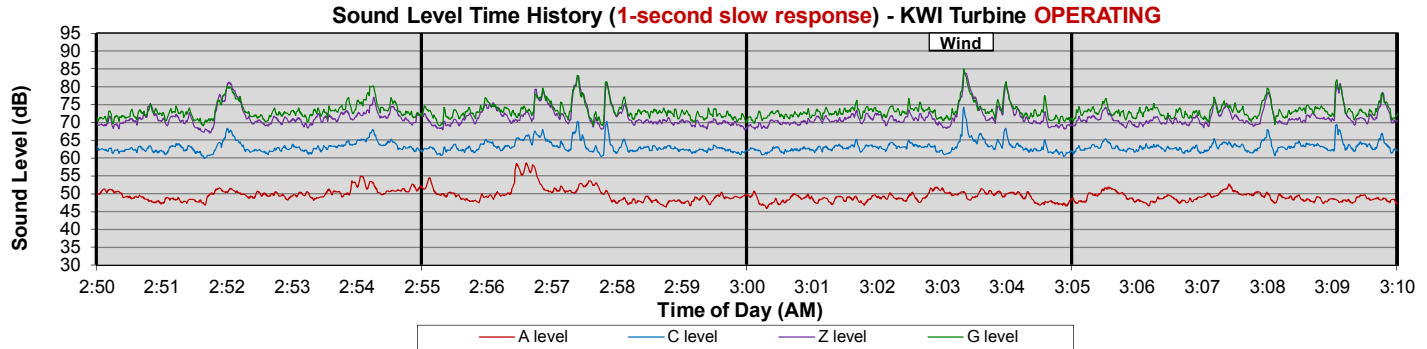
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-97: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/15/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.4	2.5	12.9	17.7	20.7	22.7	KWI Turbine OPERATING (with traffic)	Avg Lmax	2.4	3.5	5.4	5.6	5.9	6.2
	L01	-1.3	0.8	11.2	16.0	19.0	21.0		L01	1.2	2.3	4.2	4.3	4.7	5.0
	Leq	-8.2	-6.2	4.3	9.0	12.0	14.1		Leq	-1.8	-0.7	1.2	1.3	1.7	2.0
	L50	-9.3	-7.3	3.2	7.9	10.9	13.0		L50	-2.9	-1.8	0.1	0.3	0.6	0.9
	L90	-11.1	-9.1	1.4	6.1	9.1	11.2		L90	-2.9	-1.9	0.1	0.2	0.5	0.9
	Lmin	-13.2	-11.1	-0.7	4.1	7.1	9.1		Lmin	-3.7	-2.6	-0.7	-0.5	-0.2	0.2
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.6	5.2	11.9	13.7	15.9	16.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.8	3.5	4.7	4.7	5.1	5.3
	L01	9.0	5.6	12.4	14.2	16.3	17.4		L01	3.6	3.3	4.4	4.5	4.8	5.1
	Leq	4.5	1.1	7.9	9.7	11.8	12.9		Leq	1.0	0.7	1.8	1.9	2.2	2.4
	L50	4.1	0.8	7.5	9.3	11.4	12.5		L50	0.9	0.6	1.7	1.8	2.1	2.4
	L90	2.5	-0.9	5.9	7.7	9.8	10.9		L90	-0.3	-0.5	0.6	0.6	1.0	1.2
	Lmin	0.6	-2.8	3.9	5.7	7.9	8.9		Lmin	-1.3	-1.6	-0.5	-0.4	-0.1	0.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.1	-3.1	7.4	12.1	15.1	17.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	1.6	2.7	4.6	4.7	5.1	5.4
	L01	-4.6	-2.6	7.8	12.6	15.6	17.6		L01	1.3	2.4	4.3	4.5	4.8	5.1
	Leq	-9.1	-7.1	3.3	8.1	11.1	13.2		Leq	-1.3	-0.2	1.7	1.8	2.2	2.5
	L50	-9.5	-7.5	3.0	7.7	10.7	12.8		L50	-1.4	-0.3	1.6	1.8	2.1	2.4
	L90	-11.1	-9.1	1.4	6.1	9.1	11.2		L90	-2.5	-1.4	0.5	0.6	1.0	1.3
	Lmin	-13.1	-11.1	-0.6	4.1	7.1	9.2		Lmin	-3.6	-2.5	-0.6	-0.4	-0.1	0.3



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-98: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/15/2014 from 2:50 to 3:10 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>10.3 m/s</b>	Wind Direction: <b>176°</b>	Avg Power Level: <b>1505 kW</b>	Air Temperature: <b>40 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>10.2 m/s</b>	Wind Direction: <b>177°</b>	Avg Power Level: <b>1805 kW</b>	Air Temperature: <b>40 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>9.8 m/s</b>	Wind Direction: <b>179°</b>	Avg Power Level: <b>1624 kW</b>	Air Temperature: <b>40 °F</b>



**Event Log**

Traffic on Route 3 **throughout**  
Intermittent wind-generated noise **throughout**

**Slow Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

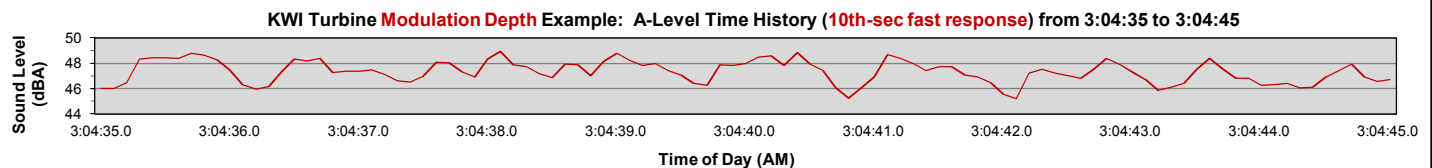
2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)						3:05 to 3:10 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.9	68.3	81.2	80.2	6.7	Lmax	58.6	70.4	83.0	83.2	5.6	Lmax	51.9	74.2	84.1	85.0	7.6	Lmax	52.7	69.4	80.9	81.9	5.8
L01	54.5	67.8	80.5	80.1	4.7	L01	58.0	69.6	81.0	81.1	5.2	L01	51.6	70.8	83.1	82.5	5.3	L01	51.8	67.9	79.3	79.6	5.1
Leq	50.2	63.3	72.4	73.9	1.9	Leq	51.0	63.6	73.0	74.1	2.1	Leq	49.1	63.7	72.8	74.0	2.4	Leq	49.1	63.4	72.1	73.8	2.4
L50	49.9	62.8	70.9	72.7	1.8	L50	49.4	62.8	70.6	72.8	1.9	L50	48.9	62.9	70.6	72.8	2.2	L50	48.7	63.0	70.8	73.0	2.2
L90	48.1	61.6	69.2	71.0	0.9	L90	47.6	61.7	69.1	70.9	1.0	L90	47.2	61.6	68.9	71.1	1.2	L90	47.7	61.9	69.4	71.2	1.2
Lmin	46.7	59.8	67.0	69.1	0.3	Lmin	46.3	60.5	67.9	69.0	0.4	Lmin	46.0	60.4	68.1	69.5	0.3	Lmin	46.6	60.6	68.4	69.3	0.4

2:50 to 3:10 AM (100% included)						Octave Band Sound Levels (2:50 to 3:10 AM)												1/3-Octave Band Sound Levels (2:50 to 3:10 AM)											
Avg	A	C	Z	G	MD																								
Lmax	54.5	70.6	82.3	82.6	6.4																								
L01	56.7	68.3	80.8	80.9	5.2																								
Leq	49.9	63.5	72.6	73.9	2.2																								
L50	49.2	62.8	70.7	72.9	1.1																								
L90	47.6	61.7	69.2	71.0	1.1																								
Lmin	46.0	59.8	67.0	69.0	0.3																								

**Slow Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

2:50 to 2:55 AM (12% included)						2:55 to 3:00 AM (20% included)						3:00 to 3:05 AM (38% included)						3:05 to 3:10 AM (49% included)					
10.3 m/s	A	C	Z	G	MD	10.2 m/s	A	C	Z	G	MD	10.1 m/s	A	C	Z	G	MD	10.0 m/s	A	C	Z	G	MD
Lmax	49.0	64.0	72.8	74.6	5.8	Lmax	48.9	65.3	75.3	77.1	5.2	Lmax	49.3	65.3	73.3	77.4	5.6	Lmax	50.0	66.8	79.7	79.0	5.8
L01	49.0	64.0	72.6	74.4	5.8	L01	48.8	65.2	75.0	77.1	5.1	L01	49.2	65.2	73.0	77.2	5.4	L01	49.7	66.3	78.2	78.1	5.3
Leq	48.1	62.6	70.3	72.2	2.8	Leq	47.8	62.7	71.3	73.1	2.5	Leq	47.8	62.6	70.4	72.8	2.8	Leq	48.4	63.2	71.8	73.3	2.7
L50	48.3	62.5	70.4	72.3	2.7	L50	47.9	62.5	70.5	72.6	2.3	L50	47.6	62.5	70.2	72.5	2.7	L50	48.3	63.0	70.8	72.8	2.7
L90	47.5	60.9	67.8	70.2	1.8	L90	47.0	61.9	69.7	71.6	1.4	L90	46.9	61.4	68.6	70.8	1.5	L90	47.5	61.9	69.5	71.2	1.5
Lmin	46.7	59.8	67.3	69.1	1.2	Lmin	46.3	61.4	69.2	70.9	0.7	Lmin	46.0	60.4	68.1	69.5	0.8	Lmin	46.6	60.6	68.7	69.3	0.4

2:50 to 3:10 AM (30% included)						Octave Band Sound Levels (2:50 to 3:10 AM)												1/3-Octave Band Sound Levels (2:50 to 3:10 AM)											
Avg	A	C	Z	G	MD																								
Lmax	49.3	65.4	75.3	77.1	5.6																								
L01	49.6	65.3	76.9	77.5	5.3																								
Leq	48.1	62.9	71.2	73.0	2.7																								
L50	48.0	62.7	70.5	72.6	2.6																								
L90	47.1	61.6	69.0	71.0	1.5																								
Lmin	46.0	59.8	67.3	69.1	0.4																								

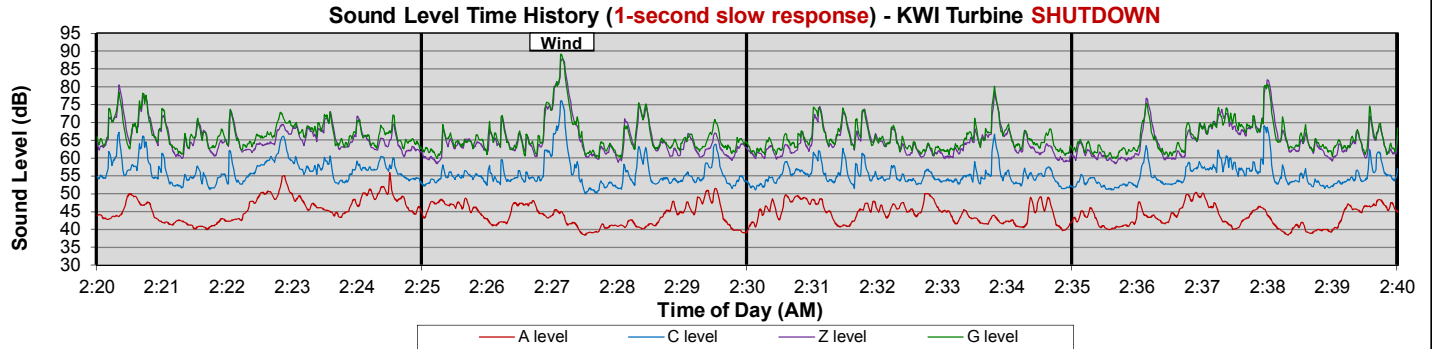


Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-99: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown

HMMH Project # 305270.001

Measurement at Site 2: 3 Leland Rd. on 3/15/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 990 ft	Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 10.0 m/s	Wind Direction: 178°	Avg Power Level: 000 kW	Air Temperature: 40 °F
Wind Speed Range: 0-1 m/s	Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 177°	Avg Power Level: 000 kW	Air Temperature: 40 °F

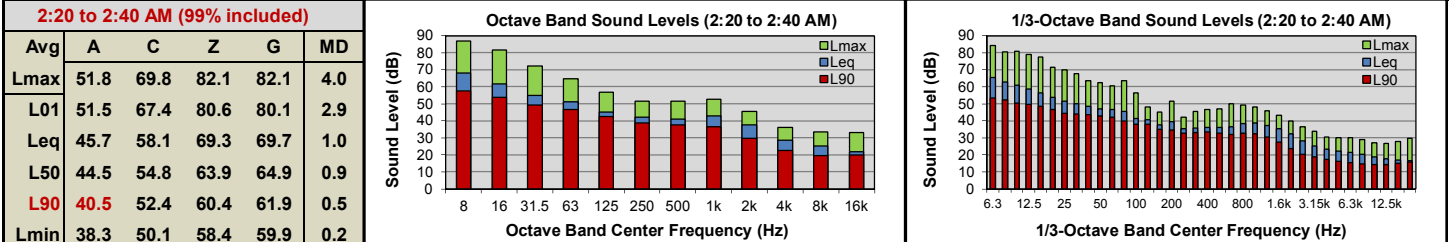


Event Log

Traffic on Route 3 throughout  
Intermittent wind-generated noise throughout  
Loud breaking branch noise from 2:24:27 to 2:24:36 (EXCLUDE)

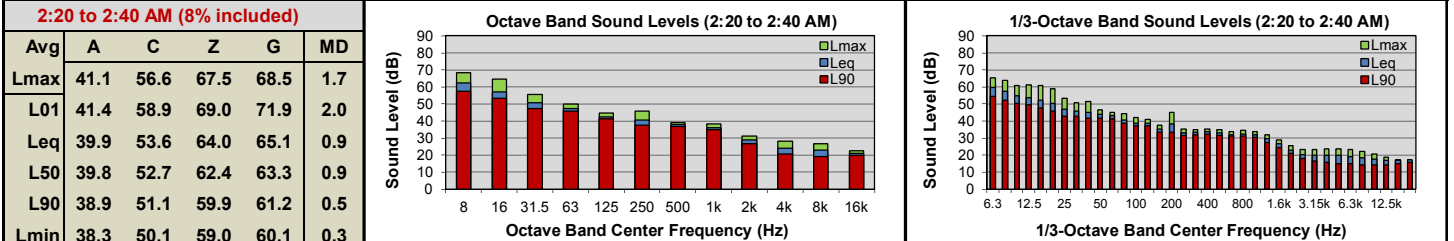
Slow Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN

2:20 to 2:25 AM (97% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	55.1	67.3	80.4	78.6	3.0	Lmax	51.5	76.1	87.7	89.1	4.1	Lmax	50.1	66.7	78.3	80.2	5.4	Lmax	50.3	69.1	81.9	80.7	3.6
L01	54.1	66.1	77.5	77.7	2.2	L01	50.9	73.1	86.9	85.9	3.2	L01	50.0	63.0	74.4	76.2	3.5	L01	50.1	67.3	79.8	79.8	2.5
Leq	47.2	58.2	68.3	68.8	0.9	Leq	45.0	60.1	72.1	72.4	1.0	Leq	45.6	56.1	66.3	67.3	1.1	Leq	44.6	57.0	68.4	68.4	1.0
L50	45.5	56.5	65.2	66.3	0.8	L50	44.0	54.4	63.5	64.5	0.8	L50	44.9	54.6	63.3	64.4	0.9	L50	43.3	54.3	63.6	64.4	0.9
L90	41.4	53.1	62.1	63.1	0.5	L90	39.8	52.3	60.2	61.7	0.5	L90	41.0	52.7	60.4	62.0	0.6	L90	40.0	52.1	59.9	61.5	0.5
Lmin	40.0	51.4	59.9	61.2	0.2	Lmin	38.3	50.1	58.4	60.0	0.2	Lmin	39.6	51.1	59.0	60.6	0.3	Lmin	38.4	51.2	58.5	59.9	0.2

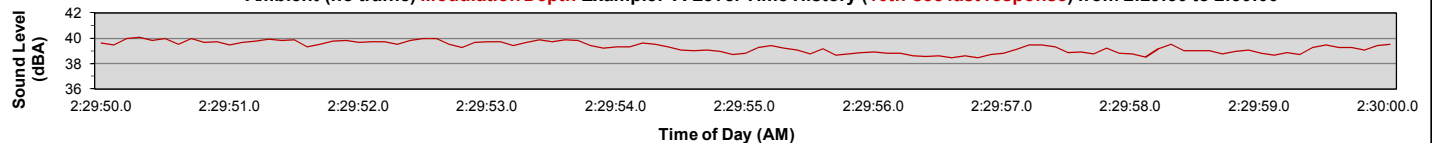


Slow Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN

2:20 to 2:25 AM (3% included)						2:25 to 2:30 AM (12% included)						2:30 to 2:35 AM (3% included)						2:35 to 2:40 AM (15% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	41.0	56.2	69.0	68.0	1.2	Lmax	41.5	55.8	67.3	67.7	2.0	Lmax	40.9	55.7	64.7	65.8	1.5	Lmax	41.0	58.9	69.0	72.5	2.3
L01	41.0	56.2	68.9	68.0	1.2	L01	41.5	55.7	67.1	67.6	1.9	L01	40.9	55.5	64.5	65.6	1.4	L01	41.0	58.9	69.0	72.2	2.1
Leq	40.6	54.6	67.4	66.6	0.7	Leq	39.7	53.0	63.1	64.2	0.9	Leq	40.4	52.9	61.7	63.2	0.9	Leq	39.7	54.0	64.0	65.7	1.0
L50	40.7	54.5	67.6	66.8	0.7	L50	39.3	53.0	62.6	63.8	0.8	L50	40.6	52.8	61.7	62.8	0.9	L50	39.9	52.5	62.3	63.1	0.9
L90	40.0	52.8	65.9	64.8	0.5	L90	38.9	50.4	60.2	61.0	0.6	L90	39.8	51.4	59.1	61.4	0.5	L90	38.9	51.5	59.8	61.3	0.5
Lmin	40.0	52.7	64.8	64.3	0.3	Lmin	38.3	50.1	59.7	60.2	0.3	Lmin	39.7	51.4	59.0	60.7	0.4	Lmin	38.4	51.2	59.2	60.1	0.3



Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:29:50 to 2:30:00



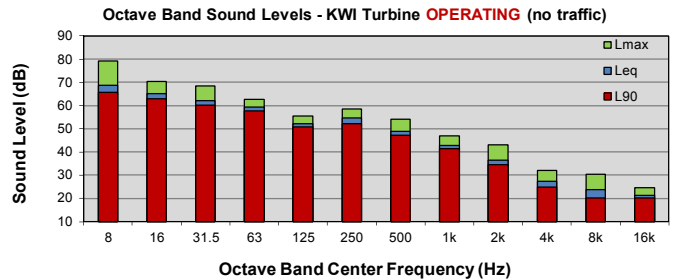
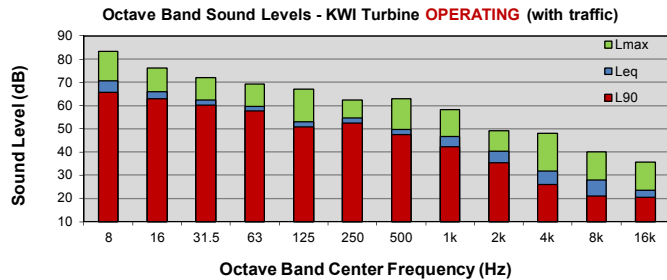
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-100: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 2: 3 Leland Rd. on 3/15/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 176°	Average Power Level: 1505 kW	Air Temperature: 40 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 10.2 m/s	Wind Direction: 177°	Average Power Level: 1805 kW	Air Temperature: 40 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 9.8 m/s	Wind Direction: 179°	Average Power Level: 1624 kW	Air Temperature: 40 °F

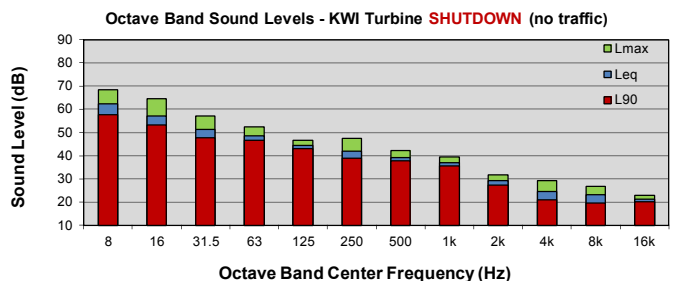
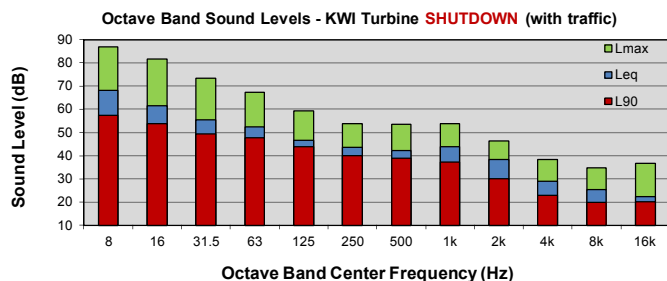
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:50 to 3:10 AM (100% included)						2:50 to 3:10 AM (30% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	56.6	75.2	82.3	82.6	6.4	Avg Lmax	51.6	69.2	75.4	77.1	5.6
L01	56.9	71.4	80.9	80.9	5.2	L01	51.9	68.7	77.0	77.7	5.3
Leq	50.9	65.4	72.8	74.0	2.2	Leq	49.4	64.6	71.4	73.1	2.7
L50	50.3	64.4	71.0	72.9	1.1	L50	49.1	64.2	70.7	72.7	2.6
L90	48.5	62.8	69.4	71.1	1.1	L90	47.9	62.6	69.3	71.1	1.5
Lmin	46.7	60.8	67.4	69.0	0.3	Lmin	46.7	60.8	67.5	69.1	0.4



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 10.0 m/s	Wind Direction: 178°	Average Power Level: 000 kW	Air Temperature: 40 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 177°	Average Power Level: 000 kW	Air Temperature: 40 °F

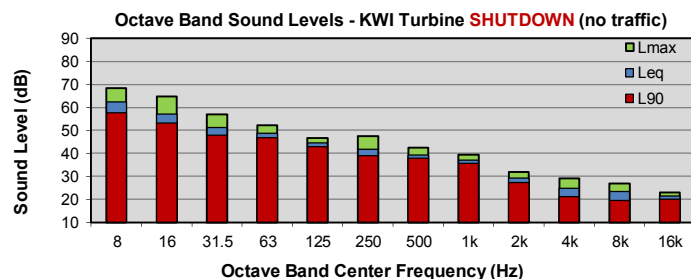
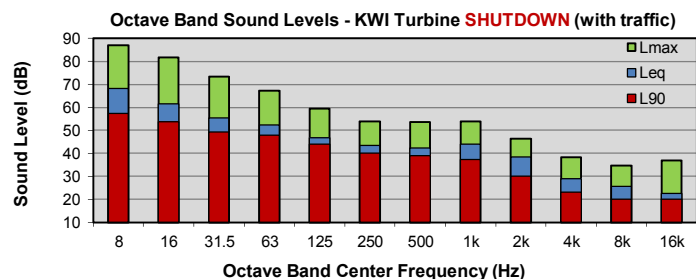
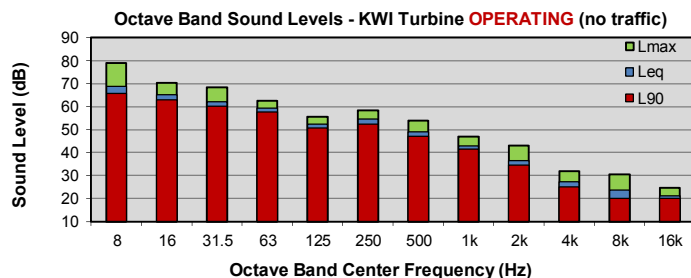
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (99% included)						2:20 to 2:40 AM (8% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.8	74.6	82.1	82.2	4.0	Avg Lmax	41.9	60.7	67.5	68.5	1.7
L01	52.3	70.8	80.6	80.1	2.9	L01	42.2	63.1	69.0	71.9	2.0
Leq	46.1	60.3	69.4	69.7	1.0	Leq	40.3	55.5	64.0	65.1	0.9
L50	44.8	55.9	64.1	64.9	0.9	L50	40.1	53.8	62.5	63.4	0.9
L90	40.8	53.4	60.6	61.9	0.5	L90	39.3	51.9	60.0	61.2	0.5
Lmin	38.7	50.8	58.8	59.9	0.2	Lmin	38.7	50.8	59.2	60.1	0.3



Measurement at Site 2: 3 Leland Rd. on 3/15/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN

**Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)**

Octave Band Center Frequency (Hz)	L90 (dB)	Leq (dB)	Lmax (dB)
8	68	5	12
16	65	5	10
31.5	62	5	10
63	58	5	10
125	52	5	10
250	53	5	5
500	48	5	10
1k	42	5	10
2k	38	5	10
4k	28	5	10
8k	22	5	10
16k	20	5	10



Operating - Shutdown Differences: <b>Overall Comparison</b>								Octave Band Sound Level Comparison: <b>Pure-tone Check</b>					
Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)													
<b>FAST Response A-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>Including traffic</b> on Route 3:					
		Avg Lmax	L01	Leq	L50	L90	Lmin						
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax	-1.2	-0.7	5.5	6.8	<b>10.8</b>	13.0	<b>L90 Pure-tone?</b>	NO		<b>L90 Pure-tone?</b>	NO	
	L01	-1.0	-0.4	5.8	7.1	11.1	13.2	<b>Excluding traffic</b> on Route 3:					
	Leq	-3.4	-2.9	3.3	4.6	<b>8.6</b>	10.7						
	L50	-3.7	-3.1	3.0	4.4	8.3	10.5	Leq Octave Band Check: <b>KWI Turbine ONLY</b>		NO KWI PURE TONE	Leq Octave Band Check <b>Ambient (no traffic)</b>		
	L90	-4.9	-4.3	1.8	3.2	<b>7.1</b>	9.3	<b>Leq Pure-tone?</b>	NO		<b>L90 Pure-tone?</b>	NO	
	Lmin	-6.2	-5.6	0.6	1.9	5.9	8.0	L90 Octave Band Check <b>KWI Turbine ONLY</b>		NO KWI PURE TONE	L90 Octave Band Check <b>Ambient (no traffic)</b>		
							<b>L90 Pure-tone?</b>	NO			<b>L90 Pure-tone?</b>	NO	

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-102: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/15/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.6	4.4	14.9	19.3	21.8	24.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.2	1.7	13.0	18.2	21.8	23.5
	L01	-3.2	0.6	11.1	15.5	18.0	20.6		L01	-1.3	0.3	11.5	16.8	20.3	22.1
	Leq	-9.3	-5.4	5.1	9.4	12.0	14.6		Leq	-9.4	-7.9	3.4	8.6	12.2	13.9
	L50	-10.2	-6.3	4.1	8.5	11.1	13.7		L50	-11.2	-9.7	1.6	6.8	10.4	12.1
	L90	-11.8	-7.9	2.5	6.9	9.5	12.1		L90	-12.7	-11.2	0.0	5.3	8.8	10.6
	Lmin	-13.8	-10.0	0.5	4.8	7.4	10.0		Lmin	-14.8	-13.3	-2.0	3.2	6.8	8.5
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.5	6.1	13.7	15.4	17.3	18.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.9	6.4	11.4	12.9	15.4	16.2
	L01	8.0	5.6	13.2	14.9	16.8	17.9		L01	9.4	8.0	12.9	14.5	17.0	17.7
	Leq	3.9	1.5	9.1	10.8	12.7	13.8		Leq	3.8	2.4	7.3	8.9	11.4	12.1
	L50	3.5	1.1	8.7	10.4	12.3	13.4		L50	3.2	1.7	6.7	8.2	10.7	11.5
	L90	1.9	-0.5	7.1	8.8	10.7	11.9		L90	1.7	0.3	5.2	6.8	9.3	10.0
	Lmin	0.0	-2.4	5.3	6.9	8.9	10.0		Lmin	0.0	-1.5	3.5	5.0	7.5	8.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.4	-1.6	8.9	13.3	15.8	18.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.7	-5.2	6.0	11.3	14.8	16.6
	L01	-5.9	-2.1	8.4	12.8	15.3	17.9		L01	-5.2	-3.7	7.6	12.9	16.4	18.1
	Leq	-10.0	-6.2	4.3	8.7	11.2	13.8		Leq	-10.8	-9.3	2.0	7.3	10.8	12.5
	L50	-10.4	-6.6	3.9	8.3	10.8	13.4		L50	-11.4	-9.9	1.3	6.6	10.1	11.9
	L90	-12.0	-8.1	2.3	6.7	9.2	11.9		L90	-12.9	-11.4	-0.1	5.2	8.7	10.4
	Lmin	-13.8	-10.0	0.5	4.8	7.4	10.0		Lmin	-14.6	-13.1	-1.9	3.4	6.9	8.7

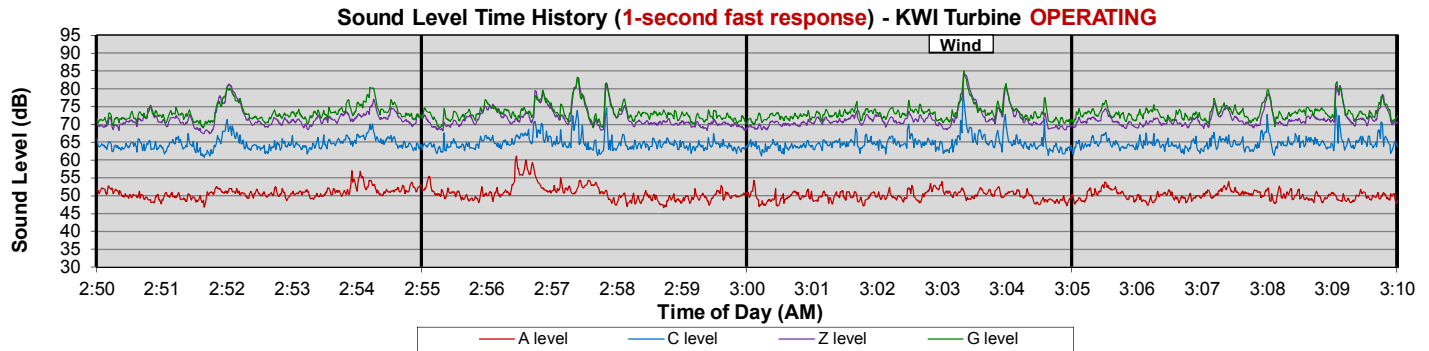
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-103: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 2: 3 Leland Rd. on 3/15/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.4	2.5	13.0	17.7	20.7	22.8	KWI Turbine OPERATING (with traffic)	Avg Lmax	2.4	3.5	5.4	5.6	5.9	6.2
	L01	-1.3	0.8	11.2	16.0	19.0	21.0		L01	1.2	2.3	4.2	4.3	4.7	5.0
	Leq	-8.2	-6.2	4.3	9.0	12.0	14.1		Leq	-1.8	-0.7	1.2	1.3	1.7	2.0
	L50	-9.3	-7.3	3.2	8.0	11.0	13.0		L50	-2.9	-1.8	0.1	0.3	0.6	0.9
	L90	-11.1	-9.1	1.4	6.1	9.1	11.2		L90	-2.9	-1.9	0.1	0.2	0.5	0.9
	Lmin	-13.2	-11.1	-0.6	4.1	7.1	9.2		Lmin	-3.7	-2.6	-0.7	-0.5	-0.2	0.2
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.6	5.2	12.0	13.7	15.9	17.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.8	3.5	4.7	4.7	5.1	5.3
	L01	9.2	5.7	12.5	14.3	16.5	17.5		L01	3.6	3.3	4.4	4.5	4.8	5.1
	Leq	4.6	1.1	7.9	9.7	11.9	12.9		Leq	1.0	0.7	1.8	1.9	2.2	2.4
	L50	4.2	0.8	7.6	9.3	11.5	12.6		L50	0.9	0.6	1.7	1.8	2.1	2.4
	L90	2.6	-0.8	5.9	7.7	9.9	10.9		L90	-0.3	-0.5	0.6	0.6	1.0	1.2
	Lmin	0.6	-2.8	3.9	5.7	7.9	8.9		Lmin	-1.3	-1.6	-0.5	-0.4	-0.1	0.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.1	-3.0	7.4	12.2	15.2	17.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	1.6	2.7	4.6	4.7	5.1	5.4
	L01	-4.5	-2.5	8.0	12.7	15.7	17.8		L01	1.3	2.4	4.3	4.5	4.8	5.1
	Leq	-9.1	-7.1	3.4	8.1	11.1	13.2		Leq	-1.3	-0.2	1.7	1.8	2.2	2.5
	L50	-9.5	-7.4	3.0	7.8	10.8	12.8		L50	-1.4	-0.3	1.6	1.8	2.1	2.4
	L90	-11.1	-9.1	1.4	6.1	9.1	11.2		L90	-2.5	-1.4	0.5	0.6	1.0	1.3
	Lmin	-13.1	-11.1	-0.6	4.1	7.1	9.2		Lmin	-3.6	-2.5	-0.6	-0.4	-0.1	0.3



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-104: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 2: **3 Leland Rd. on 3/15/2014 from 2:50 to 3:10 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>990 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>10.3 m/s</b>	Wind Direction: <b>176°</b>	Avg Power Level: <b>1505 kW</b>	Air Temperature: <b>40 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>10.2 m/s</b>	Wind Direction: <b>177°</b>	Avg Power Level: <b>1805 kW</b>	Air Temperature: <b>40 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>9.8 m/s</b>	Wind Direction: <b>179°</b>	Avg Power Level: <b>1624 kW</b>	Air Temperature: <b>40 °F</b>



**Event Log**

Traffic on Route 3 **throughout**  
Intermittent wind-generated noise **throughout**

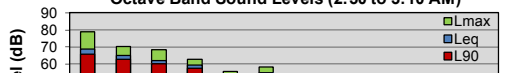
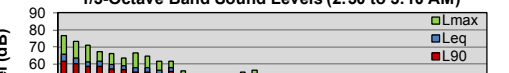
**Fast Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

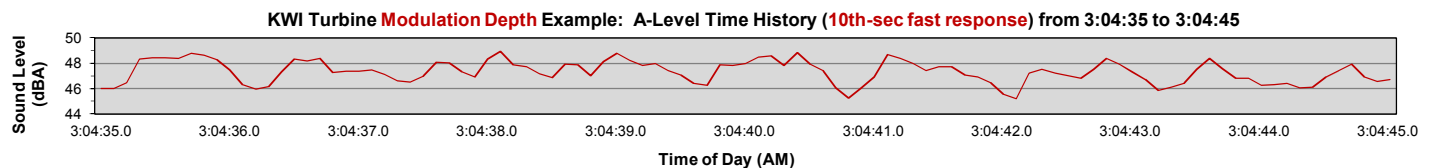
2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)						3:05 to 3:10 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	57.1	71.3	81.2	80.3	6.7	Lmax	61.2	74.6	83.0	83.3	5.6	Lmax	54.3	80.0	84.2	85.0	7.6	Lmax	54.1	74.8	80.9	82.0	5.8
L01	55.4	69.9	80.6	80.1	4.7	L01	59.4	72.4	81.2	81.1	5.2	L01	53.2	72.9	83.1	82.6	5.3	L01	53.2	72.0	79.3	79.7	5.1
Leq	51.1	64.9	72.6	73.9	1.9	Leq	51.8	65.4	73.2	74.1	2.1	Leq	50.1	65.8	72.9	74.1	2.4	Leq	50.3	65.3	72.3	73.8	2.4
L50	50.7	64.4	71.2	72.8	1.8	L50	50.5	64.5	70.8	72.9	1.9	L50	49.8	64.4	70.8	72.8	2.2	L50	50.0	64.5	71.0	73.0	2.2
L90	49.1	62.7	69.4	71.1	0.9	L90	48.4	62.9	69.4	71.0	1.0	L90	48.2	62.7	69.2	71.1	1.2	L90	48.5	63.0	69.6	71.2	1.2
Lmin	46.8	60.8	67.4	69.1	0.3	Lmin	46.7	61.3	68.2	69.0	0.4	Lmin	47.0	61.2	68.5	69.5	0.3	Lmin	47.4	61.4	68.8	69.4	0.4

2:50 to 3:10 AM (100% included)						Octave Band Sound Levels (2:50 to 3:10 AM)												1/3-Octave Band Sound Levels (2:50 to 3:10 AM)											
Avg	A	C	Z	G	MD																								
Lmax	56.6	75.2	82.3	82.6	6.4																								
L01	56.9	71.4	80.9	80.9	5.2																								
Leq	50.9	65.4	72.8	74.0	2.2																								
L50	50.3	64.4	71.0	72.9	1.1																								
L90	48.5	62.8	69.4	71.1	1.1																								
Lmin	46.7	60.8	67.4	69.0	0.3																								

**Fast Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

2:50 to 2:55 AM (12% included)						2:55 to 3:00 AM (20% included)						3:00 to 3:05 AM (38% included)						3:05 to 3:10 AM (49% included)					
10.3 m/s	A	C	Z	G	MD	10.2 m/s	A	C	Z	G	MD	10.1 m/s	A	C	Z	G	MD	10.0 m/s	A	C	Z	G	MD
Lmax	50.9	67.5	72.9	74.7	5.8	Lmax	50.8	67.2	75.4	77.2	5.2	Lmax	52.0	71.3	73.7	77.5	5.6	Lmax	52.7	70.7	79.8	79.0	5.8
L01	50.9	67.3	72.7	74.5	5.8	L01	50.8	67.2	75.1	77.1	5.1	L01	51.4	68.7	73.2	77.3	5.4	L01	51.9	69.4	78.2	78.1	5.3
Leq	49.4	64.3	70.6	72.2	2.8	Leq	49.0	64.4	71.5	73.2	2.5	Leq	49.1	64.3	70.6	72.8	2.8	Leq	49.8	64.9	72.0	73.4	2.7
L50	49.4	64.2	70.6	72.4	2.7	L50	48.8	64.0	70.7	72.7	2.3	L50	48.9	64.0	70.5	72.6	2.7	L50	49.6	64.5	71.1	72.9	2.7
L90	48.3	61.6	68.0	70.2	1.8	L90	47.5	62.9	69.9	71.7	1.4	L90	47.5	62.3	69.0	70.9	1.5	L90	48.4	63.1	69.8	71.3	1.5
Lmin	46.8	60.8	67.5	69.1	1.2	Lmin	46.7	62.6	69.4	70.9	0.7	Lmin	47.0	61.2	68.5	69.5	0.8	Lmin	47.4	61.4	69.0	69.4	0.4

2:50 to 3:10 AM (30% included)						Octave Band Sound Levels (2:50 to 3:10 AM)												1/3-Octave Band Sound Levels (2:50 to 3:10 AM)											
Avg	A	C	Z	G	MD																								
Lmax	51.6	69.2	75.4	77.1	5.6																								
L01	51.9	68.7	77.0	77.7	5.3																								
Leq	49.4	64.6	71.4	73.1	2.7																								
L50	49.1	64.2	70.7	72.7	2.6																								
L90	47.9	62.6	69.3	71.1	1.5																								
Lmin	46.7	60.8	67.5	69.1	0.4																								





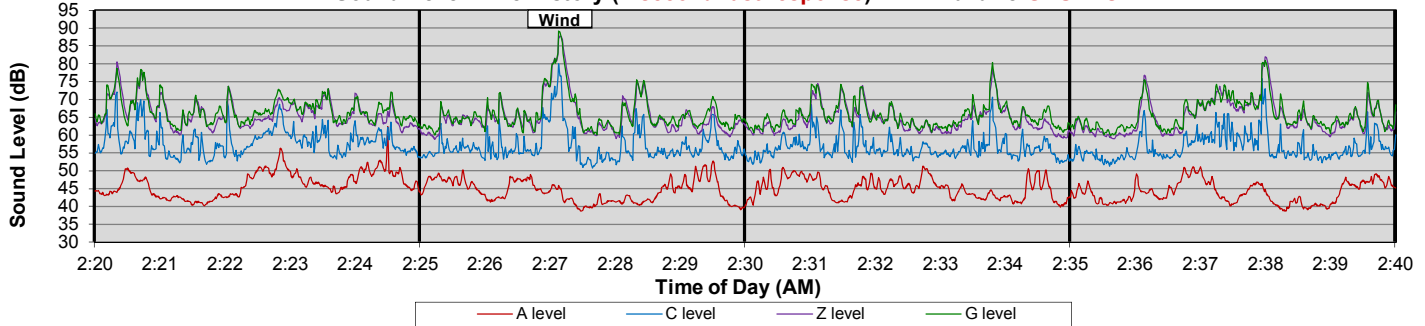
Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-105: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown

HMMH Project # 305270.001

Measurement at Site 2: 3 Leland Rd. on 3/15/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 990 ft	Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 10.0 m/s	Wind Direction: 178°	Avg Power Level: 000 kW	Air Temperature: 40 °F
Wind Speed Range: 0-1 m/s	Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 10.3 m/s	Wind Direction: 177°	Avg Power Level: 000 kW	Air Temperature: 40 °F

Sound Level Time History (1-second fast response) - KWI Turbine SHUTDOWN



Event Log

Traffic on Route 3 throughout  
Intermittent wind-generated noise throughout  
Loud breaking branch noise from 2:24:27 to 2:24:36 (EXCLUDE)

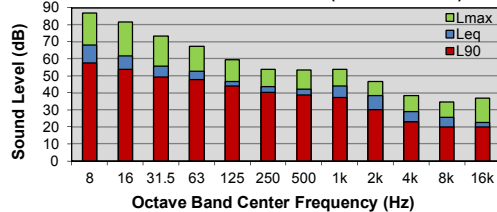
Fast Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN

2:20 to 2:25 AM (97% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	56.3	72.0	80.5	78.6	3.0	Lmax	52.7	79.9	87.7	89.1	4.1	Lmax	51.3	70.7	78.4	80.3	5.4	Lmax	51.2	75.8	82.0	80.8	3.6
L01	54.7	69.6	77.6	77.7	2.2	L01	51.6	76.1	86.9	85.8	3.2	L01	50.7	67.1	74.4	76.2	3.5	L01	50.8	68.8	79.8	79.9	2.5
Leq	47.6	60.4	68.4	68.8	0.9	Leq	45.4	62.3	72.1	72.4	1.0	Leq	46.0	58.0	66.3	67.3	1.1	Leq	44.9	59.4	68.5	68.4	1.0
L50	45.8	57.7	65.4	66.4	0.8	L50	44.0	55.6	63.6	64.5	0.8	L50	45.1	55.6	63.5	64.4	0.9	L50	43.5	55.3	63.8	64.4	0.9
L90	41.7	53.8	62.3	63.2	0.5	L90	40.3	53.1	60.5	61.7	0.5	L90	41.4	53.6	60.7	62.1	0.6	L90	40.2	53.2	60.2	61.5	0.5
Lmin	40.1	51.8	60.1	61.2	0.2	Lmin	38.7	50.8	58.8	60.0	0.2	Lmin	39.8	51.9	59.2	60.7	0.3	Lmin	38.7	51.4	58.9	59.9	0.2

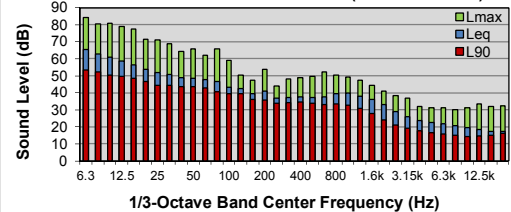
2:20 to 2:40 AM (99% included)

Avg	A	C	Z	G	MD
Lmax	52.8	74.6	82.1	82.2	4.0
L01	52.3	70.8	80.6	80.1	2.9
Leq	46.1	60.3	69.4	69.7	1.0
L50	44.8	55.9	64.1	64.9	0.9
L90	40.8	53.4	60.6	61.9	0.5
Lmin	38.7	50.8	58.8	59.9	0.2

Octave Band Sound Levels (2:20 to 2:40 AM)



1/3-Octave Band Sound Levels (2:20 to 2:40 AM)



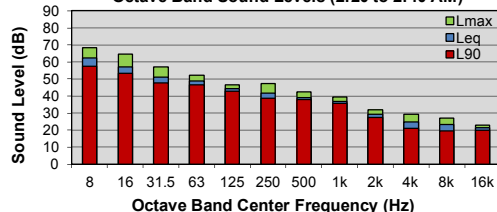
Fast Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN

2:20 to 2:25 AM (3% included)						2:25 to 2:30 AM (12% included)						2:30 to 2:35 AM (3% included)						2:35 to 2:40 AM (15% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	41.4	60.9	69.0	68.0	1.2	Lmax	42.0	59.5	67.3	67.7	2.0	Lmax	41.4	58.9	64.8	65.9	1.5	Lmax	42.5	63.7	69.1	72.5	2.3
L01	41.4	60.7	68.9	68.0	1.2	L01	41.9	59.1	67.1	67.6	1.9	L01	41.4	58.7	64.6	65.7	1.4	L01	42.4	63.4	69.1	72.2	2.1
Leq	40.9	57.0	67.4	66.6	0.7	Leq	40.1	54.9	63.2	64.2	0.9	Leq	40.9	54.7	61.8	63.3	0.9	Leq	40.2	55.7	64.1	65.8	1.0
L50	41.0	55.1	67.6	66.8	0.7	L50	40.0	54.1	62.7	63.8	0.8	L50	41.1	53.3	61.8	62.9	0.9	L50	40.2	53.8	62.5	63.1	0.9
L90	40.3	52.9	65.9	64.8	0.5	L90	39.2	51.5	60.4	61.0	0.6	L90	40.0	52.5	59.3	61.4	0.5	L90	39.2	52.4	60.0	61.3	0.5
Lmin	40.1	52.7	64.9	64.3	0.3	Lmin	38.7	50.8	59.9	60.2	0.3	Lmin	39.8	52.3	59.2	60.7	0.4	Lmin	38.7	51.4	59.4	60.1	0.3

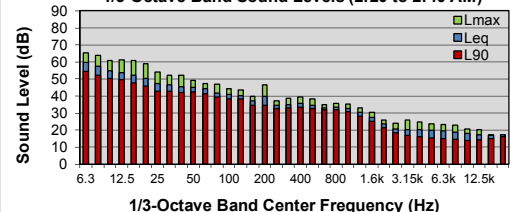
2:20 to 2:40 AM (8% included)

Avg	A	C	Z	G	MD
Lmax	41.9	60.7	67.5	68.5	1.7
L01	42.2	63.1	69.0	71.9	2.0
Leq	40.3	55.5	64.0	65.1	0.9
L50	40.1	53.8	62.5	63.4	0.9
L90	39.3	51.9	60.0	61.2	0.5
Lmin	38.7	50.8	59.2	60.1	0.3

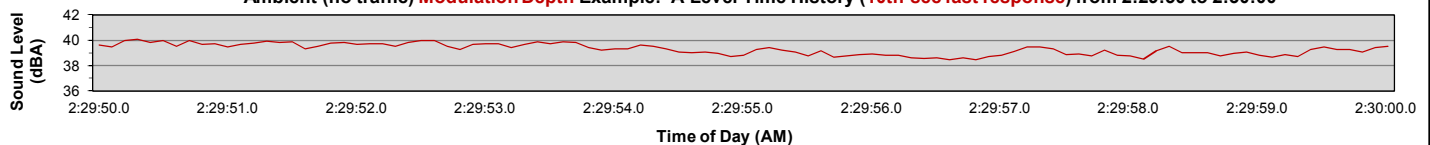
Octave Band Sound Levels (2:20 to 2:40 AM)



1/3-Octave Band Sound Levels (2:20 to 2:40 AM)



Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:29:50 to 2:30:00



# **Detailed Acoustical Monitoring Data**

## **11 Leland Road**

### **April 7, 2014**

Slow-response data: Pages D-107 to D-112

Fast-response data: Pages D-113 to D-118

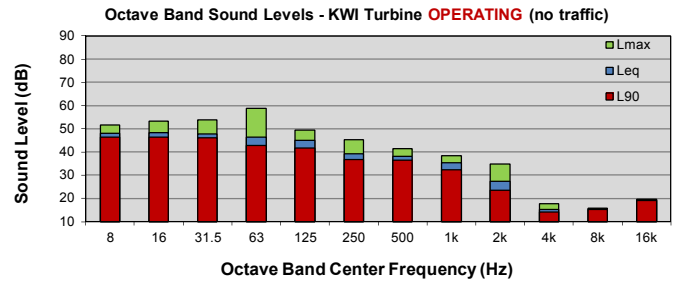
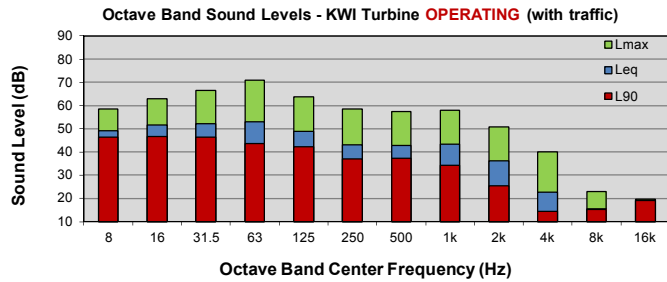
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-107: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 3: 11 Leland Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 5.2 m/s	Wind Direction: 256°	Average Power Level: 210 kW	Air Temperature: 52 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 4.8 m/s	Wind Direction: 252°	Average Power Level: 189 kW	Air Temperature: 52 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 4.9 m/s	Wind Direction: 233°	Average Power Level: 130 kW	Air Temperature: 49 °F

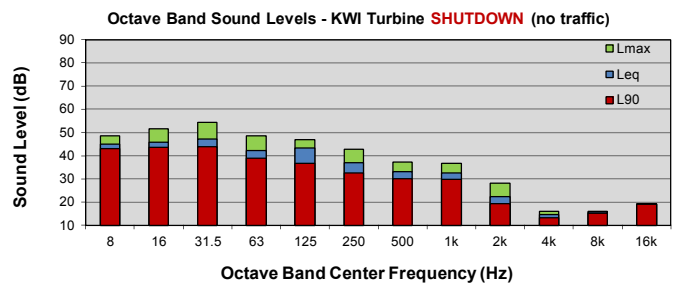
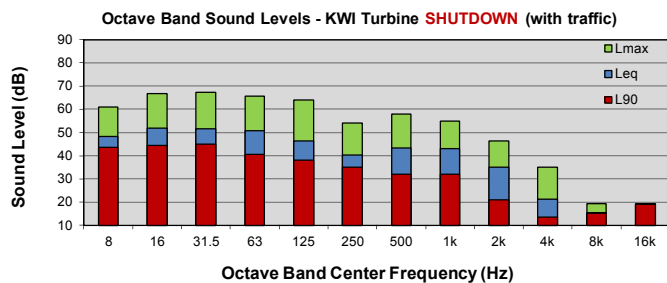
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:50 to 3:10 AM (100% included)						2:50 to 3:10 AM (32% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	56.6	65.6	67.5	68.4	5.3	Avg Lmax	42.0	54.3	57.5	60.4	2.2
L01	55.8	66.1	68.4	69.2	4.0	L01	42.3	55.9	58.0	61.0	2.0
Leq	46.2	56.2	58.7	60.3	1.2	Leq	39.8	51.0	54.6	56.9	1.0
L50	42.9	52.8	55.7	57.4	0.6	L50	39.6	50.2	54.2	56.6	0.9
L90	39.0	49.5	53.5	55.6	0.6	L90	37.8	49.0	53.1	55.0	0.6
Lmin	36.7	48.0	52.2	53.0	0.2	Lmin	36.7	48.0	52.2	53.0	0.3

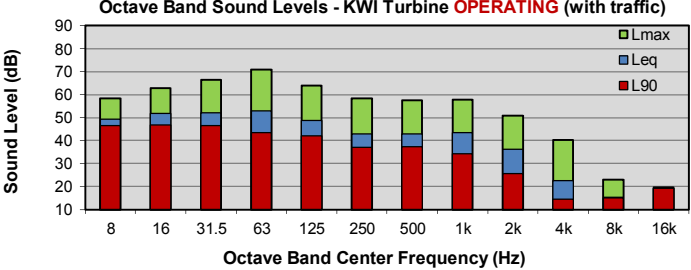
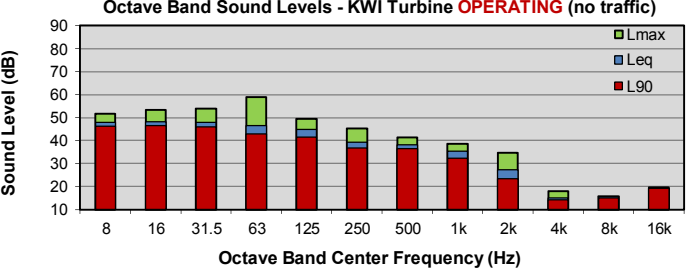
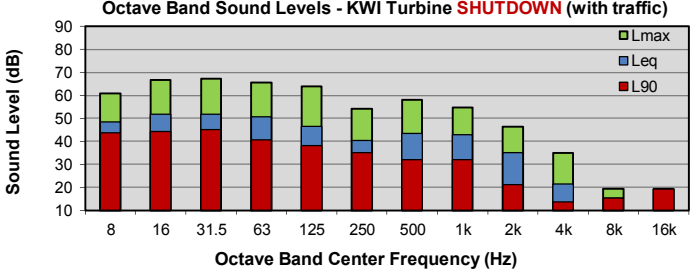
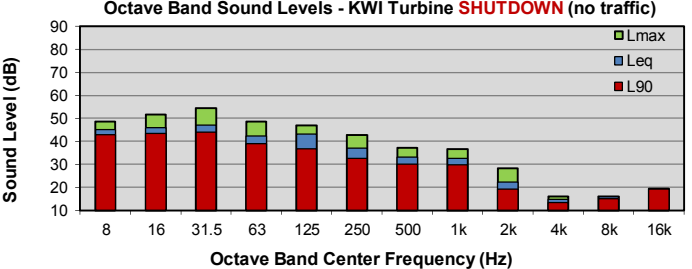


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 6.0 m/s	Wind Direction: 248°	Average Power Level: 000 kW	Air Temperature: 51 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 5.7 m/s	Wind Direction: 258°	Average Power Level: 000 kW	Air Temperature: 52 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (99% included)						2:20 to 2:40 AM (19% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.7	63.4	66.0	69.0	6.2	Avg Lmax	37.9	51.6	54.8	57.8	2.6
L01	55.5	64.7	66.9	69.6	4.5	L01	39.0	54.3	56.6	59.2	2.2
Leq	45.8	54.7	57.7	60.5	1.5	Leq	36.2	48.7	52.3	54.5	1.1
L50	40.6	50.9	54.0	55.7	1.2	L50	35.7	47.9	52.0	53.6	1.0
L90	35.6	47.1	51.0	53.0	0.7	L90	33.5	45.4	49.7	52.2	0.6
Lmin	32.1	44.1	48.9	51.1	0.2	Lmin	32.1	44.1	48.9	51.3	0.3



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-108: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.9	1.1	10.8	16.0	21.0	24.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	4.0	2.9	5.8	6.3	8.4	9.8
	L01	0.0	0.3	10.0	15.2	20.1	23.6		L01	4.3	3.2	6.1	6.6	8.7	10.1
	Leq	-9.5	-9.3	0.4	5.7	10.6	14.1		Leq	1.8	0.8	3.6	4.1	6.2	7.6
	L50	-12.8	-12.6	-2.9	2.3	7.3	10.8		L50	1.6	0.5	3.4	3.9	6.0	7.4
	L90	-16.8	-16.5	-6.8	-1.6	3.3	6.8		L90	-0.2	-1.2	1.6	2.1	4.2	5.6
	Lmin	-19.0	-18.8	-9.1	-3.8	1.1	4.6		Lmin	-1.2	-2.3	0.6	1.1	3.2	4.6
															
															
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-13.8	-13.5	-3.8	1.4	6.3	9.8								
	L01	-13.5	-13.2	-3.5	1.7	6.6	10.1								
	Leq	-16.0	-15.7	-6.0	-0.8	4.1	7.6								
	L50	-16.2	-15.9	-6.2	-1.0	3.9	7.4								
	L90	-18.0	-17.7	-8.0	-2.8	2.1	5.6								
	Lmin	-19.0	-18.8	-9.1	-3.8	1.1	4.6								
								Including traffic on Route 3:							
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
								Excluding traffic on Route 3:							
Leq Octave Band Check: KWI Turbine ONLY				NO KWI PURE TONE		Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check KWI Turbine ONLY				NO KWI PURE TONE		L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-109: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.1	0.9	10.9	14.6	18.5	21.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.4	0.5	9.8	13.5	16.4	18.6
	L01	2.7	1.5	11.5	15.2	19.1	22.0		L01	2.4	1.5	10.7	14.4	17.4	19.6
	Leq	-7.3	-8.5	1.5	5.2	9.1	12.1		Leq	-7.3	-8.2	1.0	4.7	7.7	9.8
	L50	-10.6	-11.9	-1.8	1.9	5.7	8.7		L50	-10.3	-11.2	-2.0	1.7	4.7	6.9
	L90	-14.0	-15.2	-5.2	-1.5	2.4	5.4		L90	-12.5	-13.4	-4.2	-0.5	2.5	4.7
	Lmin	-15.4	-16.6	-6.6	-2.9	1.0	3.9		Lmin	-13.8	-14.7	-5.5	-1.8	1.2	3.4
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	2.6	0.0	5.5	6.3	8.8	10.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.8	1.0	5.3	5.5	7.8	8.7
	L01	4.3	1.6	7.2	8.0	10.5	11.8		L01	3.2	1.4	5.7	5.9	8.2	9.1
	Leq	-0.6	-3.3	2.3	3.1	5.6	6.9		Leq	-0.2	-2.0	2.3	2.5	4.8	5.7
	L50	-1.5	-4.1	1.4	2.2	4.8	6.0		L50	-0.6	-2.4	1.9	2.1	4.4	5.3
	L90	-2.6	-5.3	0.2	1.1	3.6	4.9		L90	-1.7	-3.5	0.8	1.0	3.3	4.2
	Lmin	-3.6	-6.2	-0.7	0.1	2.6	3.9		Lmin	-2.6	-4.3	0.0	0.2	2.5	3.4
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-9.2	-10.4	-0.4	3.3	7.2	10.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.5	-9.4	-0.2	3.5	6.5	8.7
	L01	-7.5	-8.8	1.2	5.0	8.8	11.8		L01	-8.1	-9.0	0.3	4.0	6.9	9.1
	Leq	-12.4	-13.7	-3.7	0.1	3.9	6.9		Leq	-11.5	-12.4	-3.1	0.6	3.5	5.7
	L50	-13.3	-14.5	-4.5	-0.8	3.1	6.0		L50	-11.9	-12.8	-3.5	0.2	3.2	5.3
	L90	-14.5	-15.7	-5.7	-2.0	1.9	4.9		L90	-13.0	-13.9	-4.6	-0.9	2.0	4.2
	Lmin	-15.4	-16.6	-6.6	-2.9	1.0	3.9		Lmin	-13.8	-14.7	-5.5	-1.8	1.2	3.4

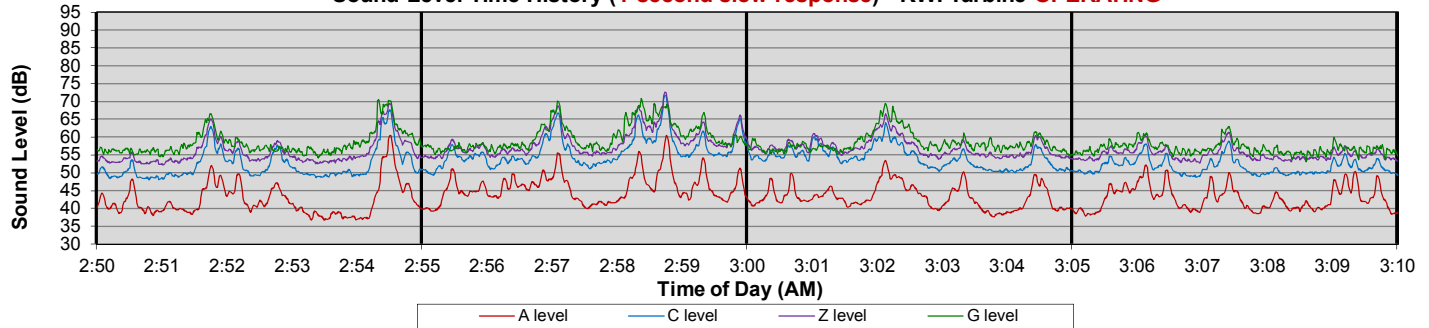
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-110: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.6	-1.2	8.0	12.7	15.4	17.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.9	0.9	3.9	4.1	4.6	5.1
	L01	0.2	-0.4	8.7	13.5	16.2	18.1		L01	-2.2	-0.5	2.5	2.8	3.3	3.8
	Leq	-8.7	-9.3	-0.2	4.6	7.3	9.2		Leq	-5.0	-3.2	-0.2	0.0	0.6	1.1
	L50	-11.6	-12.2	-3.1	1.7	4.4	6.2		L50	-5.6	-3.8	-0.8	-0.6	0.0	0.5
	L90	-13.4	-14.0	-4.9	-0.1	2.5	4.4		L90	-5.6	-3.8	-0.8	-0.6	-0.1	0.4
	Lmin	-15.9	-16.6	-7.4	-2.7	0.0	1.9		Lmin	-6.0	-4.2	-1.2	-1.0	-0.5	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	2.6	1.2	5.9	6.8	8.2	9.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.3	0.1	1.2	1.2	1.6	2.0
	L01	3.2	1.8	6.5	7.4	8.8	9.7		L01	-0.6	-0.2	0.9	1.0	1.4	1.7
	Leq	-0.9	-2.2	2.4	3.3	4.7	5.6		Leq	-1.6	-1.2	-0.1	0.4	0.7	
	L50	-1.3	-2.6	2.1	2.9	4.3	5.2		L50	-1.7	-1.2	-0.2	-0.1	0.3	0.6
	L90	-2.8	-4.1	0.6	1.4	2.8	3.7		L90	-2.0	-1.6	-0.5	-0.4	0.0	0.3
	Lmin	-4.8	-6.1	-1.4	-0.6	0.8	1.7		Lmin	-2.3	-1.9	-0.8	-0.8	-0.4	0.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.6	-9.2	-0.1	4.7	7.4	9.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.0	-2.2	0.8	1.0	1.6	2.1
	L01	-8.0	-8.6	0.5	5.3	8.0	9.9		L01	-4.2	-2.5	0.5	0.8	1.3	1.8
	Leq	-12.1	-12.7	-3.6	1.2	3.9	5.8		Leq	-5.3	-3.5	-0.5	-0.3	0.3	0.8
	L50	-12.4	-13.0	-3.9	0.8	3.5	5.4		L50	-5.3	-3.5	-0.5	-0.3	0.2	0.7
	L90	-13.9	-14.6	-5.4	-0.7	2.0	3.9		L90	-5.6	-3.9	-0.9	-0.6	-0.1	0.4
	Lmin	-15.9	-16.6	-7.4	-2.7	0.0	1.9		Lmin	-6.0	-4.2	-1.2	-1.0	-0.4	0.1

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-111: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 4/7/2014 from 2:50 to 3:10 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>5.2 m/s</b>	Wind Direction: <b>256°</b>	Avg Power Level: <b>210 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>4.8 m/s</b>	Wind Direction: <b>252°</b>	Avg Power Level: <b>189 kW</b>	Air Temperature: <b>52 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>4.9 m/s</b>	Wind Direction: <b>233°</b>	Avg Power Level: <b>130 kW</b>	Air Temperature: <b>49 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**



**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**  
HMMH consultant makes noise from **2:59:11 to 2:59:14 (EXCLUDE)**

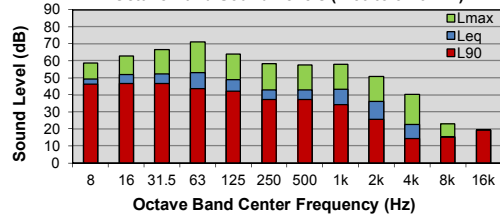
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (99% included)						3:00 to 3:05 AM (100% included)						3:05 to 3:10 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	60.5	67.7	69.4	70.5	6.0	Lmax	60.5	71.8	72.7	70.9	5.2	Lmax	53.4	64.0	66.5	69.4	4.9	Lmax	52.1	58.8	61.3	62.9	5.2
L01	59.3	65.8	68.0	70.1	4.1	L01	58.5	70.1	71.1	69.9	4.1	L01	52.4	61.6	64.3	68.3	3.4	L01	50.7	58.0	60.4	62.3	4.2
Leq	46.3	55.3	58.1	60.4	1.3	Leq	48.4	59.2	61.3	62.4	1.3	Leq	44.7	55.3	57.9	59.8	1.1	Leq	44.3	52.2	55.5	57.2	1.3
L50	40.8	50.3	54.2	56.9	1.1	L50	45.1	54.9	57.6	58.5	1.1	L50	42.6	54.0	56.6	57.6	1.0	L50	42.2	50.9	54.8	56.6	1.1
L90	37.5	48.8	52.9	55.5	0.6	L90	41.2	51.8	55.0	56.6	0.6	L90	39.4	50.7	54.5	56.1	0.6	L90	39.0	49.5	53.5	55.0	0.6
Lmin	36.7	48.0	52.2	54.2	0.3	Lmin	39.2	49.2	54.0	55.1	0.2	Lmin	37.6	50.1	53.7	54.7	0.3	Lmin	37.8	48.8	52.8	53.0	0.3

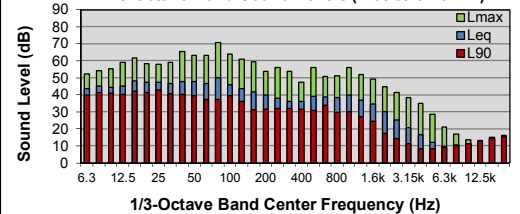
**2:50 to 3:10 AM (100% included)**

Avg	A	C	Z	G	MD
Lmax	56.6	65.6	67.5	68.4	5.3
L01	55.8	66.1	68.4	69.2	4.0
Leq	46.2	56.2	58.7	60.3	1.2
L50	42.9	52.8	55.7	57.4	0.6
L90	39.0	49.5	53.5	55.6	0.6
Lmin	36.7	48.0	52.2	53.0	0.2

**Octave Band Sound Levels (2:50 to 3:10 AM)**



**1/3-Octave Band Sound Levels (2:50 to 3:10 AM)**



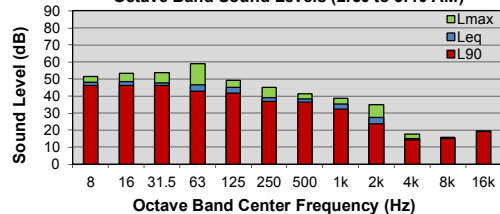
**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (40% included)						2:55 to 3:00 AM (16% included)						3:00 to 3:05 AM (35% included)						3:05 to 3:10 AM (36% included)					
5.1 m/s	A	C	Z	G	MD	4.9 m/s	A	C	Z	G	MD	4.8 m/s	A	C	Z	G	MD	5.1 m/s	A	C	Z	G	MD
Lmax	40.9	52.8	57.2	61.3	2.5	Lmax	42.2	54.3	57.5	62.1	1.8	Lmax	42.6	59.1	60.2	60.2	2.3	Lmax	42.1	50.8	55.3	57.9	2.3
L01	40.8	51.7	56.7	60.8	2.1	L01	42.1	54.1	57.3	61.7	1.6	L01	42.5	58.0	59.1	60.1	1.8	L01	41.9	50.7	54.9	57.5	2.0
Leq	38.7	49.5	53.7	56.9	1.0	Leq	40.9	52.2	55.4	57.9	0.9	Leq	40.3	52.5	55.5	57.4	0.9	Leq	39.7	49.8	53.9	55.8	1.0
L50	38.8	49.4	53.5	56.5	1.0	L50	41.0	52.5	55.5	57.4	0.9	L50	40.0	51.1	54.9	57.2	0.9	L50	39.6	49.9	53.9	55.7	0.9
L90	37.1	48.5	52.6	55.0	0.6	L90	39.5	49.9	54.2	56.1	0.6	L90	38.5	50.4	54.2	56.0	0.6	L90	38.5	49.1	53.3	54.7	0.6
Lmin	36.7	48.0	52.2	54.2	0.3	Lmin	39.2	49.2	54.0	55.1	0.3	Lmin	37.6	50.1	53.7	54.7	0.3	Lmin	37.8	48.8	52.8	53.0	0.3

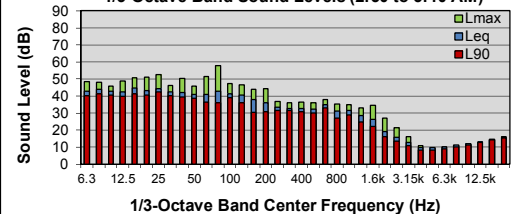
**2:50 to 3:10 AM (32% included)**

Avg	A	C	Z	G	MD
Lmax	42.0	54.3	57.5	60.4	2.2
L01	42.3	55.9	58.0	61.0	2.0
Leq	39.8	51.0	54.6	56.9	1.0
L50	39.6	50.2	54.2	56.6	0.9
L90	37.8	49.0	53.1	55.0	0.6
Lmin	36.7	48.0	52.2	53.0	0.3

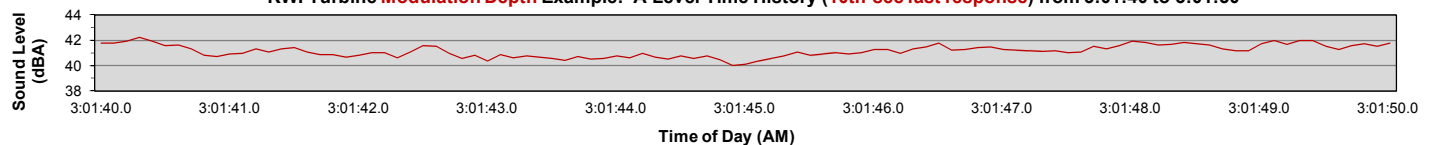
**Octave Band Sound Levels (2:50 to 3:10 AM)**



**1/3-Octave Band Sound Levels (2:50 to 3:10 AM)**



**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:01:40 to 3:01:50**

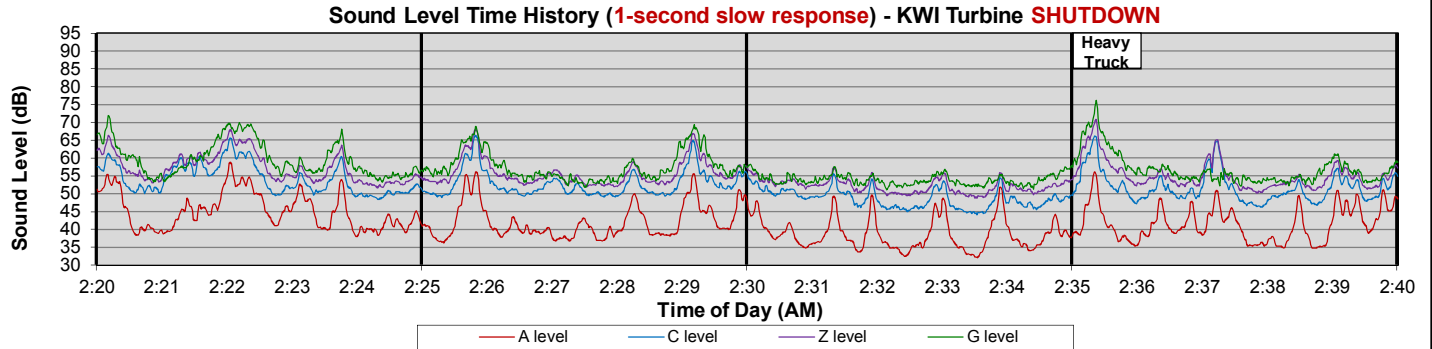




**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-112: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 4/7/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>6.0 m/s</b>	Wind Direction: <b>248°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>51 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>5.7 m/s</b>	Wind Direction: <b>258°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>

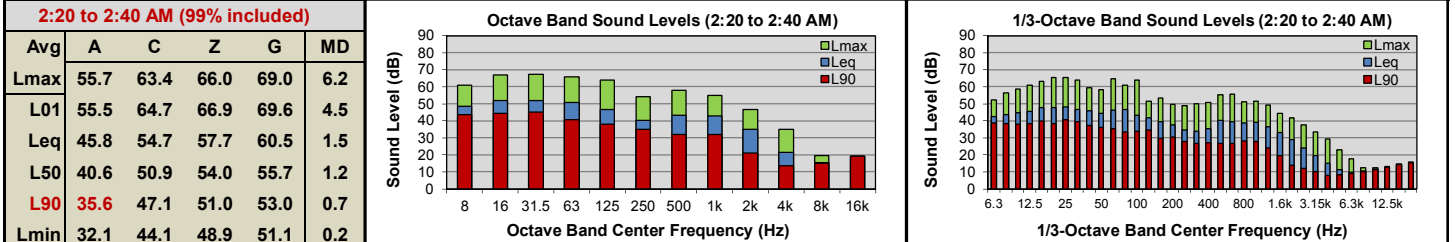


**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**  
HMMH consultant makes noise from **2:31:04 to 2:31:12 (EXCLUDE)**  
HMMH consultant makes noise from **2:31:26 to 2:31:28 (EXCLUDE)**

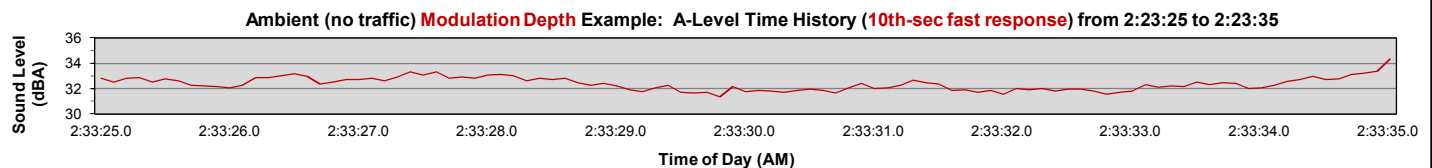
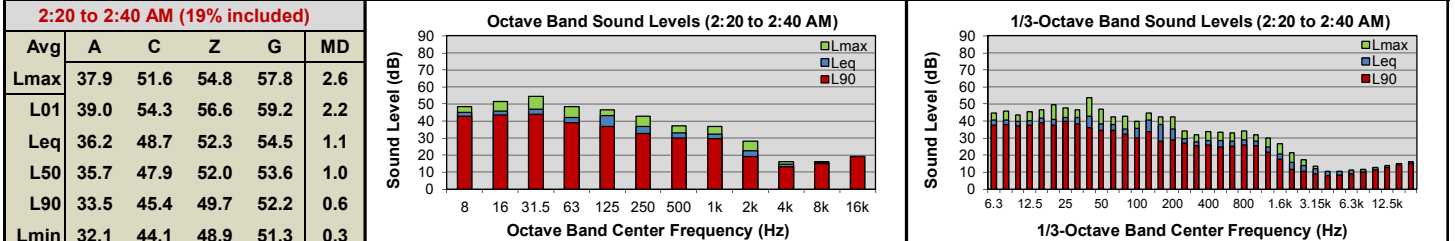
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (100% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (96% included)						2:35 to 2:40 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	58.8	65.7	67.9	72.0	6.8	Lmax	56.2	66.3	68.0	69.4	5.3	Lmax	51.9	55.6	57.4	58.3	6.1	Lmax	56.1	66.2	70.8	76.3	6.6
L01	56.8	64.3	66.7	70.0	5.0	L01	55.6	65.6	67.3	68.5	4.1	L01	49.8	54.9	56.8	57.9	4.4	L01	54.9	65.2	68.7	72.4	4.4
Leq	48.5	56.4	59.5	62.8	1.6	Leq	45.7	55.2	57.9	60.1	1.4	Leq	41.5	49.4	52.5	54.2	1.4	Leq	44.6	54.8	58.1	61.0	1.5
L50	44.5	52.7	56.0	58.3	1.4	L50	40.3	51.4	54.6	56.3	1.2	L50	37.5	48.3	51.9	53.6	1.2	L50	40.7	50.9	54.0	55.7	1.2
L90	39.5	49.6	53.1	54.7	0.8	L90	37.5	49.6	52.6	53.5	0.7	L90	33.8	45.6	49.8	52.2	0.7	L90	35.5	47.5	51.5	53.4	0.7
Lmin	38.1	48.4	51.7	53.3	0.3	Lmin	36.3	49.0	52.0	51.9	0.2	Lmin	32.1	44.1	48.9	51.1	0.3	Lmin	34.8	46.3	50.2	52.2	0.2



**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (0% included)						2:25 to 2:30 AM (24% included)						2:30 to 2:35 AM (32% included)						2:35 to 2:40 AM (18% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	-	-	-	-	-	Lmax	39.3	54.4	56.7	60.5	2.4	Lmax	37.2	50.1	53.3	54.8	2.9	Lmax	37.3	50.4	54.3	58.2	2.5
L01	-	-	-	-	-	L01	39.1	54.3	56.7	59.7	2.2	L01	36.6	49.6	53.0	54.4	2.0	L01	37.3	50.3	54.1	58.1	2.1
Leq	-	-	-	-	-	Leq	37.8	50.8	53.8	55.6	1.2	Leq	34.7	46.8	50.7	52.8	1.1	Leq	35.7	48.0	52.0	55.1	1.0
L50	-	-	-	-	-	L50	37.7	50.1	53.3	55.3	1.2	L50	34.7	46.1	50.3	52.6	1.0	L50	35.5	47.4	51.7	54.2	0.9
L90	-	-	-	-	-	L90	36.8	49.5	52.5	53.4	0.7	L90	32.8	44.8	49.4	52.0	0.6	L90	34.9	46.6	50.7	53.1	0.6
Lmin	-	-	-	-	-	Lmin	36.3	49.0	52.2	52.1	0.4	Lmin	32.1	44.1	48.9	51.3	0.3	Lmin	34.8	46.3	50.2	52.5	0.3



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-113: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 3: 11 Leland Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 5.2 m/s	Wind Direction: 256°	Average Power Level: 210 kW	Air Temperature: 52 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 4.8 m/s	Wind Direction: 252°	Average Power Level: 189 kW	Air Temperature: 52 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 4.9 m/s	Wind Direction: 233°	Average Power Level: 130 kW	Air Temperature: 49 °F

**20-minute Acoustical Metrics (including traffic on Route 3)**

**20-minute Acoustical Metrics (excluding traffic on Route 3)**

**KWI Turbine OPERATING (wind turbine plus traffic)**

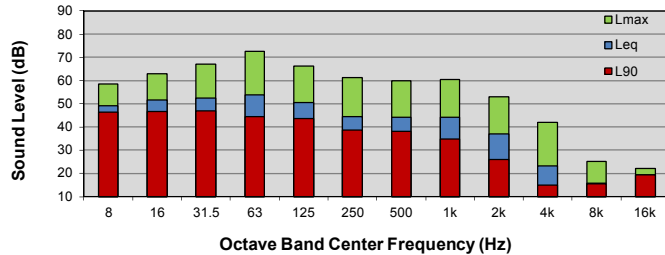
**KWI Turbine OPERATING (wind turbine only)**

**2:50 to 3:10 AM (100% included)**

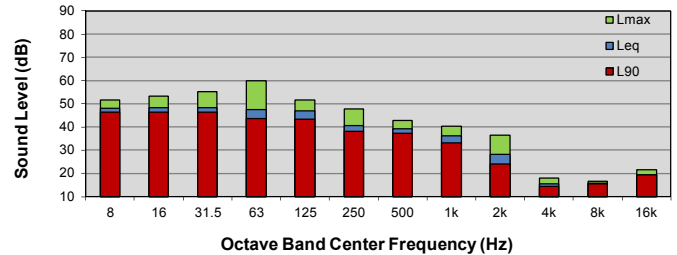
**2:50 to 3:10 AM (32% included)**

FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	58.6	67.1	68.7	68.5	5.3	Avg Lmax	43.3	55.5	58.3	60.6	2.2
L01	57.3	67.4	69.0	69.4	4.0	L01	43.5	57.3	58.8	61.0	2.0
Leq	47.2	57.1	59.3	60.4	1.2	Leq	40.8	52.1	55.2	57.0	1.0
L50	43.7	53.7	56.3	57.5	0.6	L50	40.6	51.2	54.7	56.6	0.9
L90	40.0	50.5	54.1	55.6	0.6	L90	38.9	50.0	53.6	55.1	0.6
Lmin	37.4	48.8	52.6	53.1	0.2	Lmin	37.4	48.8	52.6	53.1	0.3

**Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)**



**Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)**



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 6.0 m/s	Wind Direction: 248°	Average Power Level: 000 kW	Air Temperature: 51 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 5.7 m/s	Wind Direction: 258°	Average Power Level: 000 kW	Air Temperature: 52 °F

**20-minute Acoustical Metrics (including traffic on Route 3)**

**20-minute Acoustical Metrics (excluding traffic on Route 3)**

**KWI Turbine SHUTDOWN (ambient - with traffic)**

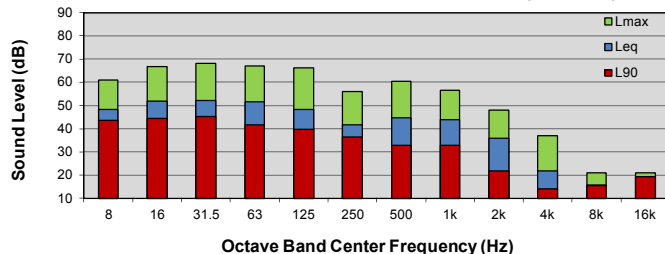
**KWI Turbine SHUTDOWN (ambient - no traffic)**

**2:20 to 2:40 AM (99% included)**

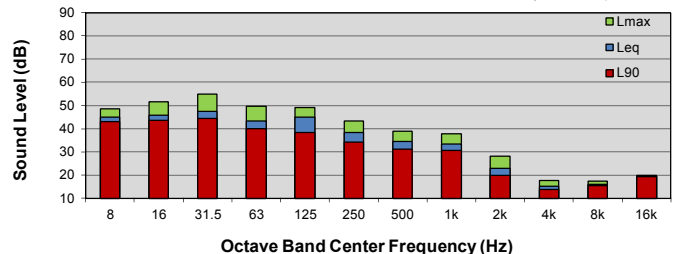
**2:20 to 2:40 AM (19% included)**

FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	57.8	64.7	66.9	69.0	6.2	Avg Lmax	39.1	52.6	55.3	57.9	2.6
L01	57.0	66.0	67.8	69.6	4.5	L01	40.5	55.0	57.2	59.3	2.2
Leq	46.8	55.6	58.3	60.6	1.5	Leq	37.3	49.7	52.8	54.6	1.1
L50	41.6	51.9	54.6	55.8	1.2	L50	36.7	48.8	52.5	53.7	1.0
L90	36.6	47.9	51.5	53.2	0.7	L90	34.4	46.2	50.1	52.3	0.6
Lmin	33.1	44.8	49.1	51.2	0.2	Lmin	33.1	44.8	49.1	51.5	0.3

**Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)**



**Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)**



**HMMH Project # 305270.001**

**Operating - Shutdown Differences (excluding traffic on Route 3)**

Vertical: KWI Turbine **OPERATING** (wind turbine only)  
Horizontal: KWI Turbine **SHUTDOWN** (ambient - no traffic)

**Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)**

Octave Band Center Frequency (Hz)	Lmax (dB)	Leq (dB)	L90 (dB)
8	4	4	44
16	5	4	44
31.5	10	5	44
63	7	5	40
125	6	5	39
250	6	5	34
500	5	5	31
1k	4	4	29
2k	4	4	19
4k	2	2	14
8k	1	1	15
16k	0	0	20

### Octave Band Sound Level Comparison: Pure-tone Check

Including traffic on Route 3:				
L90 Octave Band Check: KWI Turbine <b>OPERATING</b>		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine <b>SHUTDOWN</b>	
L90 Pure-tone?	NO		L90 Pure-tone?	NO
Excluding traffic on Route 3:				
Leq Octave Band Check: KWI Turbine <b>ONLY</b>		NO KWI PURE TONE	Leq Octave Band Check <b>Ambient (no traffic)</b>	
Leq Pure-tone?	NO		Leq Pure-tone?	NO
L90 Octave Band Check KWI Turbine <b>ONLY</b>		NO KWI PURE TONE	L90 Octave Band Check <b>Ambient (no traffic)</b>	
L90 Pure-tone?	NO		L90 Pure-tone?	NO

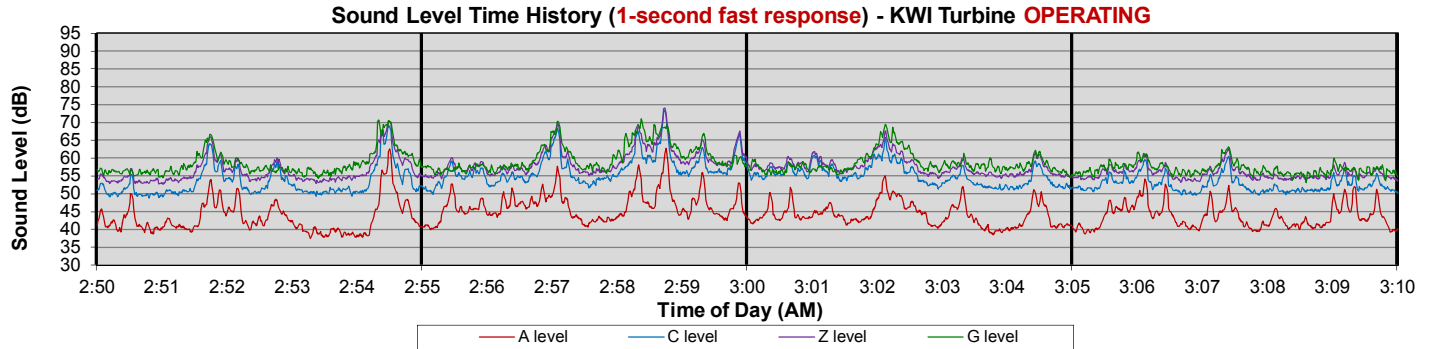
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-115: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.4	1.1	11.6	15.3	19.2	22.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.8	0.9	10.4	14.1	17.2	19.6
	L01	2.7	1.4	11.9	15.6	19.5	22.6		L01	2.1	1.2	10.7	14.4	17.5	19.9
	Leq	-7.6	-8.9	1.5	5.2	9.2	12.3		Leq	-7.6	-8.4	1.1	4.7	7.8	10.2
	L50	-11.0	-12.3	-1.9	1.8	5.8	8.9		L50	-10.6	-11.4	-1.9	1.7	4.8	7.2
	L90	-14.2	-15.5	-5.0	-1.3	2.6	5.7		L90	-12.8	-13.7	-4.2	-0.6	2.6	5.0
	Lmin	-15.9	-17.2	-6.7	-3.1	0.9	4.0		Lmin	-14.2	-15.1	-5.6	-2.0	1.2	3.6
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	2.9	0.4	5.7	6.6	9.2	10.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.9	1.1	5.4	5.7	8.1	9.2
	L01	4.7	2.3	7.6	8.5	11.1	12.5		L01	3.5	1.6	6.0	6.3	8.7	9.7
	Leq	-0.5	-2.9	2.4	3.3	5.9	7.3		Leq	-0.2	-2.0	2.3	2.6	5.0	6.1
	L50	-1.4	-3.8	1.5	2.4	5.0	6.4		L50	-0.6	-2.5	1.9	2.2	4.6	5.6
	L90	-2.6	-5.0	0.2	1.1	3.7	5.2		L90	-1.7	-3.6	0.8	1.1	3.5	4.5
	Lmin	-3.8	-6.2	-0.9	0.0	2.6	4.0		Lmin	-2.7	-4.5	-0.2	0.1	2.5	3.6
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-9.3	-10.6	-0.1	3.6	7.5	10.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.6	-9.5	0.0	3.6	6.8	9.2
	L01	-7.4	-8.7	1.8	5.4	9.4	12.5		L01	-8.1	-8.9	0.6	4.2	7.3	9.7
	Leq	-12.7	-13.9	-3.5	0.2	4.2	7.3		Leq	-11.7	-12.6	-3.1	0.6	3.7	6.1
	L50	-13.5	-14.8	-4.4	-0.7	3.3	6.4		L50	-12.2	-13.0	-3.5	0.1	3.2	5.6
	L90	-14.8	-16.1	-5.6	-1.9	2.0	5.2		L90	-13.3	-14.2	-4.6	-1.0	2.1	4.5
	Lmin	-15.9	-17.2	-6.7	-3.1	0.9	4.0		Lmin	-14.2	-15.1	-5.6	-2.0	1.2	3.6

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-116: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 4/7/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.5	-1.1	7.9	12.7	15.3	17.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.9	0.9	3.9	4.1	4.6	5.1
	L01	0.4	-0.2	8.9	13.6	16.3	18.2		L01	-2.2	-0.5	2.5	2.8	3.3	3.8
	Leq	-8.7	-9.3	-0.2	4.6	7.2	9.2		Leq	-5.0	-3.2	-0.2	0.0	0.6	1.1
	L50	-11.6	-12.2	-3.1	1.7	4.3	6.3		L50	-5.6	-3.8	-0.8	-0.6	0.0	0.5
	L90	-13.4	-14.0	-4.9	-0.1	2.5	4.5		L90	-5.6	-3.8	-0.8	-0.6	-0.1	0.4
	Lmin	-16.0	-16.6	-7.5	-2.7	-0.1	1.9		Lmin	-6.0	-4.2	-1.2	-1.0	-0.5	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	2.7	1.3	6.0	6.9	8.3	9.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.3	0.1	1.2	1.2	1.6	2.0
	L01	3.1	1.7	6.5	7.3	8.7	9.5		L01	-0.6	-0.2	0.9	1.0	1.4	1.7
	Leq	-0.9	-2.3	2.4	3.3	4.7	5.5		Leq	-1.6	-1.2	-0.1	-0.1	0.4	0.7
	L50	-1.3	-2.7	2.1	2.9	4.3	5.1		L50	-1.7	-1.2	-0.2	-0.1	0.3	0.6
	L90	-2.8	-4.2	0.5	1.4	2.8	3.6		L90	-2.0	-1.6	-0.5	-0.4	0.0	0.3
	Lmin	-4.8	-6.2	-1.5	-0.6	0.8	1.6		Lmin	-2.3	-1.9	-0.8	-0.8	-0.4	0.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.5	-9.1	0.0	4.8	7.4	9.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.0	-2.2	0.8	1.0	1.6	2.1
	L01	-8.0	-8.6	0.5	5.2	7.9	9.8		L01	-4.2	-2.5	0.5	0.8	1.3	1.8
	Leq	-12.0	-12.6	-3.6	1.2	3.9	5.8		Leq	-5.3	-3.5	-0.5	-0.3	0.3	0.8
	L50	-12.4	-13.0	-3.9	0.8	3.5	5.4		L50	-5.3	-3.5	-0.5	-0.3	0.2	0.7
	L90	-13.9	-14.5	-5.5	-0.7	2.0	3.9		L90	-5.6	-3.9	-0.9	-0.6	-0.1	0.4
	Lmin	-16.0	-16.6	-7.5	-2.7	-0.1	1.9		Lmin	-6.0	-4.2	-1.2	-1.0	-0.4	0.1

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-117: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 4/7/2014 from 2:50 to 3:10 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>5.2 m/s</b>	Wind Direction: <b>256°</b>	Avg Power Level: <b>210 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>4.8 m/s</b>	Wind Direction: <b>252°</b>	Avg Power Level: <b>189 kW</b>	Air Temperature: <b>52 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>4.9 m/s</b>	Wind Direction: <b>233°</b>	Avg Power Level: <b>130 kW</b>	Air Temperature: <b>49 °F</b>

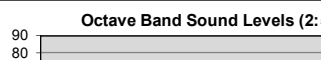



**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**  
HMMH consultant makes noise from **2:59:11 to 2:59:14 (EXCLUDE)**

**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (99% included)						3:00 to 3:05 AM (100% included)						3:05 to 3:10 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	62.6	69.1	70.5	70.6	6.0	Lmax	62.7	73.4	74.1	70.9	5.2	Lmax	55.0	65.7	67.6	69.4	4.9	Lmax	54.2	60.4	62.5	63.1	5.2
L01	58.2	67.7	69.6	70.2	4.1	L01	58.5	70.6	71.6	69.9	4.1	L01	53.3	62.3	65.1	68.4	3.4	L01	52.3	59.5	61.4	62.4	4.2
Leq	47.3	56.2	58.7	60.4	1.3	Leq	49.4	60.0	62.0	62.5	1.3	Leq	45.6	56.2	58.5	59.8	1.1	Leq	45.3	53.2	56.1	57.3	1.3
L50	41.7	51.3	54.8	57.1	1.1	L50	46.0	55.8	58.3	58.6	1.1	L50	43.4	54.9	57.1	57.7	1.0	L50	43.0	51.9	55.2	56.6	1.1
L90	38.7	49.9	53.5	55.4	0.6	L90	42.2	52.8	55.6	56.6	0.6	L90	40.5	51.8	55.2	56.2	0.6	L90	40.0	50.5	54.0	55.1	0.6
Lmin	37.4	48.8	52.6	54.2	0.3	Lmin	40.0	49.9	54.2	55.3	0.2	Lmin	38.5	51.1	54.4	54.7	0.3	Lmin	38.7	49.7	53.2	53.1	0.3

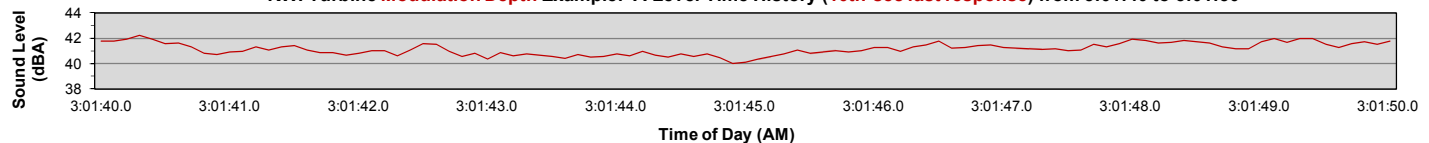
2:50 to 3:10 AM (100% included)									
Avg	A	C	Z	G	MD				
Lmax	58.6	67.1	68.7	68.5	5.3				
L01	57.3	67.4	69.0	69.4	4.0				
Leq	47.2	57.1	59.3	60.4	1.2				
L50	43.7	53.7	56.3	57.5	0.6				
L90	40.0	50.5	54.1	55.6	0.6				
Lmin	37.4	48.8	52.6	53.1	0.2				

**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (40% included)						2:55 to 3:00 AM (16% included)						3:00 to 3:05 AM (35% included)						3:05 to 3:10 AM (36% included)					
5.1 m/s	A	C	Z	G	MD	4.9 m/s	A	C	Z	G	MD	4.8 m/s	A	C	Z	G	MD	5.1 m/s	A	C	Z	G	MD
Lmax	42.2	54.2	58.1	61.8	2.5	Lmax	43.7	55.4	58.1	62.2	1.8	Lmax	43.6	60.1	61.1	60.3	2.3	Lmax	43.6	52.1	55.7	57.9	2.3
L01	41.9	53.4	57.3	60.8	2.1	L01	43.7	55.4	58.0	61.8	1.6	L01	43.5	59.3	60.3	60.2	1.8	L01	43.1	52.0	55.4	57.5	2.0
Leq	39.8	50.6	54.3	57.0	1.0	Leq	42.0	53.3	56.1	58.0	0.9	Leq	41.4	53.6	56.2	57.5	0.9	Leq	40.7	50.9	54.4	55.9	1.0
L50	39.7	50.5	54.1	56.6	1.0	L50	42.1	53.2	56.0	57.5	0.9	L50	41.1	52.3	55.5	57.3	0.9	L50	40.5	50.9	54.4	55.8	0.9
L90	38.2	49.6	53.1	55.1	0.6	L90	40.6	50.8	54.7	56.2	0.6	L90	39.6	51.4	54.7	56.1	0.6	L90	39.4	50.0	53.7	54.9	0.6
Lmin	37.4	48.8	52.6	54.2	0.3	Lmin	40.0	49.9	54.3	55.3	0.3	Lmin	38.5	51.1	54.4	54.7	0.3	Lmin	38.7	49.7	53.2	53.1	0.3

2:50 to 3:10 AM (32% included)						Octave Band Sound Levels (2:50 to 3:10 AM)												1/3-Octave Band Sound Levels (2:50 to 3:10 AM)											
Avg	A	C	Z	G	MD																								
Lmax	43.3	55.5	58.3	60.6	2.2																								
L01	43.5	57.3	58.8	61.0	2.0																								
Leq	40.8	52.1	55.2	57.0	1.0																								
L50	40.6	51.2	54.7	56.6	0.9																								
L90	38.9	50.0	53.6	55.1	0.6																								
Lmin	37.4	48.8	52.6	53.1	0.3																								

**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:01:40 to 3:01:50**

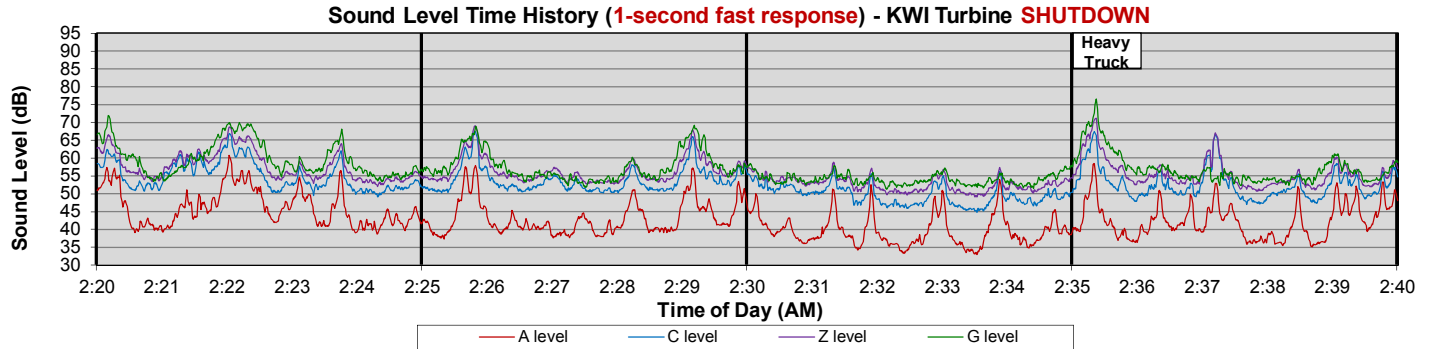




**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-118: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 4/7/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>6.0 m/s</b>	Wind Direction: <b>248°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>51 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>5.7 m/s</b>	Wind Direction: <b>258°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>

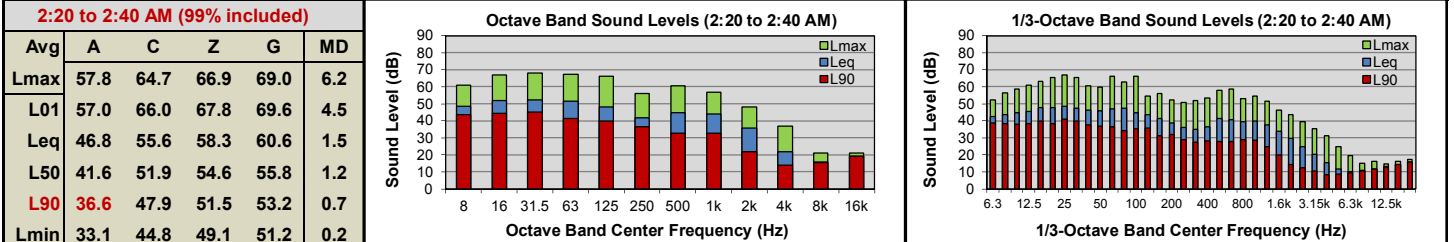


**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**  
HMMH consultant makes noise from **2:31:04 to 2:31:12 (EXCLUDE)**  
HMMH consultant makes noise from **2:31:26 to 2:31:28 (EXCLUDE)**

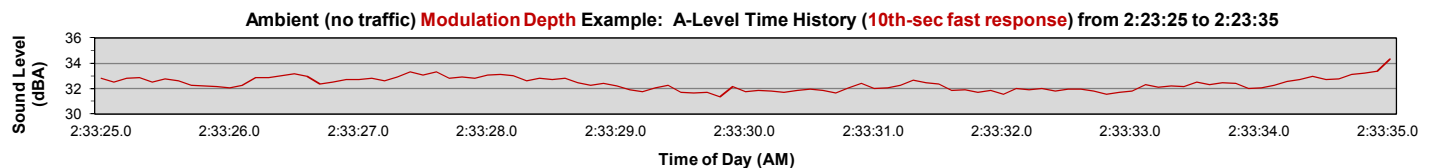
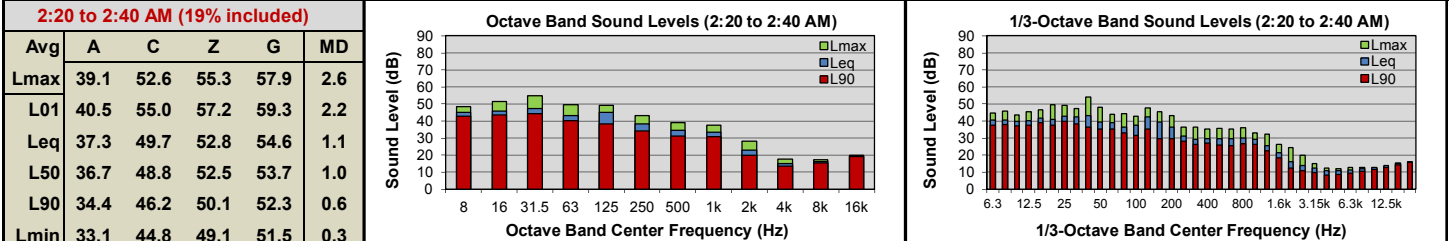
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (100% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (96% included)						2:35 to 2:40 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	60.8	66.9	68.7	72.0	6.8	Lmax	57.9	67.5	69.0	69.3	5.3	Lmax	54.0	57.2	58.7	58.4	6.1	Lmax	58.4	67.4	71.1	76.6	6.6
L01	58.5	65.8	67.8	70.0	5.0	L01	57.3	66.0	67.8	68.4	4.1	L01	52.5	55.7	57.4	58.0	4.4	L01	54.0	66.7	69.8	72.7	4.4
Leq	49.6	57.3	60.1	62.9	1.6	Leq	46.7	56.1	58.5	60.2	1.4	Leq	42.4	50.5	53.1	54.3	1.4	Leq	45.7	55.8	58.7	61.1	1.5
L50	45.3	53.6	56.4	58.4	1.4	L50	41.4	52.6	55.2	56.3	1.2	L50	38.5	49.1	52.5	53.7	1.2	L50	41.6	51.6	54.4	55.8	1.2
L90	40.3	50.8	53.7	54.8	0.8	L90	38.5	50.8	53.4	53.6	0.7	L90	34.8	46.3	50.2	52.3	0.7	L90	36.4	48.4	52.0	53.4	0.7
Lmin	38.8	49.1	52.0	53.4	0.3	Lmin	37.2	50.2	52.7	51.9	0.2	Lmin	33.1	44.8	49.1	51.2	0.3	Lmin	35.2	46.9	50.7	52.3	0.2



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (0% included)						2:25 to 2:30 AM (24% included)						2:30 to 2:35 AM (32% included)						2:35 to 2:40 AM (18% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	-	-	-	-	-	Lmax	40.7	55.2	57.3	60.5	2.4	Lmax	37.8	51.3	54.0	54.8	2.9	Lmax	39.0	51.2	54.6	58.3	2.5
L01	-	-	-	-	-	L01	40.6	55.1	57.3	59.8	2.2	L01	37.7	50.7	53.6	54.5	2.0	L01	38.5	51.2	54.6	58.2	2.1
Leq	-	-	-	-	-	Leq	39.1	51.8	54.5	55.7	1.2	Leq	35.7	47.8	51.2	52.9	1.1	Leq	36.6	48.8	52.5	55.2	1.0
L50	-	-	-	-	-	L50	39.1	51.3	54.1	55.3	1.2	L50	35.8	47.0	50.7	52.7	1.0	L50	36.5	48.4	52.2	54.3	0.9
L90	-	-	-	-	-	L90	38.0	50.7	53.2	53.5	0.7	L90	33.8	45.7	49.8	52.1	0.6	L90	35.8	47.4	51.1	53.1	0.6
Lmin	-	-	-	-	-	Lmin	37.2	50.2	52.9	52.2	0.4	Lmin	33.1	44.8	49.1	51.5	0.3	Lmin	35.2	46.9	50.7	52.5	0.3





**Detailed Acoustical Monitoring Data**  
**11 Leland Road**  
**March 22, 2014**

Slow-response data: Pages D-120 to D-125

Fast-response data: Pages D-126 to D-131

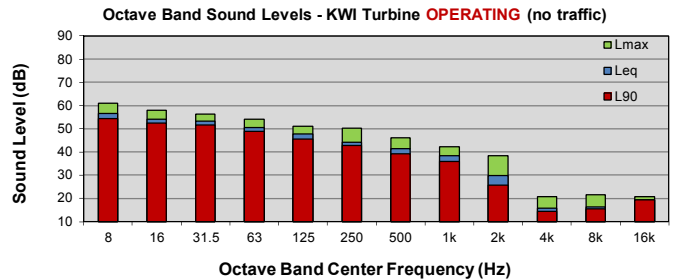
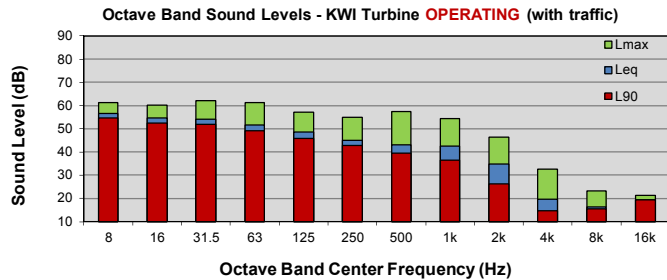
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-120: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 3: 11 Leland Rd. on 3/22/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 236°	Average Power Level: 539 kW	Air Temperature: 31 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 235°	Average Power Level: 600 kW	Air Temperature: 31 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 236°	Average Power Level: 669 kW	Air Temperature: 31 °F

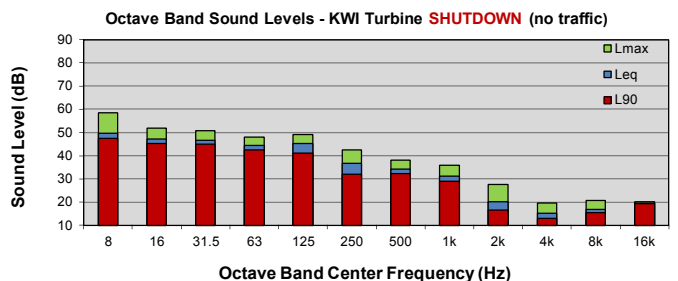
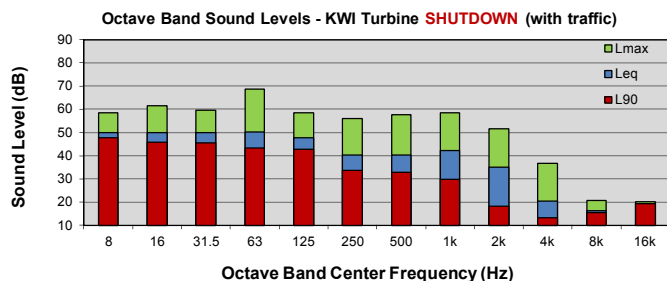
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:50 to 3:10 AM (100% included)						2:50 to 3:10 AM (53% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.8	62.2	65.3	67.1	5.5	Avg Lmax	45.1	56.5	62.5	64.8	4.1
L01	53.2	61.4	65.5	67.7	3.8	L01	45.2	56.4	62.4	64.7	3.7
Leq	45.5	56.0	61.2	62.9	1.7	Leq	42.7	54.9	60.5	62.3	1.7
L50	43.8	55.3	60.9	62.4	0.9	L50	42.5	54.8	60.4	62.1	1.6
L90	41.2	54.2	59.6	61.1	0.9	L90	41.0	54.1	59.4	60.9	1.0
Lmin	40.1	53.2	58.3	59.1	0.3	Lmin	40.1	53.2	58.3	59.1	0.3

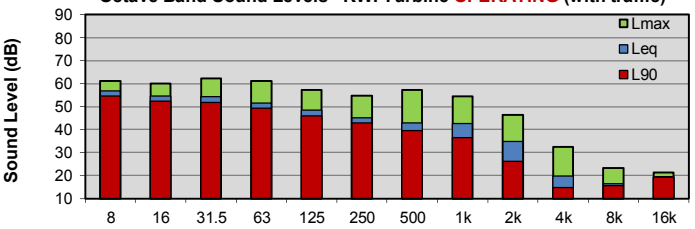
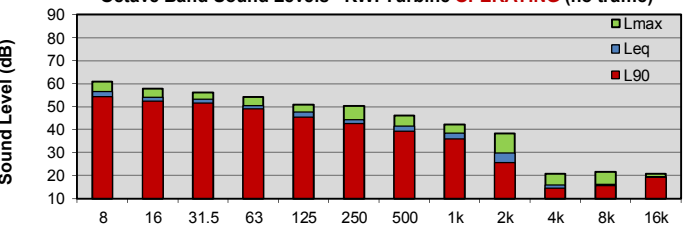
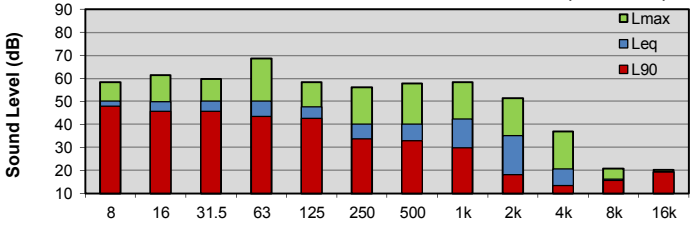
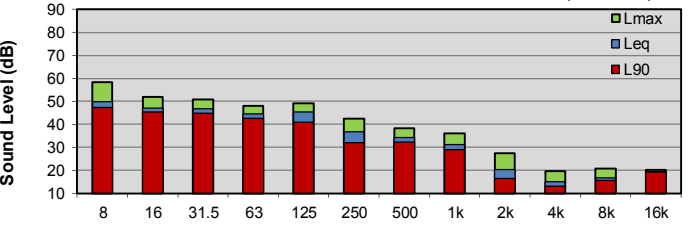


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 230°	Average Power Level: 000 kW	Air Temperature: 31 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 235°	Average Power Level: 000 kW	Air Temperature: 31 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (99% included)						2:20 to 2:40 AM (30% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.4	63.0	65.0	66.2	6.3	Avg Lmax	37.8	51.2	57.2	59.0	3.3
L01	55.1	62.6	65.1	67.0	3.9	L01	38.6	51.3	56.7	59.2	2.3
Leq	44.6	53.8	57.0	58.4	1.3	Leq	36.0	49.6	54.2	55.6	1.0
L50	39.8	51.0	55.1	56.2	1.1	L50	35.6	49.6	54.1	55.3	1.0
L90	35.0	49.0	53.6	54.4	0.6	L90	33.8	47.9	52.8	54.1	0.6
Lmin	32.2	46.9	52.0	52.8	0.2	Lmin	32.2	46.9	52.0	52.8	0.2



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-121: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/22/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.6	-1.2	9.3	14.1	18.8	21.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.3	6.5	9.0	9.5	11.2	12.8
	L01	-2.2	-1.9	8.6	13.4	18.2	21.0		L01	7.4	6.6	9.1	9.6	11.3	13.0
	Leq	-9.9	-9.5	1.0	5.8	10.5	13.3		Leq	5.0	4.2	6.7	7.1	8.9	10.5
	L50	-11.6	-11.3	-0.8	4.0	8.8	11.6		L50	4.8	4.0	6.5	6.9	8.7	10.3
	L90	-14.2	-13.9	-3.4	1.4	6.2	9.0		L90	3.2	2.4	4.9	5.3	7.1	8.7
	Lmin	-15.3	-14.9	-4.5	0.4	5.1	7.9		Lmin	2.4	1.6	4.1	4.5	6.3	7.9
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.4	-10.0	0.5	5.3	10.1	12.8								
	L01	-10.2	-9.9	0.6	5.4	10.2	13.0								
	Leq	-12.7	-12.4	-1.9	2.9	7.7	10.5								
	L50	-12.9	-12.6	-2.1	2.8	7.5	10.3								
	L90	-14.5	-14.1	-3.6	1.2	5.9	8.7								
	Lmin	-15.3	-14.9	-4.5	0.4	5.1	7.9								
								Including traffic on Route 3:							
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
								Excluding traffic on Route 3:							
Leq Octave Band Check: KWI Turbine ONLY				NO KWI PURE TONE		Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check KWI Turbine ONLY				NO KWI PURE TONE		L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-122: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/22/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.8	-0.4	8.5	11.3	13.2	15.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.3	0.3	8.3	10.3	11.8	13.4
	L01	-1.6	-1.2	7.7	10.5	12.4	14.6		L01	0.5	0.4	8.5	10.4	11.9	13.5
	Leq	-7.0	-6.6	2.2	5.0	7.0	9.1		Leq	-3.8	-3.9	4.1	6.1	7.6	9.2
	L50	-7.7	-7.3	1.6	4.4	6.3	8.5		L50	-4.1	-4.2	3.8	5.8	7.3	8.9
	L90	-8.8	-8.4	0.4	3.2	5.2	7.3		L90	-5.4	-5.5	2.6	4.5	6.0	7.6
	Lmin	-9.9	-9.5	-0.6	2.2	4.1	6.3		Lmin	-6.7	-6.8	1.3	3.2	4.7	6.3
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	5.2	5.2	6.9	6.9	8.6	9.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	5.3	5.8	8.3	8.5	9.8	10.6
	L01	5.2	5.1	6.9	6.8	8.5	9.5		L01	5.2	5.7	8.1	8.3	9.6	10.4
	Leq	3.7	3.6	5.4	5.3	7.0	8.0		Leq	3.3	3.8	6.3	6.5	7.8	8.6
	L50	3.6	3.5	5.3	5.2	6.9	7.9		L50	3.2	3.7	6.2	6.4	7.6	8.5
	L90	2.8	2.8	4.5	4.5	6.2	7.2		L90	2.2	2.7	5.1	5.3	6.6	7.4
	Lmin	1.9	1.9	3.6	3.6	5.3	6.3		Lmin	1.1	1.6	4.1	4.2	5.5	6.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.5	-6.1	2.7	5.5	7.5	9.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.5	-2.5	5.5	7.5	9.0	10.6
	L01	-6.6	-6.2	2.7	5.5	7.4	9.5		L01	-2.6	-2.7	5.3	7.3	8.8	10.4
	Leq	-8.1	-7.7	1.2	4.0	5.9	8.0		Leq	-4.5	-4.5	3.5	5.5	7.0	8.6
	L50	-8.2	-7.8	1.1	3.9	5.8	7.9		L50	-4.6	-4.7	3.4	5.3	6.9	8.5
	L90	-8.9	-8.5	0.3	3.1	5.1	7.2		L90	-5.6	-5.7	2.3	4.3	5.8	7.4
	Lmin	-9.9	-9.5	-0.6	2.2	4.1	6.3		Lmin	-6.7	-6.8	1.3	3.2	4.7	6.3

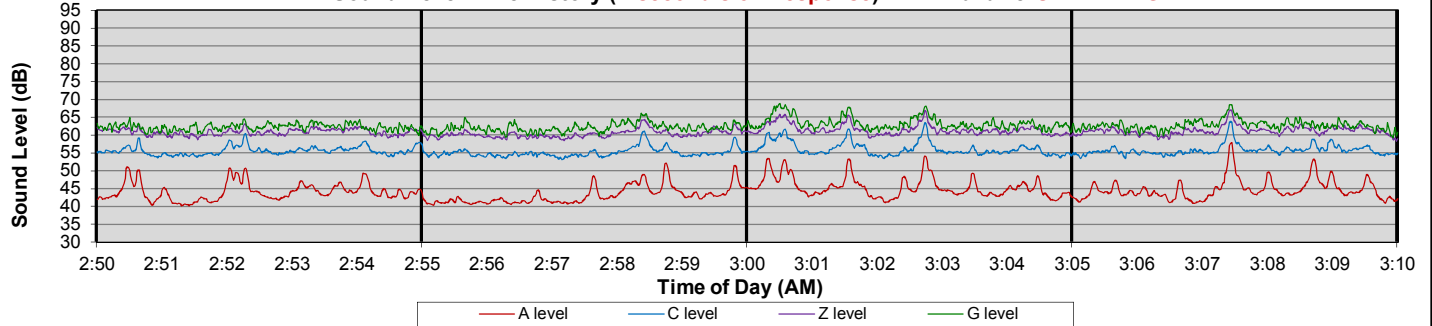
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-123: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/22/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.9	0.1	8.7	10.9	12.7	14.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.8	1.5	4.2	4.4	4.8	5.2
	L01	1.5	0.8	9.3	11.6	13.3	14.9		L01	-2.6	-0.2	2.5	2.7	3.1	3.5
	Leq	-3.3	-4.1	4.5	6.7	8.5	10.1		Leq	-4.6	-2.2	0.4	0.6	1.0	1.5
	L50	-3.8	-4.5	4.0	6.2	8.0	9.6		L50	-5.4	-3.0	-0.3	-0.2	0.3	0.7
	L90	-5.2	-5.9	2.6	4.9	6.7	8.2		L90	-5.4	-3.0	-0.4	-0.2	0.3	0.7
	Lmin	-7.1	-7.8	0.7	3.0	4.7	6.3		Lmin	-6.0	-3.6	-1.0	-0.8	-0.4	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	5.8	5.6	9.1	9.4	10.7	11.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.8	1.9	3.1	3.2	3.5	3.9
	L01	5.7	5.5	9.1	9.4	10.6	11.9		L01	0.4	1.5	2.7	2.7	3.1	3.5
	Leq	3.3	3.1	6.6	7.0	8.2	9.4		Leq	-1.6	-0.5	0.7	0.8	1.1	1.5
	L50	3.1	2.9	6.5	6.8	8.1	9.3		L50	-1.7	-0.6	0.6	0.7	1.0	1.4
	L90	1.9	1.7	5.2	5.5	6.8	8.0		L90	-2.3	-1.3	-0.1	0.0	0.3	0.7
	Lmin	0.1	-0.1	3.5	3.8	5.1	6.3		Lmin	-3.0	-2.0	-0.8	-0.7	-0.3	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.5	-2.2	6.4	8.6	10.4	11.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.2	0.2	2.9	3.0	3.5	3.9
	L01	-1.5	-2.2	6.3	8.5	10.3	11.9		L01	-2.6	-0.2	2.4	2.6	3.1	3.5
	Leq	-4.0	-4.7	3.9	6.1	7.9	9.4		Leq	-4.6	-2.2	0.4	0.6	1.1	1.5
	L50	-4.1	-4.8	3.7	6.0	7.7	9.3		L50	-4.7	-2.3	0.3	0.5	1.0	1.4
	L90	-5.4	-6.1	2.5	4.7	6.5	8.0		L90	-5.3	-3.0	-0.3	-0.1	0.3	0.7
	Lmin	-7.1	-7.8	0.7	3.0	4.7	6.3		Lmin	-6.0	-3.6	-1.0	-0.8	-0.4	0.1

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-124: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/22/2014 from 2:50 to 3:10 AM with KWI Turbine OPERATING**

Site data	Supervisory Control and Data Acquisition (SCADA) data				
Distance from KWI: <b>1025 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>236°</b>	Avg Power Level: <b>539 kW</b>	Air Temperature: <b>31 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>7.1 m/s</b>	Wind Direction: <b>235°</b>	Avg Power Level: <b>600 kW</b>	Air Temperature: <b>31 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>236°</b>	Avg Power Level: <b>669 kW</b>	Air Temperature: <b>31 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**



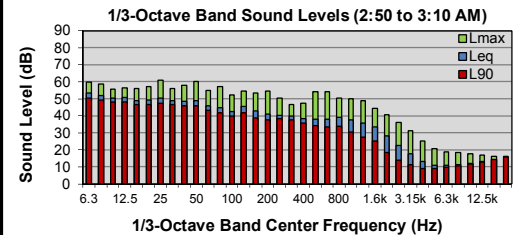
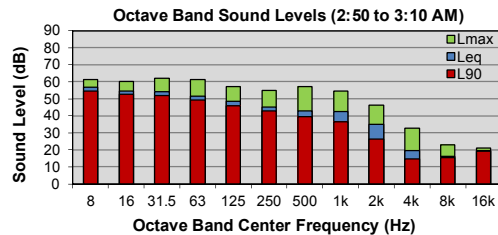
**Event Log**

Traffic on Route 3 **throughout**

**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)						3:05 to 3:10 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	51.1	60.5	63.2	64.9	4.4	Lmax	52.1	61.1	64.4	66.1	4.4	Lmax	54.2	63.5	66.8	68.9	5.0	Lmax	58.0	63.9	67.1	68.5	8.1
L01	50.8	59.1	62.5	64.3	3.6	L01	51.6	60.1	64.0	65.7	3.7	L01	53.4	61.8	65.8	68.2	4.1	L01	56.2	62.4	66.4	67.4	3.6
Leq	44.9	55.8	60.9	62.4	1.6	Leq	44.0	55.3	60.4	62.2	1.7	Leq	46.6	56.7	61.8	63.8	1.8	Leq	46.2	56.1	61.4	63.0	1.6
L50	43.5	55.4	60.9	62.3	1.5	L50	42.4	54.7	60.1	61.8	1.6	L50	44.7	55.5	61.2	62.9	1.7	L50	44.0	55.5	61.2	62.6	1.5
L90	41.2	54.3	59.7	61.0	0.9	L90	40.9	54.0	59.1	60.6	0.9	L90	42.4	54.3	60.1	61.7	1.0	L90	41.7	54.6	59.9	61.3	0.9
Lmin	40.1	53.7	58.6	59.8	0.3	Lmin	40.3	53.2	58.4	59.4	0.4	Lmin	41.1	53.4	59.1	60.7	0.4	Lmin	40.8	53.5	58.3	59.1	0.3

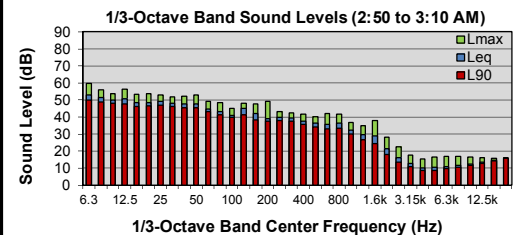
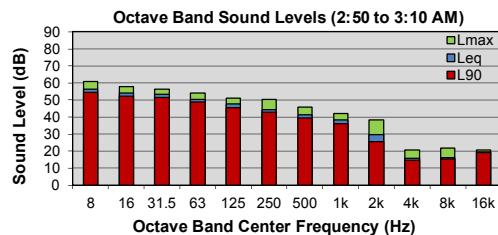
2:50 to 3:10 AM (100% included)					
Avg	A	C	Z	G	MD
Lmax	53.8	62.2	65.3	67.1	5.5
L01	53.2	61.4	65.5	67.7	3.8
Leq	45.5	56.0	61.2	62.9	1.7
L50	43.8	55.3	60.9	62.4	0.9
L90	41.2	54.2	59.6	61.1	0.9
Lmin	40.1	53.2	58.3	59.1	0.3



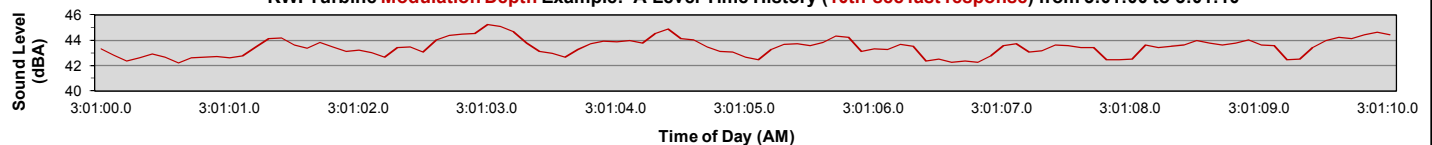
**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (49% included)						2:55 to 3:00 AM (73% included)						3:00 to 3:05 AM (45% included)						3:05 to 3:10 AM (42% included)					
7.2 m/s	A	C	Z	G	MD	7.1 m/s	A	C	Z	G	MD	7.3 m/s	A	C	Z	G	MD	7.3 m/s	A	C	Z	G	MD
Lmax	44.6	56.5	62.3	64.2	3.6	Lmax	45.4	56.8	62.6	65.0	4.4	Lmax	45.9	56.0	62.1	64.8	5.0	Lmax	44.4	56.6	63.2	65.1	3.6
L01	44.5	56.4	62.2	64.0	3.2	L01	45.1	56.2	62.2	64.5	3.8	L01	45.7	55.9	62.0	64.2	4.2	L01	44.2	56.4	62.9	64.9	3.4
Leq	42.5	55.0	60.7	62.3	1.6	Leq	42.2	54.6	60.1	61.9	1.8	Leq	43.6	54.9	60.8	62.5	1.9	Leq	42.9	55.2	60.9	62.7	1.8
L50	42.4	54.9	60.5	62.2	1.5	L50	41.6	54.5	59.9	61.6	1.7	L50	43.5	55.0	60.8	62.4	1.7	L50	43.1	55.1	60.9	62.5	1.6
L90	40.7	54.1	59.6	61.0	0.9	L90	40.9	53.8	59.0	60.5	1.0	L90	42.0	54.1	59.9	61.4	1.0	L90	41.3	54.3	59.6	60.9	1.0
Lmin	40.1	53.8	58.6	60.1	0.3	Lmin	40.3	53.2	58.4	59.4	0.5	Lmin	41.1	53.4	59.1	60.7	0.6	Lmin	40.8	53.5	58.3	59.1	0.3

2:50 to 3:10 AM (53% included)					
Avg	A	C	Z	G	MD
Lmax	45.1	56.5	62.5	64.8	4.1
L01	45.2	56.4	62.4	64.7	3.7
Leq	42.7	54.9	60.5	62.3	1.7
L50	42.5	54.8	60.4	62.1	1.6
L90	41.0	54.1	59.4	60.9	1.0
Lmin	40.1	53.2	58.3	59.1	0.3



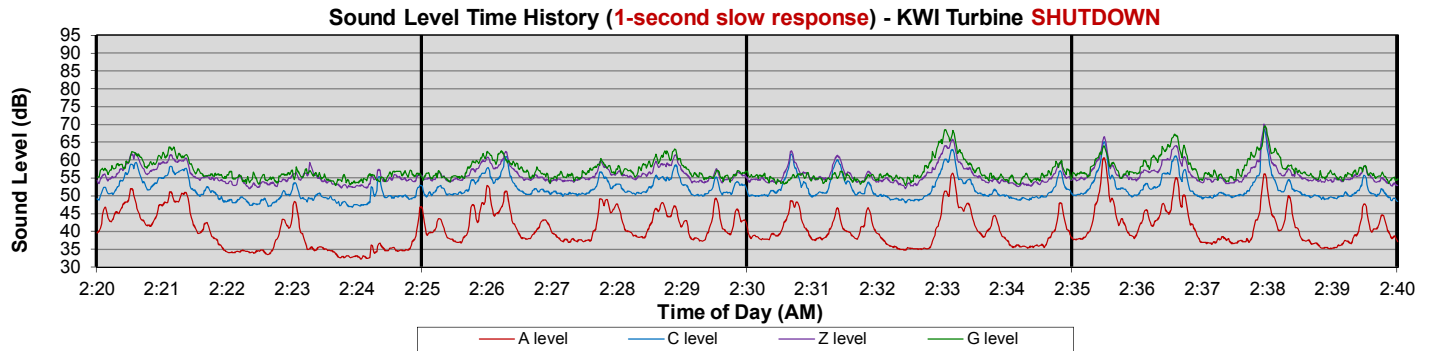
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:01:00 to 3:01:10**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-125: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/22/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>7.7 m/s</b>	Wind Direction: <b>230°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>31 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>235°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>31 °F</b>

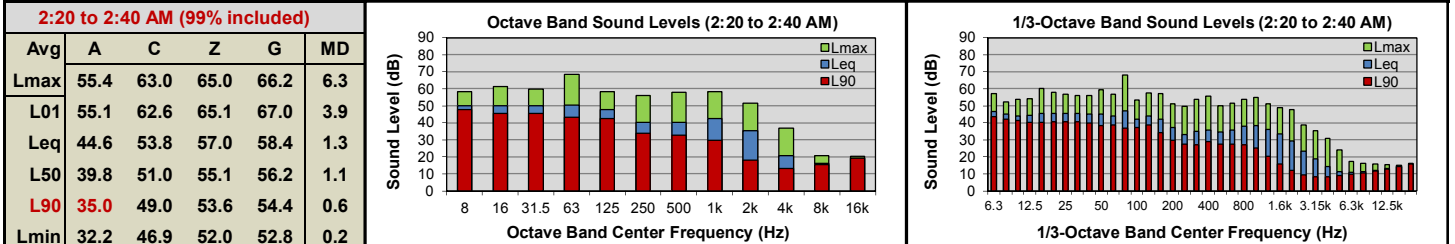


**Event Log**

Traffic on Route 3 **throughout**  
HMMH consultant makes noise from **2:20:37 to 2:20:39 (EXCLUDE)**  
KWI auxillary equipment noise from **2:39:54 to 2:40:00 (EXCLUDE)**

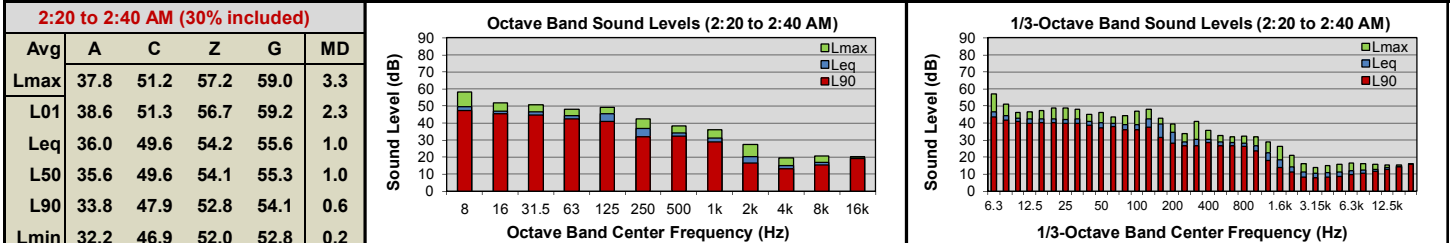
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (99% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (98% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	52.0	59.3	61.8	63.7	7.2	Lmax	52.8	61.1	62.3	63.1	5.5	Lmax	56.3	63.0	65.8	68.5	5.1	Lmax	60.5	68.7	70.1	69.6	7.3
L01	51.0	58.9	61.4	63.3	3.7	L01	51.8	60.0	61.5	62.6	3.9	L01	55.3	61.9	65.0	68.0	3.5	L01	59.1	65.8	67.7	67.4	4.6
Leq	43.2	52.1	56.1	57.4	1.1	Leq	44.0	53.2	56.6	57.9	1.3	Leq	43.6	53.7	56.9	58.3	1.3	Leq	46.7	55.3	58.3	59.7	1.4
L50	36.6	50.0	54.8	56.0	1.0	L50	41.1	51.6	55.5	56.7	1.1	L50	39.1	50.7	54.7	55.4	1.1	L50	40.5	51.2	55.5	56.8	1.2
L90	33.2	47.6	52.8	54.1	0.6	L90	37.6	50.4	54.2	55.0	0.6	L90	35.4	49.0	53.3	54.0	0.7	L90	36.6	49.6	54.0	55.0	0.7
Lmin	32.2	46.9	52.0	52.9	0.2	Lmin	36.8	49.6	53.5	53.7	0.3	Lmin	34.8	48.1	52.0	52.8	0.4	Lmin	35.2	48.9	53.4	53.4	0.3

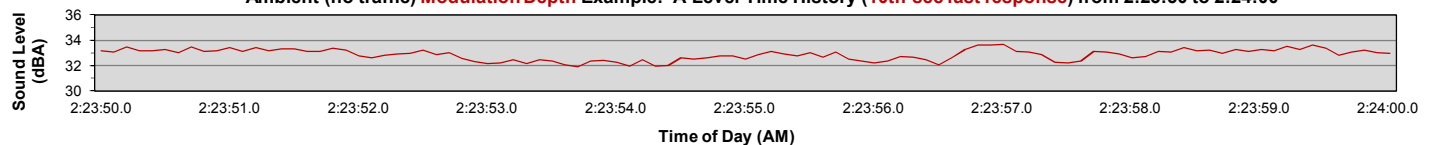


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (42% included)						2:25 to 2:30 AM (23% included)						2:30 to 2:35 AM (27% included)						2:35 to 2:40 AM (28% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	35.7	50.8	59.3	57.0	5.4	Lmax	38.9	51.3	56.3	59.0	2.7	Lmax	37.8	50.8	56.7	59.5	2.3	Lmax	38.6	52.1	56.6	60.5	2.8
L01	35.6	50.5	58.6	57.0	2.0	L01	38.9	51.3	56.1	58.4	2.3	L01	37.5	50.5	56.6	59.1	2.1	L01	38.5	51.5	56.5	60.4	2.6
Leq	34.3	48.7	54.1	55.2	0.9	Leq	37.7	50.5	54.6	56.1	1.0	Leq	35.7	49.3	53.9	55.4	1.2	Leq	36.8	50.0	54.5	56.0	1.1
L50	34.4	48.5	53.5	55.0	0.8	L50	37.7	50.5	54.5	55.7	1.0	L50	35.6	49.2	53.6	55.1	1.1	L50	36.8	49.9	54.5	55.5	1.1
L90	32.8	47.3	52.4	53.6	0.5	L90	37.1	50.1	53.9	55.0	0.6	L90	35.1	48.7	52.7	53.7	0.8	L90	35.4	49.2	53.7	54.5	0.7
Lmin	32.2	46.9	52.0	52.9	0.2	Lmin	36.8	49.9	53.6	54.2	0.4	Lmin	34.8	48.1	52.0	52.8	0.5	Lmin	35.2	48.9	53.4	54.0	0.3



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:23:50 to 2:24:00**





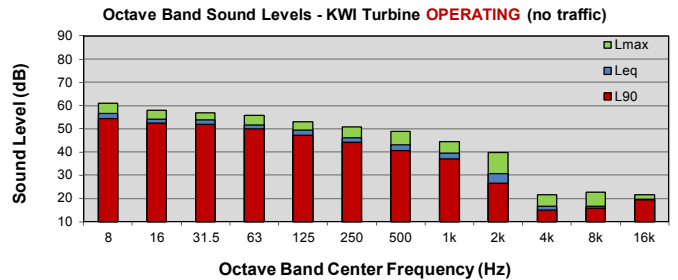
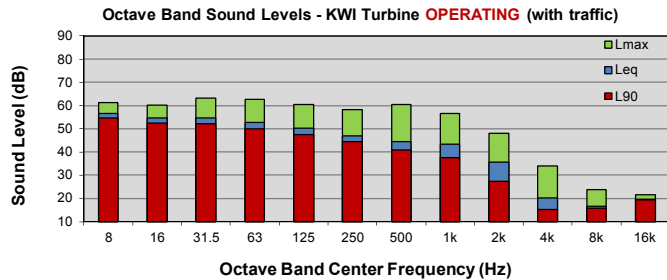
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-126: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 3: 11 Leland Rd. on 3/22/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 236°	Average Power Level: 539 kW	Air Temperature: 31 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 235°	Average Power Level: 600 kW	Air Temperature: 31 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 236°	Average Power Level: 669 kW	Air Temperature: 31 °F

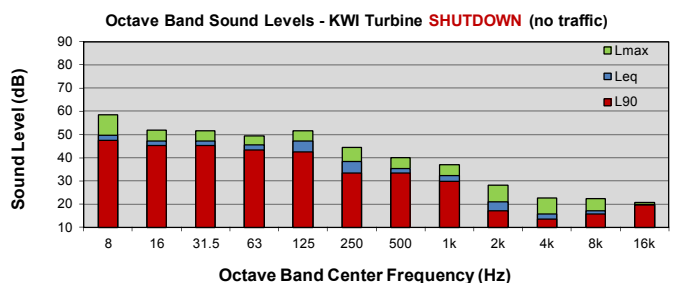
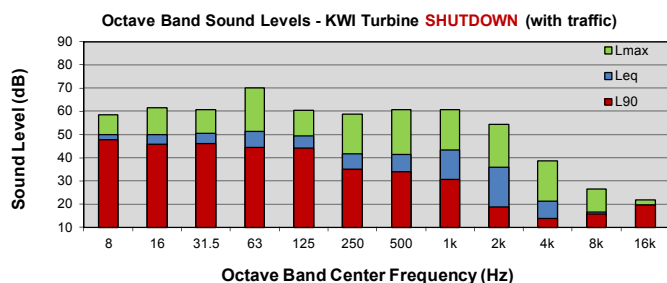
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:50 to 3:10 AM (100% included)						2:50 to 3:10 AM (53% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.6	63.6	66.3	67.3	5.5	Avg Lmax	46.7	58.6	62.9	64.9	4.1
L01	53.9	62.8	66.0	67.8	3.8	L01	46.3	58.3	62.8	64.8	3.7
Leq	46.2	57.2	61.6	63.0	1.7	Leq	43.5	56.2	61.0	62.4	1.7
L50	44.5	56.6	61.3	62.5	0.9	L50	43.2	56.1	60.9	62.2	1.6
L90	41.9	55.2	60.0	61.1	0.9	L90	41.6	55.0	59.8	60.9	1.0
Lmin	40.3	53.8	58.5	59.2	0.3	Lmin	40.3	53.8	58.5	59.2	0.3

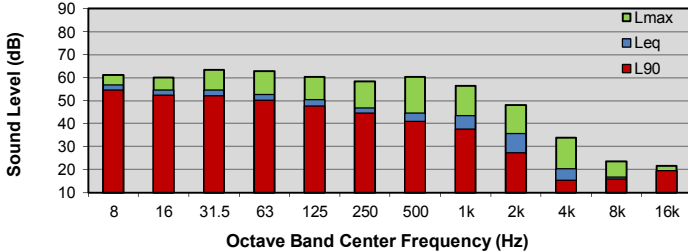
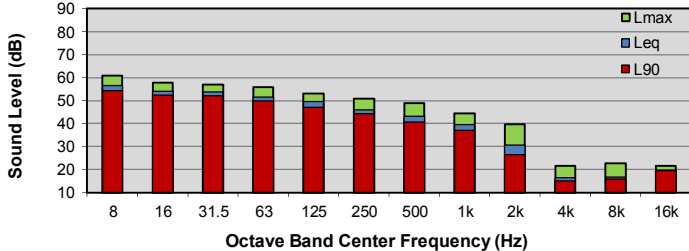
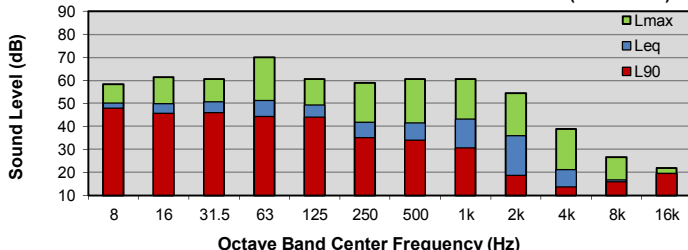
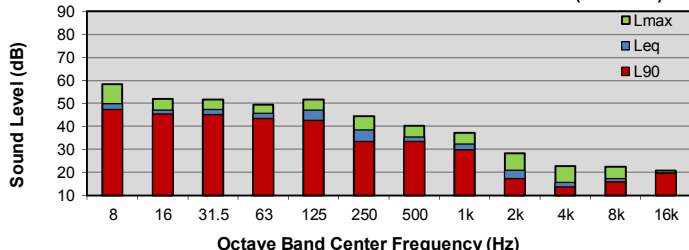


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 230°	Average Power Level: 000 kW	Air Temperature: 31 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 235°	Average Power Level: 000 kW	Air Temperature: 31 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (99% included)						2:20 to 2:40 AM (30% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	57.2	64.7	66.2	66.4	6.3	Avg Lmax	38.6	52.9	57.6	59.1	3.3
L01	55.5	63.3	65.2	66.9	3.9	L01	39.3	52.6	57.1	59.4	2.3
Leq	45.1	54.8	57.7	58.5	1.3	Leq	36.6	50.7	54.7	55.7	1.0
L50	40.0	52.0	55.6	56.2	1.1	L50	36.3	50.7	54.6	55.4	1.0
L90	35.5	50.0	54.1	54.5	0.6	L90	34.1	48.8	53.2	54.1	0.6
Lmin	32.2	47.3	52.3	52.8	0.2	Lmin	32.2	47.3	52.3	52.8	0.2



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-127: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/22/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.6	0.0	10.5	15.5	20.1	23.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.2	7.5	10.2	10.5	12.6	14.5
	L01	-3.3	-1.7	8.7	13.8	18.4	21.6		L01	7.7	7.0	9.7	10.0	12.2	14.0
	Leq	-11.0	-9.4	1.1	6.1	10.7	14.0		Leq	4.9	4.3	6.9	7.2	9.4	11.3
	L50	-12.7	-11.0	-0.6	4.5	9.0	12.3		L50	4.6	4.0	6.6	6.9	9.1	11.0
	L90	-15.3	-13.6	-3.2	1.9	6.4	9.7		L90	3.0	2.3	5.0	5.3	7.5	9.4
	Lmin	-16.8	-15.2	-4.8	0.3	4.8	8.1		Lmin	1.8	1.1	3.8	4.1	6.2	8.1
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.4	-8.8	1.6	6.7	11.2	14.5								
	L01	-10.9	-9.3	1.2	6.2	10.8	14.0								
	Leq	-13.6	-12.0	-1.6	3.5	8.0	11.3								
	L50	-14.0	-12.3	-1.9	3.2	7.7	11.0								
	L90	-15.6	-14.0	-3.5	1.5	6.1	9.4								
	Lmin	-16.8	-15.2	-4.8	0.3	4.8	8.1								
								Including traffic on Route 3:							
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
								Excluding traffic on Route 3:							
Leq Octave Band Check: KWI Turbine ONLY				NO KWI PURE TONE		Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check KWI Turbine ONLY				NO KWI PURE TONE		L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							

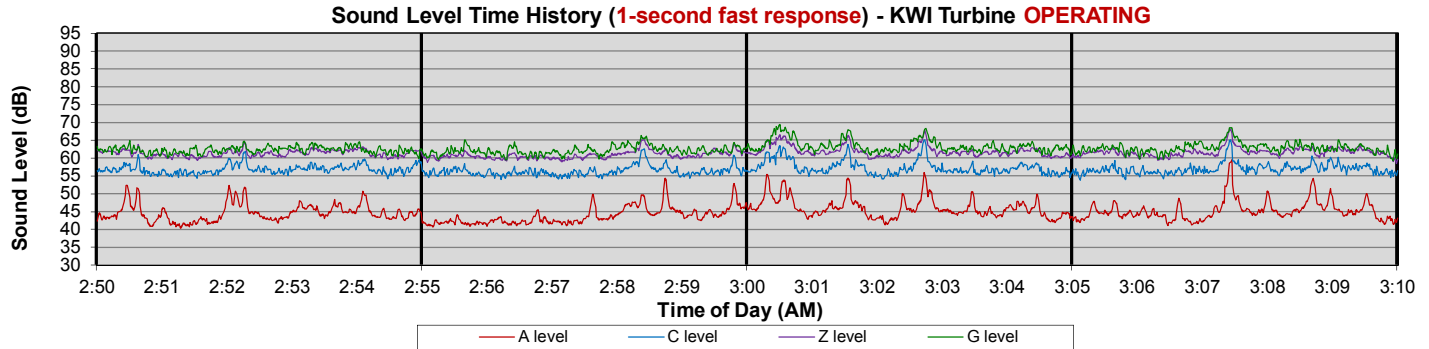
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-128: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/22/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.1	0.3	8.8	11.6	13.6	16.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.1	1.1	8.7	10.7	12.2	14.0
	L01	-2.0	-0.6	8.0	10.8	12.7	15.4		L01	-0.3	0.7	8.3	10.3	11.9	13.7
	Leq	-7.5	-6.1	2.5	5.2	7.2	9.9		Leq	-4.6	-3.6	4.0	6.0	7.5	9.3
	L50	-8.1	-6.7	1.8	4.6	6.5	9.3		L50	-4.9	-3.9	3.6	5.7	7.2	9.0
	L90	-9.6	-8.2	0.4	3.2	5.1	7.8		L90	-6.2	-5.2	2.4	4.4	5.9	7.7
	Lmin	-10.9	-9.5	-1.0	1.8	3.8	6.5		Lmin	-7.7	-6.7	0.9	2.9	4.4	6.2
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	5.7	6.0	8.0	8.0	9.8	11.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	5.3	5.7	8.1	8.3	9.7	10.6
	L01	5.3	5.7	7.6	7.6	9.5	10.9		L01	5.1	5.6	8.0	8.1	9.5	10.5
	Leq	3.3	3.6	5.5	5.6	7.4	8.9		Leq	3.4	3.8	6.2	6.3	7.8	8.7
	L50	3.2	3.5	5.4	5.5	7.3	8.8		L50	3.2	3.7	6.1	6.2	7.6	8.6
	L90	2.1	2.4	4.3	4.4	6.2	7.7		L90	2.2	2.6	5.0	5.2	6.6	7.5
	Lmin	0.9	1.2	3.1	3.1	5.0	6.5		Lmin	0.9	1.4	3.8	3.9	5.3	6.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.1	-4.7	3.9	6.6	8.6	11.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	-3.4	-2.4	5.2	7.2	8.8	10.6
	L01	-6.5	-5.0	3.5	6.3	8.2	10.9		L01	-3.5	-2.5	5.1	7.1	8.7	10.5
	Leq	-8.5	-7.1	1.4	4.2	6.2	8.9		Leq	-5.3	-4.3	3.3	5.3	6.9	8.7
	L50	-8.6	-7.2	1.3	4.1	6.1	8.8		L50	-5.4	-4.4	3.2	5.2	6.8	8.6
	L90	-9.7	-8.3	0.2	3.0	5.0	7.7		L90	-6.4	-5.5	2.1	4.1	5.7	7.5
	Lmin	-10.9	-9.5	-1.0	1.8	3.8	6.5		Lmin	-7.7	-6.7	0.9	2.9	4.4	6.2

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-129: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/22/2014 between 2:20 AM and 3:10 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.0	0.4	8.8	11.1	12.8	14.5	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.8	1.5	4.2	4.4	4.8	5.2
	L01	1.4	0.8	9.3	11.5	13.3	14.9		L01	-2.6	-0.2	2.5	2.7	3.1	3.5
	Leq	-3.4	-4.0	4.5	6.7	8.5	10.2		Leq	-4.6	-2.2	0.4	0.6	1.0	1.5
	L50	-3.9	-4.4	4.0	6.3	8.0	9.7		L50	-5.4	-3.0	-0.3	-0.2	0.3	0.7
	L90	-5.2	-5.8	2.6	4.9	6.6	8.3		L90	-5.4	-3.0	-0.4	-0.2	0.3	0.7
	Lmin	-7.1	-7.7	0.7	3.0	4.7	6.4		Lmin	-6.0	-3.6	-1.0	-0.8	-0.4	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	5.7	5.5	9.2	9.5	10.8	12.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.8	1.9	3.1	3.2	3.5	3.9
	L01	5.6	5.4	9.1	9.4	10.7	12.0		L01	0.4	1.5	2.7	2.7	3.1	3.5
	Leq	3.2	3.0	6.7	7.0	8.2	9.5		Leq	-1.6	-0.5	0.7	0.8	1.1	1.5
	L50	3.1	2.8	6.5	6.8	8.1	9.4		L50	-1.7	-0.6	0.6	0.7	1.0	1.4
	L90	1.8	1.5	5.2	5.5	6.8	8.1		L90	-2.3	-1.3	-0.1	0.0	0.3	0.7
	Lmin	0.1	-0.2	3.5	3.8	5.1	6.4		Lmin	-3.0	-2.0	-0.8	-0.7	-0.3	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.5	-2.1	6.4	8.6	10.4	12.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.2	0.2	2.9	3.0	3.5	3.9
	L01	-1.6	-2.1	6.3	8.5	10.3	12.0		L01	-2.6	-0.2	2.4	2.6	3.1	3.5
	Leq	-4.0	-4.6	3.9	6.1	7.9	9.5		Leq	-4.6	-2.2	0.4	0.6	1.1	1.5
	L50	-4.1	-4.7	3.7	6.0	7.7	9.4		L50	-4.7	-2.3	0.3	0.5	1.0	1.4
	L90	-5.5	-6.0	2.4	4.7	6.4	8.1		L90	-5.3	-3.0	-0.3	-0.1	0.3	0.7
	Lmin	-7.1	-7.7	0.7	3.0	4.7	6.4		Lmin	-6.0	-3.6	-1.0	-0.8	-0.4	0.1

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-130: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/22/2014 from 2:50 to 3:10 AM with KWI Turbine OPERATING**

Site data	Supervisory Control and Data Acquisition (SCADA) data				
Distance from KWI: <b>1025 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>236°</b>	Avg Power Level: <b>539 kW</b>	Air Temperature: <b>31 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>7.1 m/s</b>	Wind Direction: <b>235°</b>	Avg Power Level: <b>600 kW</b>	Air Temperature: <b>31 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>236°</b>	Avg Power Level: <b>669 kW</b>	Air Temperature: <b>31 °F</b>

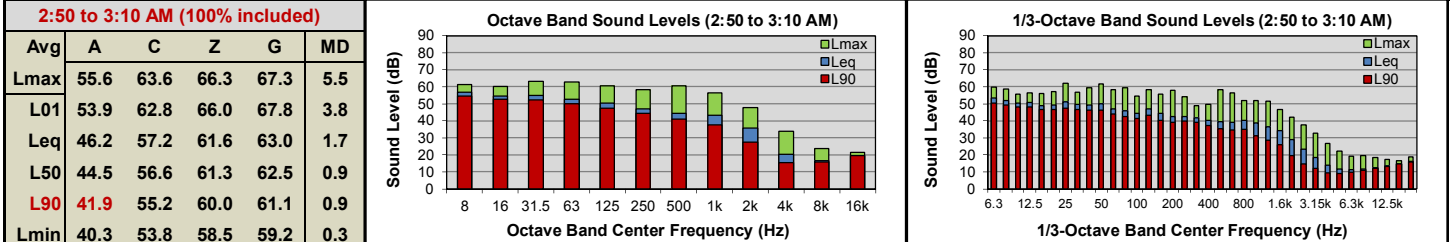


**Event Log**

Traffic on Route 3 **throughout**

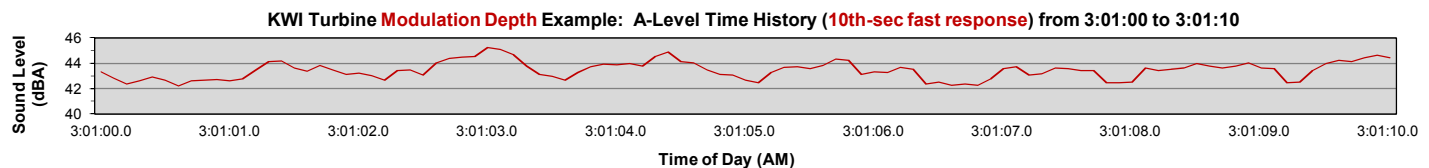
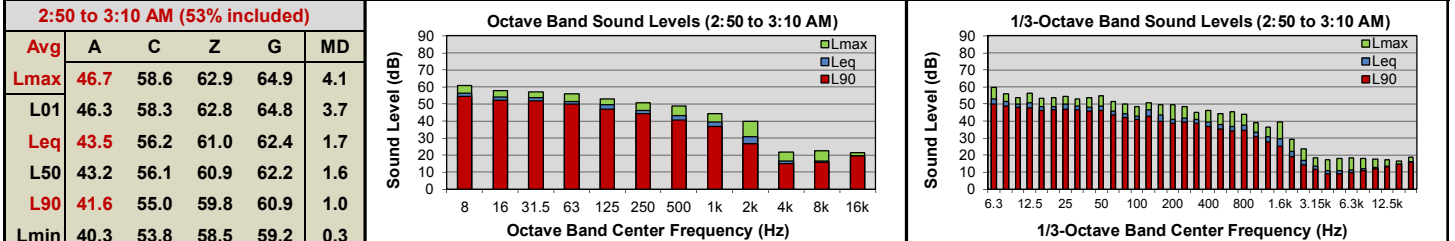
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (100% included)						3:00 to 3:05 AM (100% included)						3:05 to 3:10 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	52.4	61.8	64.3	65.0	4.4	Lmax	54.4	62.5	65.2	66.4	4.4	Lmax	56.0	65.1	67.7	69.4	5.0	Lmax	59.6	65.0	68.0	68.6	8.1
L01	51.9	60.9	63.4	64.4	3.6	L01	52.4	62.1	65.0	65.8	3.7	L01	55.1	63.8	66.4	68.6	4.1	L01	56.8	63.2	66.9	67.4	3.6
Leq	45.5	57.0	61.4	62.4	1.6	Leq	44.7	56.5	60.9	62.3	1.7	Leq	47.2	57.9	62.2	63.9	1.8	Leq	46.8	57.3	61.9	63.1	1.6
L50	44.2	56.7	61.4	62.4	1.5	L50	43.0	56.0	60.6	61.9	1.6	L50	45.5	56.8	61.6	63.0	1.7	L50	44.7	56.8	61.6	62.8	1.5
L90	41.8	55.4	60.2	61.1	0.9	L90	41.5	55.0	59.6	60.7	0.9	L90	43.1	55.3	60.4	61.8	1.0	L90	42.4	55.4	60.3	61.4	0.9
Lmin	40.3	54.1	59.3	59.9	0.3	Lmin	40.7	53.9	58.8	59.4	0.4	Lmin	41.3	54.1	59.7	60.7	0.4	Lmin	41.0	53.8	58.5	59.2	0.3



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:50 to 2:55 AM (49% included)						2:55 to 3:00 AM (73% included)						3:00 to 3:05 AM (45% included)						3:05 to 3:10 AM (42% included)					
7.2 m/s	A	C	Z	G	MD	7.1 m/s	A	C	Z	G	MD	7.3 m/s	A	C	Z	G	MD	7.3 m/s	A	C	Z	G	MD
Lmax	45.8	58.6	62.8	64.4	3.6	Lmax	47.5	58.4	62.8	65.1	4.4	Lmax	47.8	58.6	62.3	64.9	5.0	Lmax	45.9	59.0	63.6	65.2	3.6
L01	45.4	58.0	62.5	64.1	3.2	L01	45.8	57.8	62.5	64.6	3.8	L01	47.2	57.7	62.3	64.3	4.2	L01	45.8	58.6	63.2	65.0	3.4
Leq	43.2	56.3	61.1	62.4	1.6	Leq	43.0	55.9	60.5	62.0	1.8	Leq	44.4	56.2	61.2	62.6	1.9	Leq	43.7	56.5	61.4	62.7	1.8
L50	43.1	56.3	61.0	62.3	1.5	L50	42.5	55.8	60.4	61.7	1.7	L50	44.4	56.2	61.2	62.5	1.7	L50	43.7	56.4	61.3	62.6	1.6
L90	41.4	55.2	60.0	61.1	0.9	L90	41.5	54.8	59.6	60.6	1.0	L90	42.6	55.0	60.3	61.5	1.0	L90	41.9	55.1	60.0	61.0	1.0
Lmin	40.3	54.1	59.3	60.2	0.3	Lmin	40.7	53.9	58.8	59.4	0.5	Lmin	41.3	54.1	59.7	60.7	0.6	Lmin	41.0	53.8	58.5	59.2	0.3

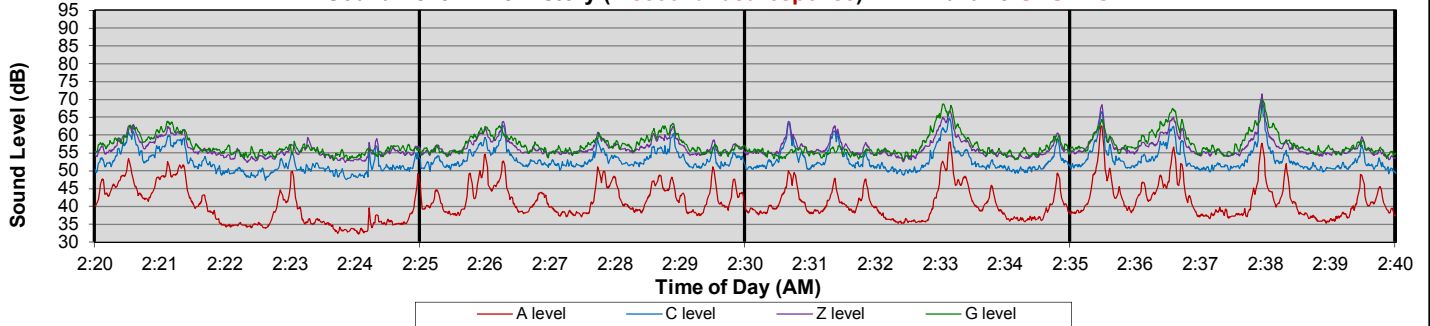


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-131: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/22/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>7.7 m/s</b>	Wind Direction: <b>230°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>31 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>235°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>31 °F</b>

**Sound Level Time History (1-second fast response) - KWI Turbine SHUTDOWN**



**Event Log**

Traffic on Route 3 **throughout**  
HMMH consultant makes noise from **2:20:37 to 2:20:39 (EXCLUDE)**  
KWI auxillary equipment noise from **2:39:54 to 2:40:00 (EXCLUDE)**

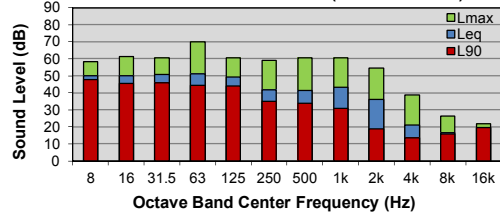
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (99% included)						2:25 to 2:30 AM (100% included)						2:30 to 2:35 AM (100% included)						2:35 to 2:40 AM (98% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	53.5	61.2	62.9	63.9	7.2	Lmax	54.6	62.7	63.8	63.2	5.5	Lmax	58.1	64.7	66.8	68.7	5.1	Lmax	62.5	70.4	71.5	69.6	7.3
L01	52.2	60.2	62.4	63.4	3.7	L01	52.7	60.4	62.3	62.7	3.9	L01	53.8	63.3	65.2	68.1	3.5	L01	58.1	66.6	68.5	67.5	4.6
Leq	43.6	53.3	56.6	57.5	1.1	Leq	44.4	54.2	57.2	58.0	1.3	Leq	44.0	54.8	57.6	58.3	1.3	Leq	47.3	56.3	58.9	59.8	1.4
L50	37.3	51.0	55.2	56.0	1.0	L50	41.1	52.6	56.1	56.8	1.1	L50	39.4	51.7	55.3	55.5	1.1	L50	40.7	52.1	56.0	56.9	1.2
L90	33.8	48.7	53.2	54.2	0.6	L90	38.1	51.2	54.8	55.1	0.6	L90	36.0	50.1	54.0	54.0	0.7	L90	37.0	50.6	54.6	55.1	0.7
Lmin	32.2	47.3	52.3	53.0	0.2	Lmin	37.0	49.8	53.9	53.6	0.3	Lmin	35.3	48.7	52.6	52.8	0.4	Lmin	35.3	49.7	53.8	53.5	0.3

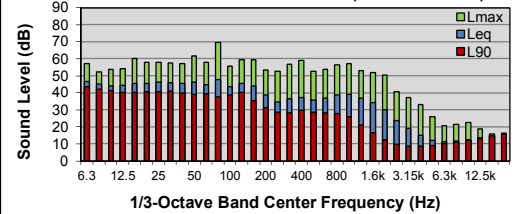
**2:20 to 2:40 AM (99% included)**

Avg	A	C	Z	G	MD
Lmax	57.2	64.7	66.2	66.4	6.3
L01	55.5	63.3	65.2	66.9	3.9
Leq	45.1	54.8	57.7	58.5	1.3
L50	40.0	52.0	55.6	56.2	1.1
L90	35.5	50.0	54.1	54.5	0.6
Lmin	32.2	47.3	52.3	52.8	0.2

**Octave Band Sound Levels (2:20 to 2:40 AM)**



**1/3-Octave Band Sound Levels (2:20 to 2:40 AM)**



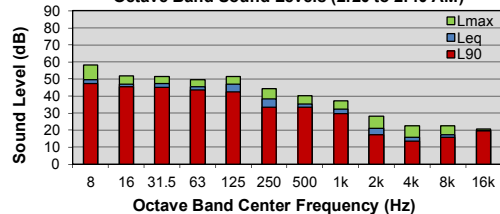
**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (42% included)						2:25 to 2:30 AM (23% included)						2:30 to 2:35 AM (27% included)						2:35 to 2:40 AM (28% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	36.6	52.3	59.4	57.1	5.4	Lmax	39.7	53.1	56.9	59.1	2.7	Lmax	38.3	52.3	57.0	59.8	2.3	Lmax	39.8	54.0	57.2	60.6	2.8
L01	36.5	52.1	58.8	57.1	2.0	L01	39.5	52.9	56.6	58.5	2.3	L01	38.2	52.2	57.0	59.3	2.1	L01	39.5	53.2	57.1	60.5	2.6
Leq	34.7	49.9	54.5	55.3	0.9	Leq	38.2	51.6	55.2	56.2	1.0	Leq	36.3	50.4	54.4	55.5	1.2	Leq	37.4	51.1	55.0	56.1	1.1
L50	34.8	49.8	53.9	54.9	0.8	L50	38.2	51.5	55.2	55.8	1.0	L50	36.2	50.3	54.1	55.2	1.1	L50	37.3	51.0	54.9	55.6	1.1
L90	33.1	48.2	52.9	53.7	0.5	L90	37.5	51.0	54.5	55.1	0.6	L90	35.6	49.5	53.4	53.8	0.8	L90	36.0	50.1	54.2	54.5	0.7
Lmin	32.2	47.3	52.3	53.0	0.2	Lmin	37.0	50.3	54.3	54.3	0.4	Lmin	35.3	48.7	52.6	52.8	0.5	Lmin	35.3	49.7	54.0	54.1	0.3

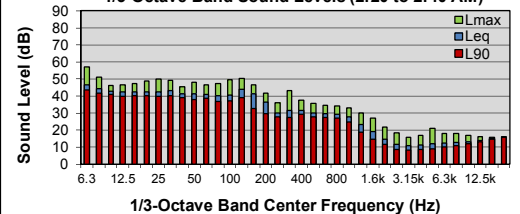
**2:20 to 2:40 AM (30% included)**

Avg	A	C	Z	G	MD
Lmax	38.6	52.9	57.6	59.1	3.3
L01	39.3	52.6	57.1	59.4	2.3
Leq	36.6	50.7	54.7	55.7	1.0
L50	36.3	50.7	54.6	55.4	1.0
L90	34.1	48.8	53.2	54.1	0.6
Lmin	32.2	47.3	52.3	52.8	0.2

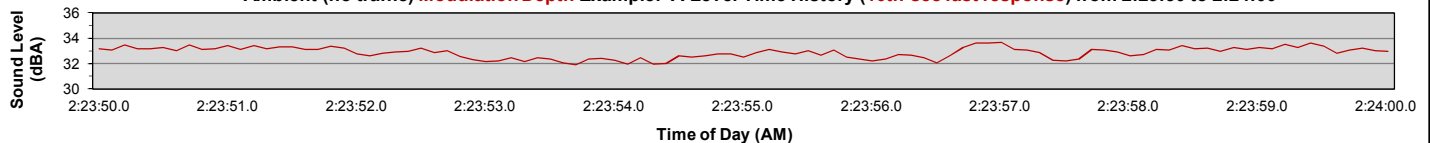
**Octave Band Sound Levels (2:20 to 2:40 AM)**



**1/3-Octave Band Sound Levels (2:20 to 2:40 AM)**



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:23:50 to 2:24:00**



**Detailed Acoustical Monitoring Data**  
**11 Leland Road**  
**March 2, 2014**

Slow-response data: Pages D-133 to D-138

Fast-response data: Pages D-139 to D-144



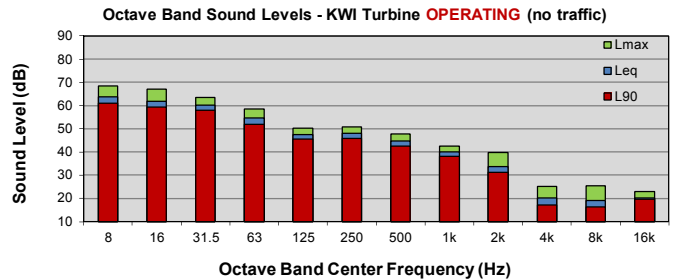
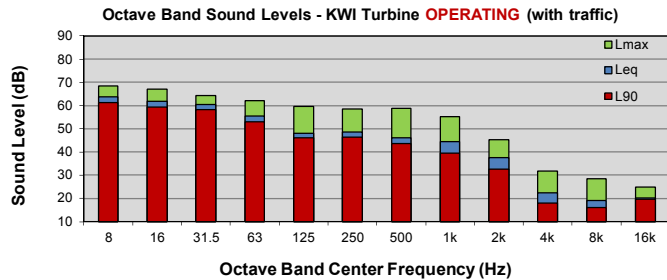
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-133: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 3: 11 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 199°	Average Power Level: 827 kW	Air Temperature: 33 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 200°	Average Power Level: 1054 kW	Air Temperature: 33 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 8.8 m/s	Wind Direction: 199°	Average Power Level: 1139 kW	Air Temperature: 33 °F

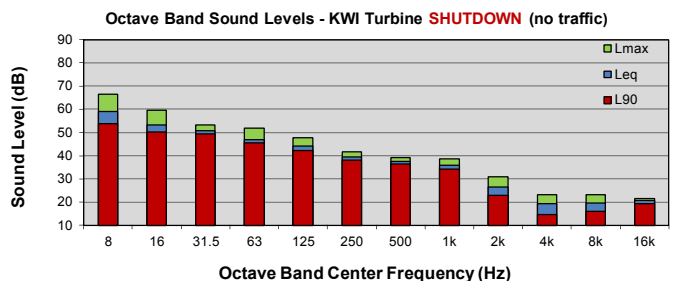
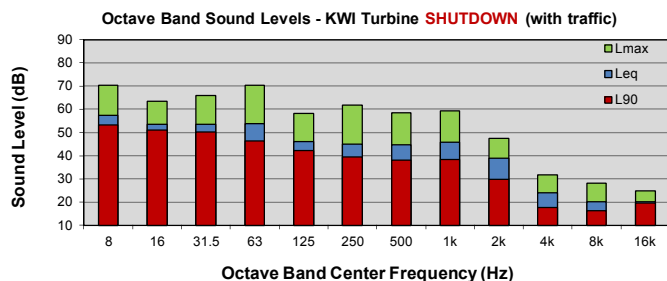
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:30 to 1:50 AM (99% included)						1:30 to 1:50 AM (23% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.2	64.0	70.2	73.2	5.4	Avg Lmax	46.9	62.3	69.8	72.2	4.6
L01	52.8	63.9	69.9	72.6	4.5	L01	47.3	62.9	69.8	72.2	4.7
Leq	48.0	60.7	67.4	69.8	1.8	Leq	45.4	60.2	67.2	69.5	2.2
L50	47.2	60.5	67.3	69.6	1.0	L50	45.3	59.9	67.0	69.3	2.0
L90	44.8	58.8	65.4	67.7	0.9	L90	43.9	58.1	65.0	67.6	1.2
Lmin	42.7	56.6	63.0	65.4	0.3	Lmin	42.7	57.0	63.0	65.4	0.5

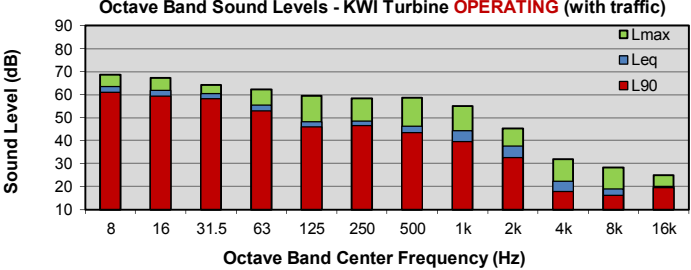
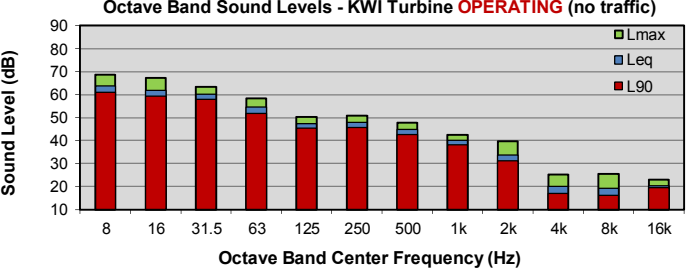
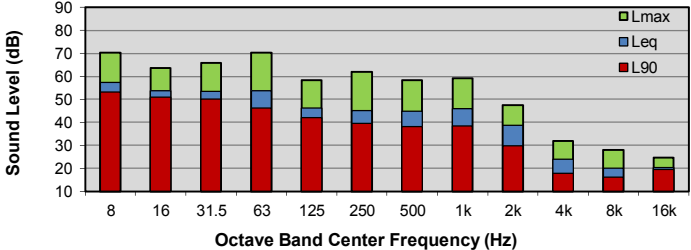
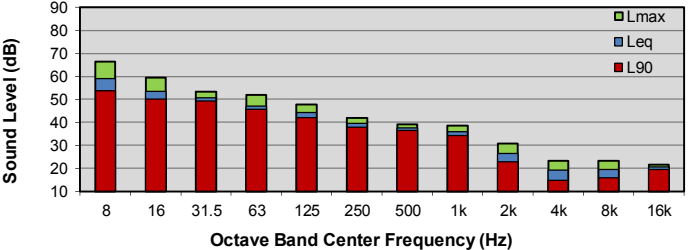


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 197°	Average Power Level: 000 kW	Air Temperature: 33 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 196°	Average Power Level: 000 kW	Air Temperature: 33 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (97% included)						1:00 to 1:20 AM (6% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	56.0	65.0	69.4	69.0	6.7	Avg Lmax	40.4	53.6	61.9	63.3	1.6
L01	56.9	65.9	68.3	67.7	4.1	L01	40.8	56.1	67.2	67.4	1.7
Leq	48.2	56.6	61.4	62.2	1.4	Leq	39.4	52.4	60.8	61.9	0.9
L50	46.6	54.6	60.1	61.3	1.2	L50	39.4	52.1	58.9	61.1	0.8
L90	41.2	51.9	58.1	59.6	0.6	L90	38.5	51.0	57.6	59.0	0.6
Lmin	38.1	49.9	56.4	57.6	0.2	Lmin	38.1	50.6	57.0	57.6	0.2



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-134: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)							Operating - Shutdown Differences (excluding traffic on Route 3)								
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.8	-1.8	7.0	8.6	14.0	17.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	6.6	6.1	7.5	7.6	8.5	8.8
	L01	-3.2	-4.2	4.6	6.2	11.6	14.7		L01	6.9	6.4	7.9	7.9	8.8	9.2
	Leq	-7.9	-8.9	-0.2	1.5	6.9	9.9		Leq	5.1	4.6	6.0	6.1	7.0	7.3
	L50	-8.8	-9.7	-1.0	0.6	6.0	9.1		L50	4.9	4.4	5.9	5.9	6.8	7.2
	L90	-11.2	-12.1	-3.4	-1.7	3.7	6.7		L90	3.6	3.1	4.5	4.6	5.5	5.8
	Lmin	-13.3	-14.3	-5.5	-3.9	1.5	4.6		Lmin	2.3	1.8	3.3	3.3	4.2	4.6
															
															
Operating - Shutdown Differences: Overall Comparison							Octave Band Sound Level Comparison: Pure-tone Check								
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-9.1	-10.0	-1.3	0.4	5.8	8.8	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-8.7	-9.6	-0.9	0.7	6.1	9.2	Excluding traffic on Route 3:							
	Leq	-10.6	-11.5	-2.8	-1.1	4.2	7.3	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L50	-10.7	-11.7	-2.9	-1.3	4.1	7.2	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L90	-12.1	-13.0	-4.3	-2.6	2.7	5.8	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
	Lmin	-13.3	-14.3	-5.5	-3.9	1.5	4.6	L90 Pure-tone?	NO		L90 Pure-tone?	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-135: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.1	-1.9	7.4	9.4	12.1	14.1	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.8	1.9	8.8	10.2	12.1	13.8
	L01	-1.1	-2.0	7.3	9.3	12.0	14.0		L01	0.5	1.6	8.5	9.8	11.8	13.4
	Leq	-4.3	-5.2	4.1	6.1	8.8	10.9		Leq	-2.0	-0.9	6.0	7.4	9.4	11.0
	L50	-4.6	-5.4	3.9	5.9	8.6	10.6		L50	-2.1	-1.0	5.9	7.2	9.2	10.9
	L90	-6.3	-7.2	2.2	4.1	6.9	8.9		L90	-4.0	-2.9	4.0	5.3	7.3	9.0
	Lmin	-8.5	-9.3	0.0	1.9	4.7	6.7		Lmin	-6.4	-5.4	1.6	2.9	4.9	6.5
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.7	6.1	9.8	10.2	11.2	11.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.9	2.6	9.0	10.9	12.2	12.8
	L01	9.3	6.8	10.5	10.8	11.9	12.3		L01	7.9	2.6	9.0	10.9	12.2	12.8
	Leq	6.6	4.0	7.8	8.1	9.1	9.6		Leq	5.4	0.0	6.4	8.3	9.6	10.2
	L50	6.3	3.7	7.4	7.8	8.8	9.3		L50	5.1	-0.2	6.1	8.1	9.4	10.0
	L90	4.6	2.0	5.7	6.0	7.1	7.6		L90	3.2	-2.1	4.2	6.2	7.4	8.1
	Lmin	3.4	0.8	4.5	4.9	5.9	6.4		Lmin	1.1	-4.2	2.1	4.1	5.3	6.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.8	-3.6	5.7	7.6	10.4	12.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.4	1.5	8.4	9.7	11.7	13.4
	L01	-2.2	-3.0	6.3	8.3	11.0	13.0		L01	0.4	1.5	8.4	9.7	11.7	13.4
	Leq	-4.9	-5.7	3.6	5.6	8.3	10.3		Leq	-2.2	-1.1	5.8	7.2	9.1	10.8
	L50	-5.2	-6.1	3.3	5.2	8.0	10.0		L50	-2.4	-1.3	5.6	6.9	8.9	10.6
	L90	-6.9	-7.8	1.6	3.5	6.3	8.3		L90	-4.3	-3.3	3.7	5.0	7.0	8.6
	Lmin	-8.1	-9.0	0.4	2.3	5.1	7.1		Lmin	-6.4	-5.4	1.6	2.9	4.9	6.5

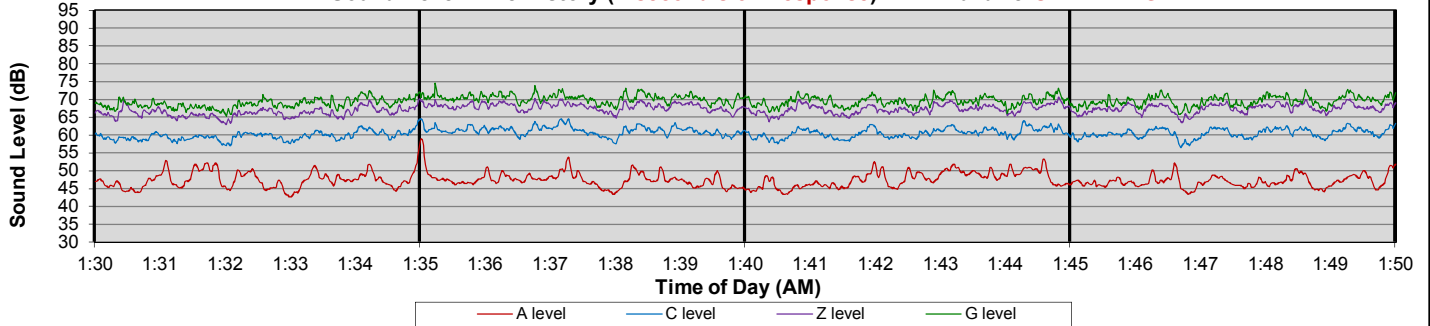
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-136: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	4.2	5.6	11.0	11.9	13.6	15.7	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.3	1.3	4.0	4.2	4.7	5.2
	L01	3.6	5.0	10.5	11.3	13.0	15.1		L01	-2.2	0.4	3.1	3.3	3.8	4.2
	Leq	0.8	2.1	7.6	8.4	10.1	12.2		Leq	-4.8	-2.2	0.4	0.7	1.2	1.6
	L50	0.6	1.9	7.4	8.3	10.0	12.0		L50	-5.7	-3.1	-0.4	-0.2	0.4	0.8
	L90	-1.3	0.0	5.5	6.3	8.0	10.1		L90	-5.7	-3.1	-0.5	-0.2	0.3	0.7
	Lmin	-3.7	-2.3	3.2	4.0	5.7	7.8		Lmin	-6.4	-3.8	-1.1	-0.9	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.9	4.8	10.4	11.1	13.2	14.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.0	3.0	3.8	3.8	4.1	4.4
	L01	8.9	4.8	10.3	11.1	13.2	14.6		L01	3.1	3.0	3.8	3.9	4.2	4.5
	Leq	6.2	2.1	7.7	8.4	10.5	12.0		Leq	0.6	0.5	1.3	1.3	1.6	1.9
	L50	5.9	1.9	7.4	8.1	10.3	11.7		L50	0.4	0.4	1.1	1.2	1.5	1.8
	L90	4.3	0.2	5.8	6.5	8.6	10.1		L90	-0.4	-0.5	0.3	0.3	0.6	0.9
	Lmin	2.0	-2.0	3.5	4.2	6.4	7.8		Lmin	-1.1	-1.2	-0.4	-0.3	-0.1	0.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	3.2	4.6	10.0	10.9	12.6	14.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.0	0.6	3.2	3.5	4.0	4.4
	L01	3.2	4.5	10.0	10.9	12.6	14.6		L01	-2.0	0.7	3.3	3.6	4.1	4.5
	Leq	0.5	1.9	7.3	8.2	9.9	12.0		Leq	-4.5	-1.9	0.8	1.0	1.5	2.0
	L50	0.3	1.6	7.1	7.9	9.6	11.7		L50	-4.6	-2.0	0.6	0.9	1.4	1.8
	L90	-1.4	0.0	5.4	6.3	8.0	10.1		L90	-5.5	-2.9	-0.2	0.0	0.5	0.9
	Lmin	-3.7	-2.3	3.2	4.0	5.7	7.8		Lmin	-6.2	-3.6	-0.9	-0.7	-0.1	0.3

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-137: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/2/2014 from 1:30 to 1:50 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>8.4 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>827 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-2 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>8.5 m/s</b>	Wind Direction: <b>200°</b>	Avg Power Level: <b>1054 kW</b>	Air Temperature: <b>33 °F</b>
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>8.8 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>1139 kW</b>	Air Temperature: <b>33 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**



**Event Log**

Traffic on Route 3 **throughout**

HMMH consultant makes noise from **1:45:09 to 1:45:12 (EXCLUDE)**

Loud leaves blowing across street noise from **1:47:46 to 1:47:50 (EXCLUDE)**

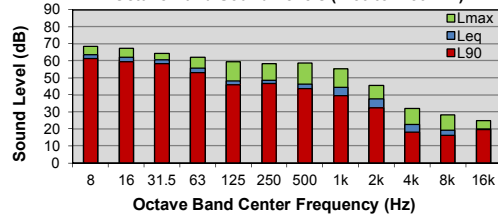
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:30 to 1:35 AM (100% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)						1:45 to 1:50 AM (98% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	56.4	64.2	70.1	72.4	4.4	Lmax	58.9	64.6	70.2	74.6	7.0	Lmax	53.3	64.0	70.6	73.2	4.5	Lmax	52.1	63.2	70.1	72.8	5.6
L01	52.8	62.5	69.4	72.0	3.6	L01	57.1	64.5	70.0	73.0	5.0	L01	52.4	63.3	69.8	72.3	4.1	L01	51.5	63.1	69.9	72.5	4.5
Leq	48.1	59.8	66.4	69.0	1.5	Leq	48.4	61.5	68.1	70.5	2.1	Leq	48.3	60.7	67.4	69.7	1.8	Leq	47.3	60.7	67.6	69.7	1.9
L50	47.2	59.7	66.2	68.6	1.4	L50	47.4	61.3	68.1	70.4	1.9	L50	47.7	60.6	67.3	69.5	1.7	L50	46.7	60.6	67.7	69.6	1.7
L90	44.5	58.4	64.7	67.2	0.8	L90	45.1	59.7	66.6	68.8	1.1	L90	44.9	58.8	65.5	67.7	0.9	L90	45.0	58.9	66.0	67.7	1.0
Lmin	42.7	57.1	63.0	65.4	0.3	Lmin	43.4	57.6	64.8	67.1	0.4	Lmin	43.4	57.6	63.6	66.0	0.3	Lmin	43.3	56.6	63.5	65.9	0.4

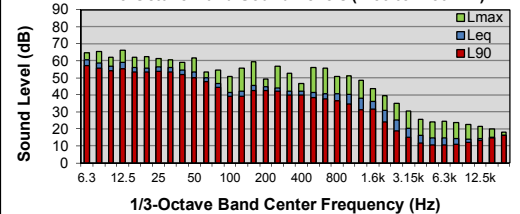
**1:30 to 1:50 AM (99% included)**

Avg	A	C	Z	G	MD
Lmax	55.2	64.0	70.2	73.2	5.4
L01	52.8	63.9	69.9	72.6	4.5
Leq	48.0	60.7	67.4	69.8	1.8
L50	47.2	60.5	67.3	69.6	1.0
L90	44.8	58.8	65.4	67.7	0.9
Lmin	42.7	56.6	63.0	65.4	0.3

**Octave Band Sound Levels (1:30 to 1:50 AM)**



**1/3-Octave Band Sound Levels (1:30 to 1:50 AM)**



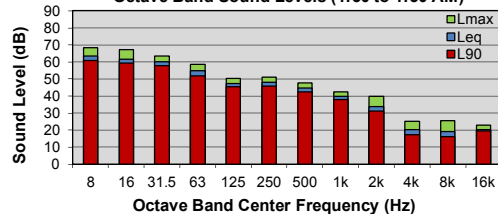
**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

1:30 to 1:35 AM (14% included)						1:35 to 1:40 AM (23% included)						1:40 to 1:45 AM (17% included)						1:45 to 1:50 AM (36% included)					
8.4 m/s	A	C	Z	G	MD	8.3 m/s	A	C	Z	G	MD	8.7 m/s	A	C	Z	G	MD	8.7 m/s	A	C	Z	G	MD
Lmax	46.6	60.5	69.7	71.4	4.2	Lmax	47.1	62.9	69.6	72.3	5.4	Lmax	46.5	63.1	70.6	73.2	4.4	Lmax	47.6	62.5	69.4	72.2	4.6
L01	46.2	60.4	69.5	71.0	4.2	L01	46.9	62.9	69.5	72.1	5.0	L01	46.4	62.8	70.3	72.7	4.1	L01	47.4	62.3	69.4	72.0	3.8
Leq	44.4	58.9	66.4	68.8	1.6	Leq	45.6	60.7	67.5	70.0	2.8	Leq	45.0	60.3	67.6	70.0	2.3	Leq	45.9	60.2	67.2	69.3	1.9
L50	44.3	58.9	66.1	68.5	1.5	L50	45.3	60.8	67.3	70.0	2.7	L50	45.0	59.9	67.0	69.5	2.3	L50	45.9	60.0	67.1	69.0	1.9
L90	43.2	57.7	64.5	67.5	1.0	L90	44.1	58.8	65.8	68.0	1.4	L90	43.7	58.5	65.5	68.0	1.3	L90	44.5	58.7	65.5	67.3	1.1
Lmin	42.7	57.1	63.0	65.4	0.7	Lmin	43.4	57.6	64.8	67.1	0.8	Lmin	43.4	57.6	64.3	66.5	0.6	Lmin	43.3	57.0	63.9	66.1	0.5

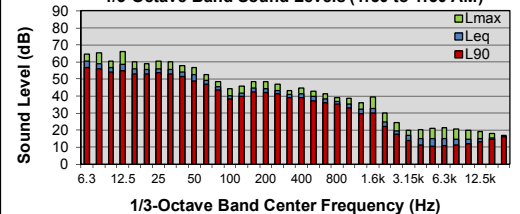
**1:30 to 1:50 AM (23% included)**

Avg	A	C	Z	G	MD
Lmax	46.9	62.3	69.8	72.2	4.6
L01	47.3	62.9	69.8	72.2	4.7
Leq	45.4	60.2	67.2	69.5	2.2
L50	45.3	59.9	67.0	69.3	2.0
L90	43.9	58.1	65.0	67.6	1.2
Lmin	42.7	57.0	63.0	65.4	0.5

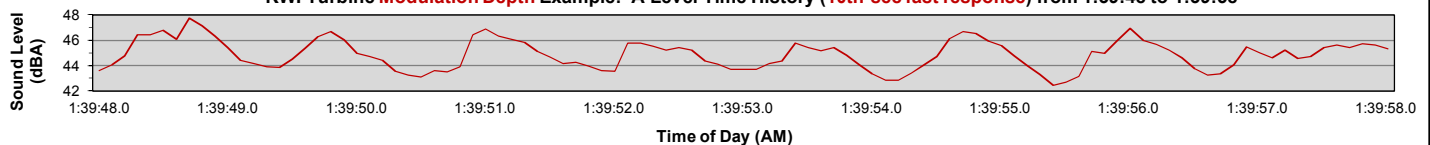
**Octave Band Sound Levels (1:30 to 1:50 AM)**



**1/3-Octave Band Sound Levels (1:30 to 1:50 AM)**



**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:39:48 to 1:39:58**

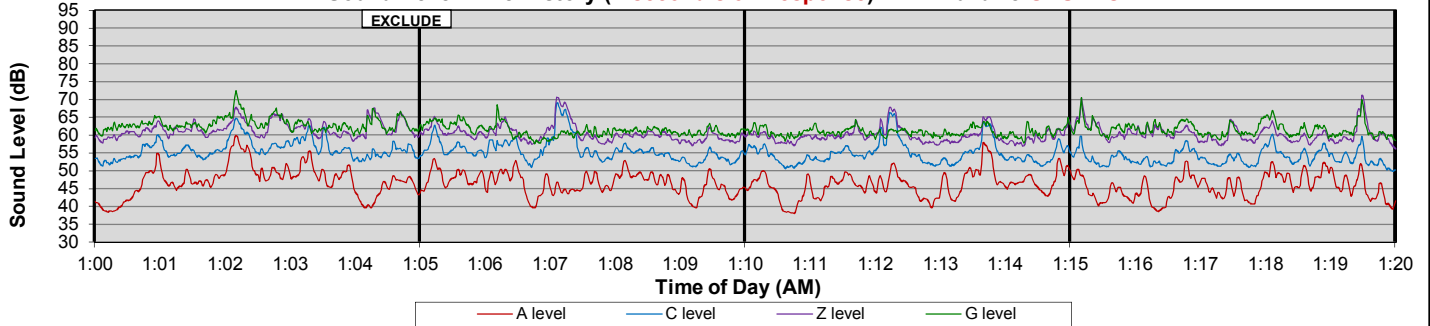


Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-138: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown  
HMMH Project # 305270.001

Measurement at Site 3: 11 Leland Rd. on 3/2/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 1025 ft	Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 197°	Avg Power Level: 000 kW	Air Temperature: 33 °F
Wind Speed Range: 0-2 m/s	Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 196°	Avg Power Level: 000 kW	Air Temperature: 33 °F

Sound Level Time History (1-second slow response) - KWI Turbine SHUTDOWN



Event Log

Traffic on Route 3 throughout

Local vehicle from 1:04:33 to 1:05:05 (EXCLUDE)

Loud leaves blowing across street noise from 1:15:19 to 1:15:24 (EXCLUDE)

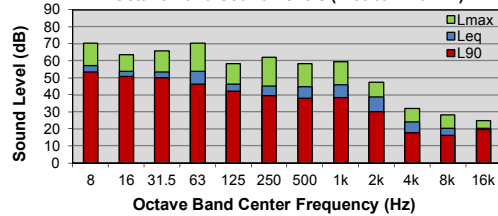
Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN

1:00 to 1:05 AM (91% included)						1:05 to 1:10 AM (98% included)						1:10 to 1:15 AM (100% included)						1:15 to 1:20 AM (98% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	59.8	64.7	67.8	72.4	6.1	Lmax	53.4	69.0	70.7	68.4	5.2	Lmax	58.0	66.3	67.8	64.9	10.4	Lmax	52.8	60.2	71.2	70.4	4.9
L01	59.2	64.1	67.4	70.3	4.2	L01	53.0	67.4	69.3	65.4	3.8	L01	57.1	65.9	67.2	63.8	3.8	L01	52.5	59.7	69.4	68.0	4.0
Leq	50.0	57.1	62.2	63.7	1.4	Leq	47.5	57.8	61.5	61.5	1.4	Leq	47.9	56.6	60.5	61.0	1.3	Leq	46.8	54.2	61.3	62.2	1.5
L50	47.6	55.6	61.1	62.8	1.1	L50	46.8	55.2	60.0	61.0	1.2	L50	46.2	54.3	59.4	60.8	1.1	L50	45.4	53.2	60.0	61.1	1.3
L90	40.3	53.1	59.3	61.2	0.7	L90	42.7	52.6	58.1	59.3	0.7	L90	41.7	51.7	57.7	59.4	0.6	L90	40.8	51.4	58.1	59.6	0.7
Lmin	38.4	51.3	57.7	59.6	0.2	Lmin	39.6	50.9	57.0	57.6	0.2	Lmin	38.1	50.6	56.9	57.8	0.3	Lmin	38.5	49.9	56.4	58.6	0.2

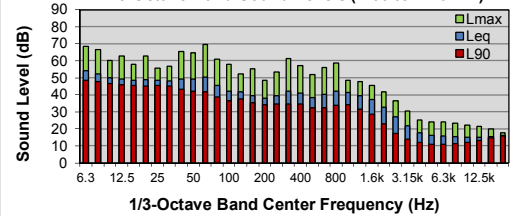
1:00 to 1:20 AM (97% included)

Avg	A	C	Z	G	MD
Lmax	56.0	65.0	69.4	69.0	6.7
L01	56.9	65.9	68.3	67.7	4.1
Leq	48.2	56.6	61.4	62.2	1.4
L50	46.6	54.6	60.1	61.3	1.2
L90	41.2	51.9	58.1	59.6	0.6
Lmin	38.1	49.9	56.4	57.6	0.2

Octave Band Sound Levels (1:00 to 1:20 AM)



1/3-Octave Band Sound Levels (1:00 to 1:20 AM)



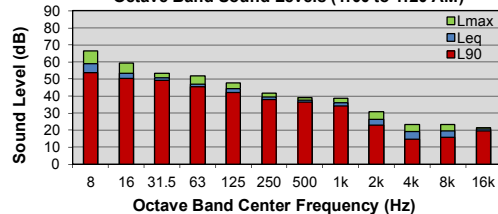
Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN

1:00 to 1:05 AM (10% included)						1:05 to 1:10 AM (4% included)						1:10 to 1:15 AM (4% included)						1:15 to 1:20 AM (3% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	40.8	56.1	67.5	67.5	2.1	Lmax	41.0	53.3	58.3	60.8	1.5	Lmax	40.1	52.0	58.6	60.7	1.3	Lmax	39.7	52.8	63.0	64.3	1.6
L01	40.8	56.1	67.4	67.5	1.8	L01	40.9	53.3	58.3	60.8	1.5	L01	40.0	52.0	58.6	60.7	1.3	L01	39.6	52.8	63.0	64.2	1.6
Leq	39.5	53.1	62.0	62.9	0.9	Leq	40.1	51.8	57.7	59.4	0.9	Leq	38.6	51.2	57.8	59.7	0.8	Leq	39.2	52.2	62.0	62.7	0.9
L50	39.5	52.6	59.3	61.9	0.9	L50	39.9	51.4	57.8	59.5	0.8	L50	38.5	51.2	57.7	59.6	0.7	L50	39.1	52.1	61.7	62.6	0.8
L90	38.7	51.8	58.5	60.3	0.6	L90	39.6	51.0	57.1	57.8	0.5	L90	38.1	50.8	57.4	58.9	0.5	L90	38.7	51.6	61.2	61.0	0.6
Lmin	38.4	51.3	57.7	59.6	0.2	Lmin	39.6	50.9	57.0	57.6	0.4	Lmin	38.1	50.6	57.1	58.2	0.4	Lmin	38.5	51.6	61.1	60.6	0.5

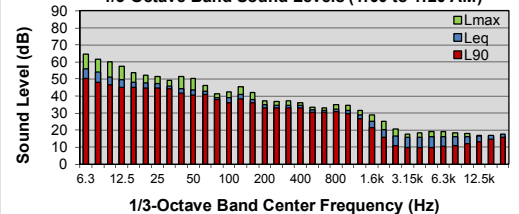
1:00 to 1:20 AM (6% included)

Avg	A	C	Z	G	MD
Lmax	40.4	53.6	61.9	63.3	1.6
L01	40.8	56.1	67.2	67.4	1.7
Leq	39.4	52.4	60.8	61.9	0.9
L50	39.4	52.1	58.9	61.1	0.8
L90	38.5	51.0	57.6	59.0	0.6
Lmin	38.1	50.6	57.0	57.6	0.2

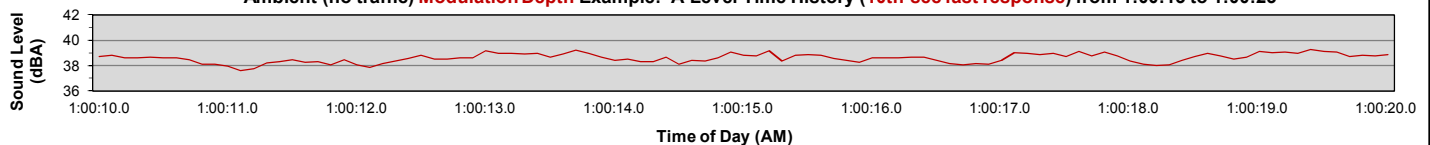
Octave Band Sound Levels (1:00 to 1:20 AM)



1/3-Octave Band Sound Levels (1:00 to 1:20 AM)



Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:00:13 to 1:00:23





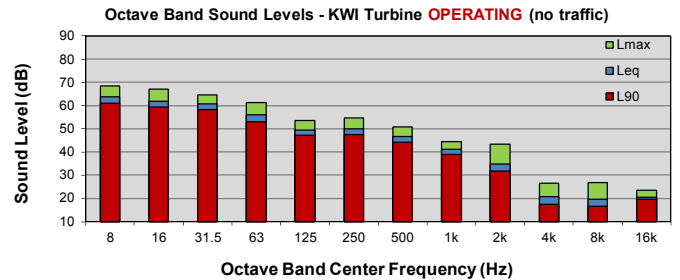
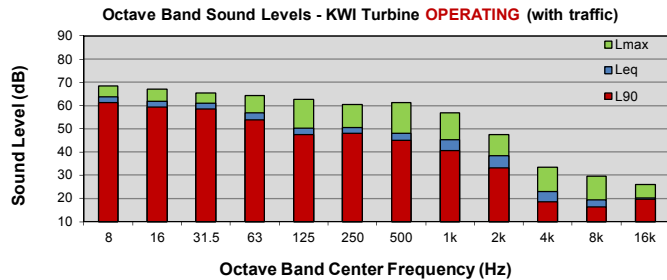
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-139: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 3: 11 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 199°	Average Power Level: 827 kW	Air Temperature: 33 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 200°	Average Power Level: 1054 kW	Air Temperature: 33 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 8.8 m/s	Wind Direction: 199°	Average Power Level: 1139 kW	Air Temperature: 33 °F

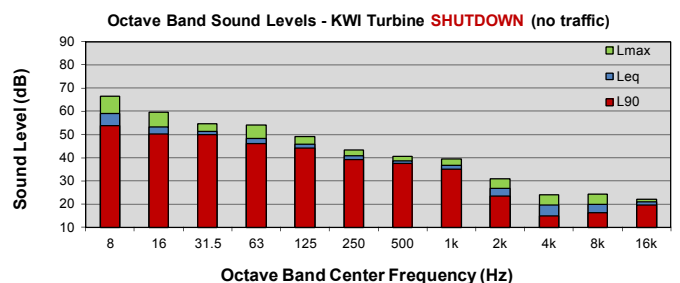
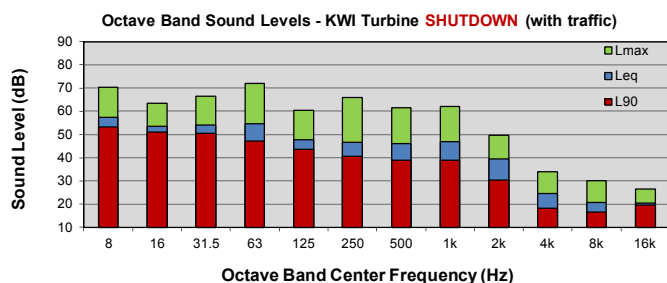
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:30 to 1:50 AM (99% included)						1:30 to 1:50 AM (23% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	57.0	66.9	70.7	73.3	5.4	Avg Lmax	49.0	65.5	70.1	72.3	4.6
L01	54.0	66.3	70.2	72.7	4.5	L01	49.2	65.9	70.0	72.3	4.7
Leq	48.8	62.5	67.7	69.8	1.8	Leq	46.5	62.1	67.5	69.6	2.2
L50	48.0	62.2	67.6	69.7	1.0	L50	46.3	61.7	67.2	69.4	2.0
L90	45.7	60.1	65.7	67.8	0.9	L90	44.6	59.7	65.4	67.7	1.2
Lmin	43.2	57.6	63.3	65.4	0.3	Lmin	43.2	57.9	63.3	65.4	0.5



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 197°	Average Power Level: 000 kW	Air Temperature: 33 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 8.5 m/s	Wind Direction: 196°	Average Power Level: 000 kW	Air Temperature: 33 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (97% included)						1:00 to 1:20 AM (6% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	58.3	67.9	70.6	69.1	6.7	Avg Lmax	40.6	55.7	62.1	63.4	1.6
L01	57.3	66.9	69.1	67.7	4.1	L01	41.4	57.9	67.3	67.5	1.7
Leq	48.8	57.7	61.8	62.3	1.4	Leq	39.7	54.1	61.0	61.9	0.9
L50	46.8	55.7	60.5	61.4	1.2	L50	39.6	53.3	59.2	61.2	0.8
L90	41.5	53.0	58.4	59.7	0.6	L90	38.7	51.9	57.9	59.0	0.6
Lmin	38.4	50.7	56.7	57.6	0.2	Lmin	38.4	51.5	57.3	57.6	0.2





Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-140: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.3	-0.3	8.2	10.3	15.5	18.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.4	7.5	9.2	9.4	10.3	10.6
	L01	-4.3	-3.3	5.2	7.3	12.5	15.6		L01	8.6	7.7	9.4	9.6	10.5	10.8
	Leq	-9.4	-8.5	0.0	2.1	7.4	10.4		Leq	5.9	5.1	6.8	6.9	7.8	8.1
	L50	-10.2	-9.3	-0.7	1.3	6.6	9.6		L50	5.7	4.9	6.6	6.7	7.6	7.9
	L90	-12.6	-11.6	-3.1	-1.0	4.2	7.3		L90	4.0	3.2	4.9	5.0	5.9	6.2
	Lmin	-15.1	-14.1	-5.6	-3.5	1.7	4.8		Lmin	2.6	1.8	3.5	3.6	4.5	4.8
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-9.3	-8.4	0.2	2.2	7.5	10.6								
	L01	-9.1	-8.2	0.4	2.4	7.7	10.8								
	Leq	-11.8	-10.8	-2.3	-0.3	5.0	8.1								
	L50	-12.0	-11.0	-2.5	-0.5	4.8	7.9								
	L90	-13.7	-12.7	-4.2	-2.1	3.1	6.2								
	Lmin	-15.1	-14.1	-5.6	-3.5	1.7	4.8								
								Including traffic on Route 3:							
								L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
								L90 Pure-tone?	NO		L90 Pure-tone?	NO			
								Excluding traffic on Route 3:							
								Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
								Leq Pure-tone?	NO		Leq Pure-tone?	NO			
								L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
								L90 Pure-tone?	NO		L90 Pure-tone?	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-141: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.9	0.0	9.3	11.3	14.0	16.2	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.1	1.6	8.9	10.2	12.3	14.0
	L01	-1.5	-0.6	8.6	10.7	13.4	15.6		L01	-0.4	1.1	8.4	9.7	11.8	13.5
	Leq	-5.4	-4.4	4.8	6.8	9.5	11.8		Leq	-2.8	-1.4	5.9	7.3	9.3	11.0
	L50	-5.7	-4.7	4.5	6.5	9.2	11.5		L50	-3.0	-1.5	5.8	7.1	9.2	10.9
	L90	-7.8	-6.8	2.4	4.4	7.1	9.3		L90	-4.9	-3.4	3.9	5.2	7.3	9.0
	Lmin	-10.3	-9.3	-0.1	1.9	4.6	6.9		Lmin	-7.2	-5.8	1.5	2.9	4.9	6.6
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	9.8	7.6	11.5	12.3	13.7	14.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.0	2.9	9.1	10.9	12.2	12.8
	L01	10.1	7.9	11.8	12.6	14.0	14.3		L01	7.9	2.8	9.0	10.8	12.2	12.8
	Leq	6.3	4.1	8.0	8.8	10.2	10.5		Leq	5.4	0.2	6.5	8.3	9.6	10.2
	L50	5.9	3.7	7.6	8.4	9.8	10.1		L50	5.1	0.0	6.2	8.0	9.3	10.0
	L90	3.9	1.8	5.6	6.4	7.8	8.1		L90	3.3	-1.8	4.4	6.2	7.5	8.1
	Lmin	2.2	0.0	3.8	4.6	6.0	6.4		Lmin	1.2	-3.9	2.3	4.1	5.4	6.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.3	-1.4	7.9	9.9	12.6	14.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.4	1.0	8.3	9.7	11.7	13.4
	L01	-2.0	-1.0	8.2	10.2	12.9	15.1		L01	-0.5	0.9	8.2	9.6	11.6	13.4
	Leq	-5.8	-4.8	4.4	6.4	9.1	11.3		Leq	-3.1	-1.6	5.7	7.0	9.1	10.8
	L50	-6.2	-5.2	4.0	6.0	8.7	10.9		L50	-3.3	-1.9	5.4	6.8	8.8	10.5
	L90	-8.2	-7.2	2.0	4.0	6.7	8.9		L90	-5.1	-3.7	3.6	5.0	7.0	8.7
	Lmin	-10.0	-9.0	0.2	2.2	4.9	7.2		Lmin	-7.2	-5.8	1.5	2.9	4.9	6.6

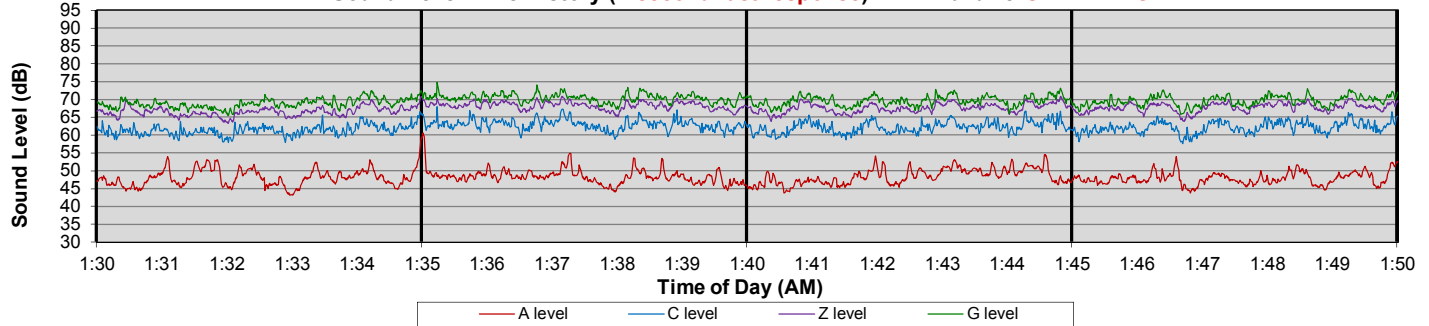
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-142: Summary of G-weighted Sound Level (slow response) and Modulation Depth (slow response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/2/2014 between 1:00 AM and 1:50 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	4.3	5.6	11.1	11.9	13.6	15.7	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.3	1.3	4.0	4.2	4.7	5.2
	L01	3.7	5.0	10.5	11.3	13.0	15.1		L01	-2.2	0.4	3.1	3.3	3.8	4.2
	Leq	0.8	2.2	7.6	8.4	10.1	12.2		Leq	-4.8	-2.2	0.4	0.7	1.2	1.6
	L50	0.6	2.0	7.4	8.3	10.0	12.1		L50	-5.7	-3.1	-0.4	-0.2	0.4	0.8
	L90	-1.3	0.1	5.5	6.3	8.1	10.1		L90	-5.7	-3.1	-0.5	-0.2	0.3	0.7
	Lmin	-3.7	-2.3	3.1	4.0	5.7	7.8		Lmin	-6.4	-3.8	-1.1	-0.9	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.9	4.9	10.4	11.2	13.3	14.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.0	3.0	3.8	3.8	4.1	4.4
	L01	8.9	4.8	10.4	11.2	13.3	14.7		L01	3.1	3.0	3.8	3.9	4.2	4.5
	Leq	6.2	2.1	7.7	8.5	10.6	12.0		Leq	0.6	0.5	1.3	1.3	1.6	1.9
	L50	6.0	1.9	7.5	8.3	10.4	11.8		L50	0.4	0.4	1.1	1.2	1.5	1.8
	L90	4.4	0.3	5.8	6.6	8.7	10.1		L90	-0.4	-0.5	0.3	0.3	0.6	0.9
	Lmin	2.0	-2.1	3.5	4.2	6.4	7.8		Lmin	-1.1	-1.2	-0.4	-0.3	-0.1	0.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	3.3	4.6	10.1	10.9	12.6	14.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	-2.0	0.6	3.2	3.5	4.0	4.4
	L01	3.3	4.6	10.1	10.9	12.6	14.7		L01	-2.0	0.7	3.3	3.6	4.1	4.5
	Leq	0.6	1.9	7.4	8.2	9.9	12.0		Leq	-4.5	-1.9	0.8	1.0	1.5	2.0
	L50	0.4	1.7	7.2	8.0	9.7	11.8		L50	-4.6	-2.0	0.6	0.9	1.4	1.8
	L90	-1.3	0.1	5.5	6.3	8.0	10.1		L90	-5.5	-2.9	-0.2	0.0	0.5	0.9
	Lmin	-3.7	-2.3	3.1	4.0	5.7	7.8		Lmin	-6.2	-3.6	-0.9	-0.7	-0.1	0.3

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-143: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/2/2014 from 1:30 to 1:50 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data					
Distance from KWI: <b>1025 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>8.4 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>827 kW</b>	Air Temperature: <b>33 °F</b>		
Wind Speed Range: <b>0-2 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>8.5 m/s</b>	Wind Direction: <b>200°</b>	Avg Power Level: <b>1054 kW</b>	Air Temperature: <b>33 °F</b>		
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>8.8 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>1139 kW</b>	Air Temperature: <b>33 °F</b>		

**Sound Level Time History (1-second fast response) - KWI Turbine OPERATING**



**Event Log**

Traffic on Route 3 **throughout**

HMMH consultant makes noise from **1:45:09 to 1:45:12 (EXCLUDE)**

Loud leaves blowing across street noise from **1:47:46 to 1:47:50 (EXCLUDE)**

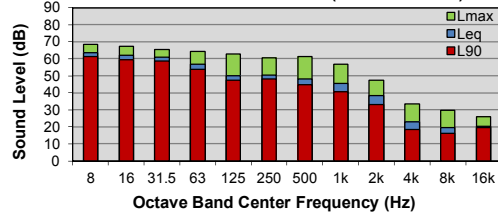
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:30 to 1:35 AM (100% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)						1:45 to 1:50 AM (98% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	59.0	66.6	70.8	72.5	4.4	Lmax	60.6	67.9	70.8	74.7	7.0	Lmax	54.6	66.7	70.9	73.2	4.5	Lmax	54.0	66.6	70.4	72.9	5.6
L01	53.6	65.4	69.6	72.1	3.6	L01	54.9	67.1	70.5	73.1	5.0	L01	54.0	66.2	70.1	72.3	4.1	L01	52.3	65.7	70.1	72.5	4.5
Leq	48.8	61.6	66.7	69.0	1.5	Leq	49.2	63.2	68.4	70.6	2.1	Leq	49.0	62.5	67.7	69.8	1.8	Leq	48.2	62.5	67.9	69.8	1.9
L50	47.9	61.3	66.5	68.8	1.4	L50	48.4	63.0	68.3	70.5	1.9	L50	48.3	62.2	67.5	69.6	1.7	L50	47.7	62.2	67.9	69.7	1.7
L90	45.1	59.6	65.0	67.3	0.8	L90	46.0	61.1	66.8	68.8	1.1	L90	45.8	60.1	65.9	67.8	0.9	L90	45.8	60.2	66.2	67.8	1.0
Lmin	43.2	57.9	63.3	65.4	0.3	Lmin	44.1	58.9	65.2	67.2	0.4	Lmin	43.8	58.7	63.9	66.0	0.3	Lmin	43.8	57.6	63.8	65.8	0.4

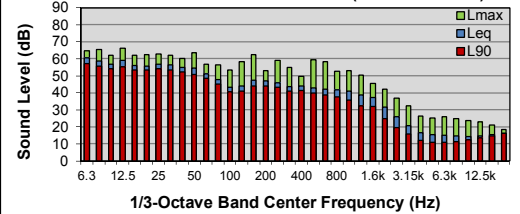
**1:30 to 1:50 AM (99% included)**

Avg	A	C	Z	G	MD
Lmax	57.0	66.9	70.7	73.3	5.4
L01	54.0	66.3	70.2	72.7	4.5
Leq	48.8	62.5	67.7	69.8	1.8
L50	48.0	62.2	67.6	69.7	1.0
L90	45.7	60.1	65.7	67.8	0.9
Lmin	43.2	57.6	63.3	65.4	0.3

**Octave Band Sound Levels (1:30 to 1:50 AM)**



**1/3-Octave Band Sound Levels (1:30 to 1:50 AM)**



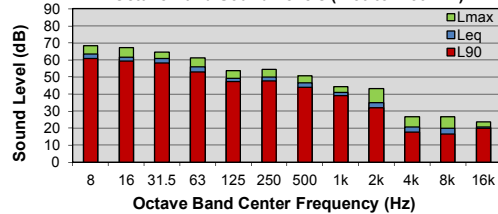
**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

1:30 to 1:35 AM (14% included)						1:35 to 1:40 AM (23% included)						1:40 to 1:45 AM (17% included)						1:45 to 1:50 AM (36% included)					
8.4 m/s	A	C	Z	G	MD	8.3 m/s	A	C	Z	G	MD	8.7 m/s	A	C	Z	G	MD	8.7 m/s	A	C	Z	G	MD
Lmax	48.1	63.4	69.9	71.4	4.2	Lmax	49.4	66.9	70.0	72.3	5.4	Lmax	48.6	66.7	70.9	73.2	4.4	Lmax	49.9	65.2	69.7	72.4	4.6
L01	47.6	63.1	69.7	71.1	4.2	L01	49.2	66.1	69.7	72.2	5.0	L01	48.1	66.4	70.6	72.8	4.1	L01	49.6	65.1	69.6	72.2	3.8
Leq	45.1	60.9	66.6	68.8	1.6	Leq	46.9	62.7	67.8	70.1	2.8	Leq	46.1	62.1	67.8	70.0	2.3	Leq	46.9	61.9	67.5	69.4	1.9
L50	45.1	60.8	66.2	68.6	1.5	L50	46.7	62.7	67.7	70.1	2.7	L50	46.1	61.6	67.3	69.6	2.3	L50	46.9	61.6	67.3	69.1	1.9
L90	43.6	59.1	64.7	67.6	1.0	L90	44.8	60.2	66.0	68.1	1.4	L90	44.6	59.6	65.9	68.1	1.3	L90	45.0	59.8	65.8	67.5	1.1
Lmin	43.2	57.9	63.3	65.4	0.7	Lmin	44.1	58.9	65.2	67.2	0.8	Lmin	43.8	59.2	64.7	66.6	0.6	Lmin	43.8	58.1	64.3	66.2	0.5

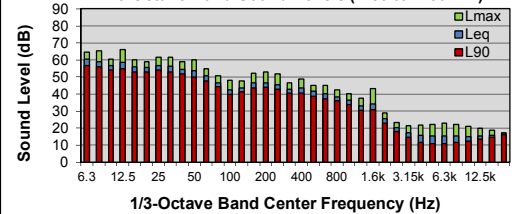
**1:30 to 1:50 AM (23% included)**

Avg	A	C	Z	G	MD
Lmax	49.0	65.5	70.1	72.3	4.6
L01	49.2	65.9	70.0	72.3	4.7
Leq	46.5	62.1	67.5	69.6	2.2
L50	46.3	61.7	67.2	69.4	2.0
L90	44.6	59.7	65.4	67.7	1.2
Lmin	43.2	57.9	63.3	65.4	0.5

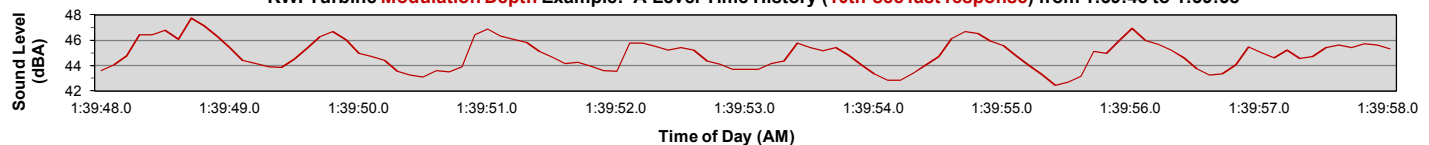
**Octave Band Sound Levels (1:30 to 1:50 AM)**



**1/3-Octave Band Sound Levels (1:30 to 1:50 AM)**



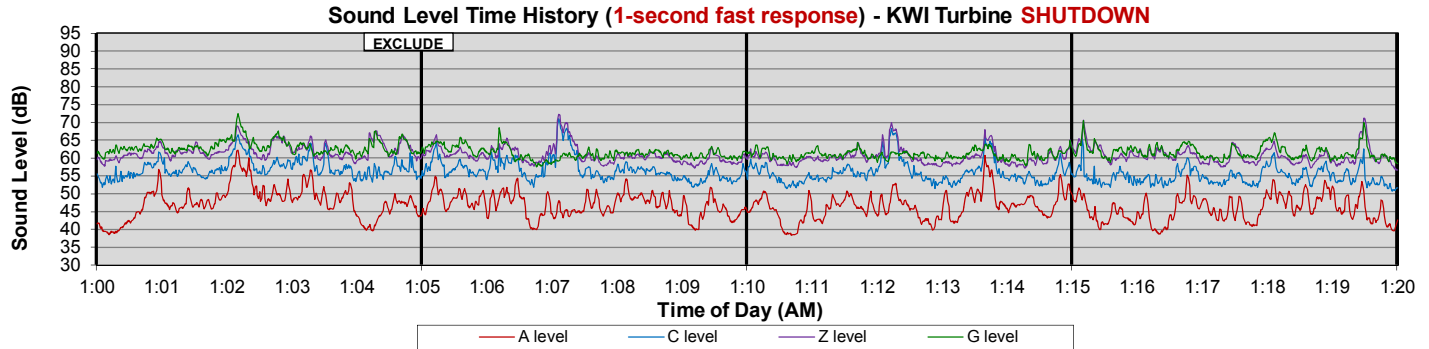
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:39:48 to 1:39:58**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-144: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/2/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>8.9 m/s</b>	Wind Direction: <b>197°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-2 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>8.5 m/s</b>	Wind Direction: <b>196°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>



**Event Log**

Traffic on Route 3 **throughout**

Local vehicle from **1:04:33 to 1:05:05 (EXCLUDE)**

Loud leaves blowing across street noise from **1:15:19 to 1:15:24 (EXCLUDE)**

**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (91% included)						1:05 to 1:10 AM (98% included)						1:10 to 1:15 AM (100% included)						1:15 to 1:20 AM (98% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	62.2	66.5	69.0	72.4	6.1	Lmax	54.9	71.1	72.2	68.6	5.2	Lmax	60.9	68.3	69.9	64.9	10.4	Lmax	55.2	65.6	71.2	70.4	4.9
L01	60.0	64.5	67.7	70.3	4.2	L01	54.1	68.4	70.0	65.5	3.8	L01	57.5	66.9	68.2	63.9	3.8	L01	53.9	61.7	69.4	68.0	4.0
Leq	50.7	58.1	62.6	63.8	1.4	Leq	48.0	58.8	62.0	61.6	1.4	Leq	48.5	57.7	61.1	61.1	1.3	Leq	47.3	55.5	61.6	62.2	1.5
L50	48.0	56.7	61.4	62.9	1.1	L50	47.1	56.2	60.4	61.1	1.2	L50	46.5	55.3	59.8	60.9	1.1	L50	45.7	54.4	60.3	61.2	1.3
L90	40.7	54.3	59.5	61.2	0.7	L90	43.1	53.5	58.5	59.4	0.7	L90	42.1	52.8	58.1	59.5	0.6	L90	41.2	52.3	58.4	59.7	0.7
Lmin	38.6	51.9	57.8	59.7	0.2	Lmin	39.8	51.8	57.3	57.6	0.2	Lmin	38.4	51.4	57.3	57.9	0.3	Lmin	38.7	50.7	56.7	58.7	0.2

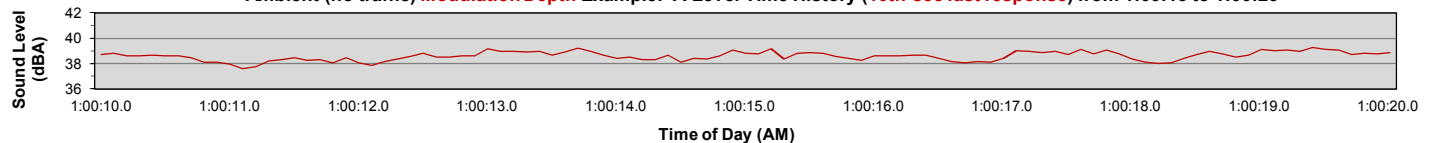
1:00 to 1:20 AM (97% included)						Octave Band Sound Levels (1:00 to 1:20 AM)												1/3-Octave Band Sound Levels (1:00 to 1:20 AM)											
Avg	A	C	Z	G	MD																								
Lmax	58.3	67.9	70.6	69.1	6.7																								
L01	57.3	66.9	69.1	67.7	4.1																								
Leq	48.8	57.7	61.8	62.3	1.4																								
L50	46.8	55.7	60.5	61.4	1.2																								
L90	41.5	53.0	58.4	59.7	0.6																								
Lmin	38.4	50.7	56.7	57.6	0.2																								

**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (10% included)						1:05 to 1:10 AM (4% included)						1:10 to 1:15 AM (4% included)						1:15 to 1:20 AM (3% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	41.5	58.4	67.6	67.5	2.1	Lmax	41.0	55.4	58.9	60.8	1.5	Lmax	39.3	53.7	58.9	60.9	1.3	Lmax	40.7	55.5	63.1	64.3	1.6
L01	41.5	58.2	67.5	67.5	1.8	L01	41.0	55.3	58.9	60.7	1.5	L01	39.3	53.6	58.9	60.9	1.3	L01	40.7	55.4	63.1	64.3	1.6
Leq	39.9	55.0	62.1	63.0	0.9	Leq	40.3	53.3	58.1	59.4	0.9	Leq	38.8	52.4	58.1	59.8	0.8	Leq	39.6	53.6	62.1	62.7	0.9
L50	39.6	54.0	59.5	62.0	0.9	L50	40.2	52.7	58.1	59.5	0.8	L50	38.7	52.2	58.0	59.8	0.7	L50	39.5	53.4	61.9	62.6	0.8
L90	38.9	52.9	58.7	60.4	0.6	L90	40.0	51.8	57.5	57.8	0.5	L90	38.5	51.7	57.7	58.9	0.5	L90	38.7	52.6	61.4	61.1	0.6
Lmin	38.6	51.9	57.8	59.7	0.2	Lmin	39.8	51.8	57.3	57.6	0.4	Lmin	38.4	51.5	57.4	58.2	0.4	Lmin	38.7	51.6	61.2	60.7	0.5

1:00 to 1:20 AM (6% included)						Octave Band Sound Levels (1:00 to 1:20 AM)												1/3-Octave Band Sound Levels (1:00 to 1:20 AM)											
Avg	A	C	Z	G	MD																								
Lmax	40.6	55.7	62.1	63.4	1.6																								
L01	41.4	57.9	67.3	67.5	1.7																								
Leq	39.7	54.1	61.0	61.9	0.9																								
L50	39.6	53.3	59.2	61.2	0.8																								
L90	38.7	51.9	57.9	59.0	0.6																								
Lmin	38.4	51.5	57.3	57.6	0.2																								

**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:00:13 to 1:00:23**



**Detailed Acoustical Monitoring Data**  
**11 Leland Road**  
**March 15, 2014**

Slow-response data: Pages D-146 to D-151

Fast-response data: Pages D-152 to D-157

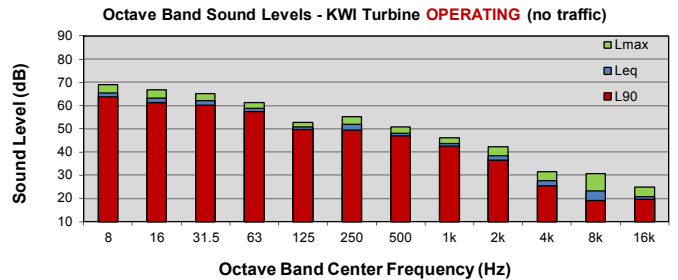
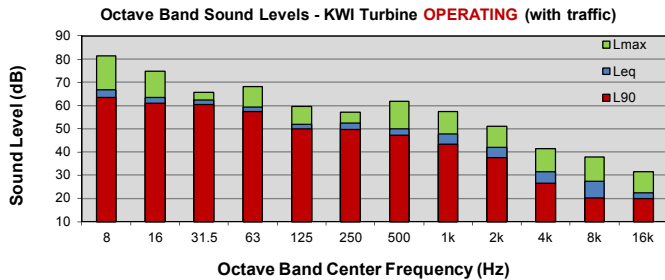
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-146: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 3: 11 Leland Rd. on 3/15/2014 between 3:40 AM and 4:30 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 4:00 to 4:10 AM	Calibrated Wind Speed: 10.1 m/s	Wind Direction: 181°	Average Power Level: 1422 kW	Air Temperature: 41 °F
Time: 4:10 to 4:20 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 180°	Average Power Level: 1826 kW	Air Temperature: 41 °F
Time: 4:20 to 4:30 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 179°	Average Power Level: 1880 kW	Air Temperature: 41 °F

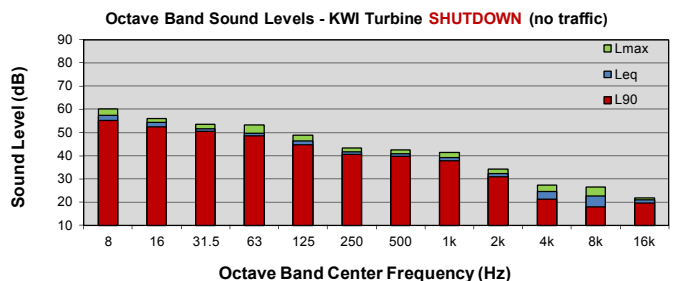
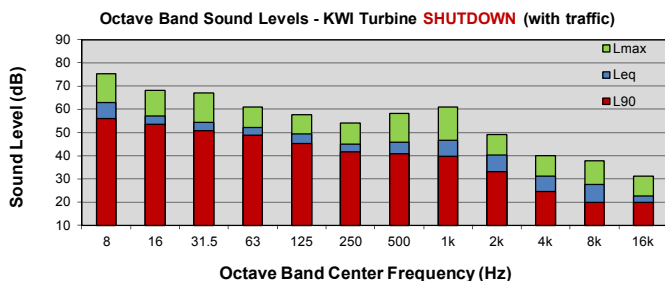
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
4:10 to 4:30 AM (99% included)						4:10 to 4:30 AM (19% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	58.3	67.7	77.5	77.6	6.8	Avg Lmax	50.8	64.7	70.9	73.3	5.2
L01	57.7	67.3	76.4	75.8	5.1	L01	50.8	64.8	71.0	73.7	5.0
Leq	51.8	63.5	70.0	71.6	2.1	Leq	49.3	62.9	69.2	71.2	2.5
L50	50.7	63.2	69.4	71.2	1.1	L50	49.3	62.8	69.2	71.0	2.4
L90	48.9	61.6	67.8	69.2	1.1	L90	48.1	61.5	67.8	69.5	1.4
Lmin	46.3	59.6	65.7	66.4	0.3	Lmin	46.3	59.8	66.8	68.2	0.5



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 3:40 to 3:50 AM	Calibrated Wind Speed: 10.7 m/s	Wind Direction: 182°	Average Power Level: 000 kW	Air Temperature: 41 °F
Time: 3:50 to 4:00 AM	Calibrated Wind Speed: 11.0 m/s	Wind Direction: 182°	Average Power Level: 000 kW	Air Temperature: 41 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
3:40 to 4:00 AM (99% included)						3:40 to 4:00 AM (5% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	57.0	63.8	75.1	74.2	6.6	Avg Lmax	43.8	54.9	61.8	64.3	1.9
L01	56.8	63.2	73.6	73.5	4.6	L01	44.3	55.0	62.4	64.5	1.9
Leq	49.3	57.4	65.0	65.6	1.3	Leq	42.8	54.0	60.6	62.7	0.9
L50	47.7	56.2	62.2	64.0	1.1	L50	42.5	54.2	60.7	62.4	0.9
L90	43.4	53.9	60.1	62.0	0.6	L90	41.9	53.0	59.2	61.1	0.5
Lmin	41.5	52.4	58.3	59.3	0.2	Lmin	41.5	52.4	58.3	59.3	0.2





Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-147: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/15/2014 between 3:40 AM and 4:30 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.3	1.5	9.0	10.7	14.9	16.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	6.9	6.5	8.0	8.2	8.9	9.3
	L01	0.7	0.9	8.3	10.0	14.3	16.2		L01	6.9	6.5	8.0	8.3	8.9	9.3
	Leq	-5.2	-5.0	2.5	4.2	8.4	10.3		Leq	5.4	5.0	6.5	6.8	7.4	7.8
	L50	-6.3	-6.1	1.3	3.0	7.3	9.2		L50	5.4	5.0	6.5	6.8	7.4	7.8
	L90	-8.1	-7.9	-0.4	1.3	5.5	7.4		L90	4.2	3.8	5.3	5.5	6.2	6.6
	Lmin	-10.8	-10.6	-3.1	-1.4	2.8	4.8		Lmin	2.4	1.9	3.5	3.7	4.4	4.8
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.3	-6.0	1.4	3.1	7.3	9.3	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-6.2	-6.0	1.4	3.1	7.4	9.3								
	Leq	-7.8	-7.5	-0.1	1.6	5.8	7.8	Excluding traffic on Route 3:							
	L50	-7.7	-7.5	-0.1	1.6	5.9	7.8	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L90	-9.0	-8.7	-1.3	0.4	4.6	6.6	Leq Pure-tone?			NO	Leq Pure-tone?	NO		
	Lmin	-10.8	-10.6	-3.1	-1.4	2.8	4.8	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
							L90 Pure-tone?		NO		L90 Pure-tone?	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-148: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/15/2014 between 3:40 AM and 4:30 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	3.9	4.6	10.4	11.5	13.8	15.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	2.4	3.9	12.5	15.2	17.4	19.1
	L01	3.4	4.1	9.9	11.0	13.4	14.9		L01	1.2	2.8	11.4	14.1	16.3	18.0
	Leq	-0.4	0.3	6.1	7.2	9.5	11.0		Leq	-5.1	-3.6	5.0	7.8	9.9	11.7
	L50	-0.6	0.0	5.8	7.0	9.3	10.8		L50	-5.7	-4.2	4.4	7.1	9.3	11.1
	L90	-2.2	-1.5	4.2	5.4	7.7	9.2		L90	-7.3	-5.8	2.8	5.5	7.7	9.4
	Lmin	-4.2	-3.5	2.2	3.4	5.7	7.2		Lmin	-9.4	-7.9	0.7	3.4	5.6	7.3
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	9.8	9.7	10.7	10.5	11.7	12.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	9.1	8.5	10.4	10.3	11.8	12.6
	L01	9.9	9.7	10.8	10.6	11.8	12.4		L01	9.2	8.7	10.5	10.4	11.9	12.7
	Leq	8.0	7.9	8.9	8.7	9.9	10.5		Leq	7.4	6.8	8.7	8.6	10.1	10.9
	L50	8.0	7.8	8.8	8.7	9.8	10.4		L50	7.4	6.8	8.6	8.5	10.0	10.8
	L90	6.7	6.5	7.5	7.4	8.5	9.1		L90	6.0	5.4	7.2	7.1	8.6	9.4
	Lmin	5.0	4.8	5.8	5.7	6.8	7.4		Lmin	5.0	4.4	6.2	6.1	7.6	8.4
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.9	1.5	7.3	8.5	10.8	12.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.2	-2.7	5.9	8.7	10.8	12.6
	L01	1.0	1.6	7.4	8.6	10.9	12.4		L01	-4.1	-2.6	6.1	8.8	10.9	12.7
	Leq	-0.9	-0.2	5.5	6.7	9.0	10.5		Leq	-5.9	-4.4	4.2	7.0	9.1	10.9
	L50	-1.0	-0.3	5.5	6.6	8.9	10.4		L50	-5.9	-4.4	4.2	6.9	9.1	10.9
	L90	-2.3	-1.6	4.1	5.3	7.6	9.1		L90	-7.3	-5.8	2.8	5.5	7.7	9.4
	Lmin	-4.0	-3.3	2.4	3.6	5.9	7.4		Lmin	-8.3	-6.8	1.8	4.5	6.7	8.4

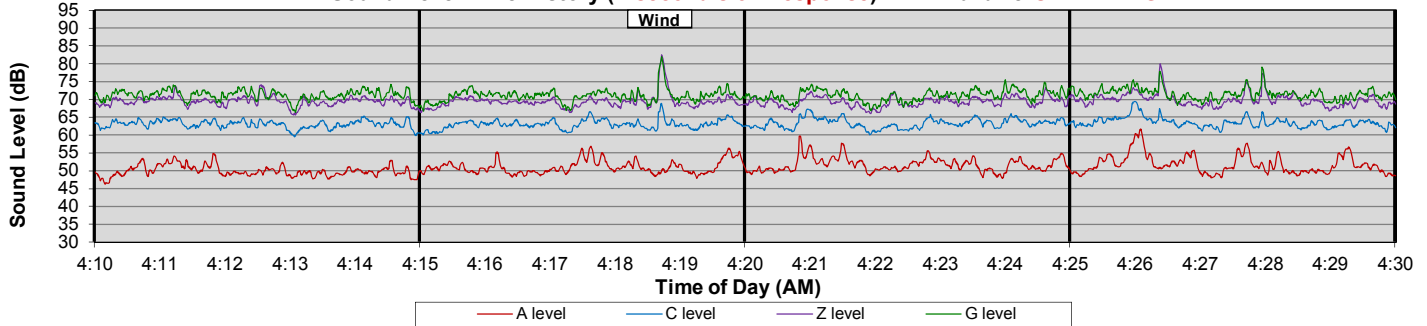
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-149: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/15/2014 between 3:40 AM and 4:30 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	3.5	4.1	12.0	13.6	15.6	18.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.2	2.2	5.4	5.7	6.2	6.6
	L01	1.6	2.3	10.2	11.8	13.8	16.5		L01	-1.5	0.5	3.8	4.0	4.5	4.9
	Leq	-2.6	-1.9	6.0	7.6	9.6	12.3		Leq	-4.5	-2.5	0.8	1.1	1.6	1.9
	L50	-2.9	-2.3	5.6	7.3	9.2	12.0		L50	-5.5	-3.5	-0.2	0.1	0.6	0.9
	L90	-4.9	-4.3	3.6	5.3	7.2	10.0		L90	-5.5	-3.5	-0.3	0.0	0.5	0.9
	Lmin	-7.8	-7.1	0.8	2.4	4.4	7.1		Lmin	-6.3	-4.3	-1.1	-0.8	-0.3	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	9.0	8.8	10.6	10.9	12.2	14.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.3	3.3	4.3	4.4	4.7	5.0
	L01	9.5	9.2	11.0	11.3	12.6	14.4		L01	3.1	3.1	4.1	4.1	4.5	4.8
	Leq	6.9	6.7	8.5	8.8	10.1	11.9		Leq	0.6	0.6	1.6	1.6	2.0	2.3
	L50	6.7	6.5	8.3	8.6	9.9	11.7		L50	0.5	0.5	1.5	1.6	1.9	2.2
	L90	5.3	5.0	6.8	7.1	8.4	10.2		L90	-0.5	-0.5	0.5	0.5	0.9	1.2
	Lmin	4.0	3.7	5.5	5.8	7.1	8.9		Lmin	-1.4	-1.4	-0.4	-0.4	-0.1	0.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.9	-0.2	7.7	9.3	11.3	14.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.4	0.6	3.9	4.1	4.6	5.0
	L01	-0.5	0.2	8.1	9.7	11.7	14.4		L01	-1.6	0.4	3.7	3.9	4.4	4.8
	Leq	-3.0	-2.3	5.6	7.2	9.2	11.9		Leq	-4.1	-2.1	1.1	1.4	1.9	2.3
	L50	-3.2	-2.5	5.4	7.0	9.0	11.7		L50	-4.2	-2.2	1.1	1.3	1.8	2.2
	L90	-4.7	-4.0	3.9	5.5	7.5	10.2		L90	-5.2	-3.2	0.1	0.3	0.8	1.2
	Lmin	-6.0	-5.3	2.6	4.2	6.2	8.9		Lmin	-6.1	-4.1	-0.9	-0.6	-0.1	0.3

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-150: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/15/2014 from 4:10 to 4:30 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>4:00 to 4:10 AM</b>	Calibrated Wind Speed: <b>10.1 m/s</b>	Wind Direction: <b>181°</b>	Avg Power Level: <b>1422 kW</b>	Air Temperature: <b>41 °F</b>
Wind Speed Range: <b>0-4 m/s</b>	Time: <b>4:10 to 4:20 AM</b>	Calibrated Wind Speed: <b>10.4 m/s</b>	Wind Direction: <b>180°</b>	Avg Power Level: <b>1826 kW</b>	Air Temperature: <b>41 °F</b>
	Time: <b>4:20 to 4:30 AM</b>	Calibrated Wind Speed: <b>10.4 m/s</b>	Wind Direction: <b>179°</b>	Avg Power Level: <b>1880 kW</b>	Air Temperature: <b>41 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**

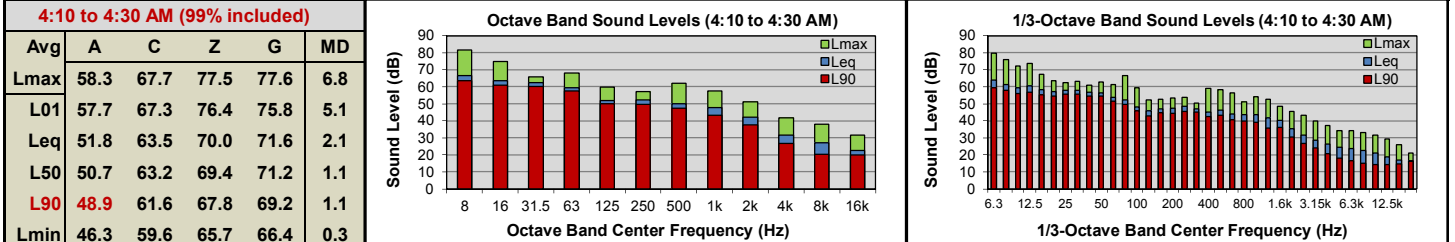


**Event Log**

Traffic on Route 3 **throughout**  
Intermittent wind-generated noise **throughout**  
Loud leaves blowing across street noise from **4:10:14 to 4:10:17 (EXCLUDE)**  
Loud breaking branch noise from **4:11:24 to 4:11:26 (EXCLUDE)**  
Loud breaking branch noise from **4:12:35 to 4:12:37 (EXCLUDE)**

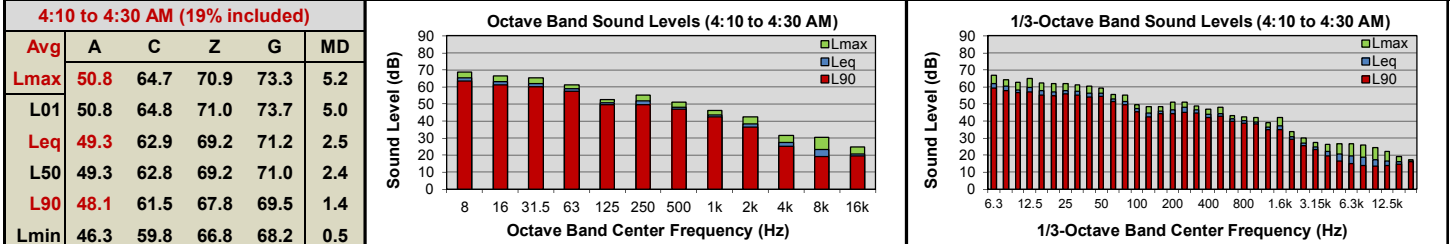
**Slow Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

4:10 to 4:15 AM (97% included)						4:15 to 4:20 AM (100% included)						4:20 to 4:25 AM (100% included)						4:25 to 4:30 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.9	65.3	74.0	74.2	7.7	Lmax	56.9	68.9	82.5	81.9	5.6	Lmax	59.7	67.3	73.4	75.4	7.8	Lmax	61.7	69.4	80.0	79.0	6.0
L01	54.1	65.1	73.5	73.8	5.6	L01	56.3	66.5	79.5	79.3	4.6	L01	57.6	67.1	72.3	74.3	5.8	L01	60.4	69.2	77.3	77.8	4.6
Leq	50.2	63.2	69.6	71.5	2.4	Leq	51.5	63.2	70.3	71.6	2.1	Leq	52.2	63.5	69.5	71.3	2.0	Leq	52.9	63.8	70.5	71.9	2.2
L50	49.7	63.2	69.5	71.4	2.2	L50	50.6	63.0	69.2	71.0	1.9	L50	51.4	63.2	69.2	71.1	1.8	L50	51.0	63.5	69.6	71.5	2.0
L90	48.4	61.7	68.0	69.5	1.3	L90	49.1	61.3	67.6	68.9	1.0	L90	49.6	61.5	67.6	69.0	1.0	L90	49.1	62.0	67.9	69.6	1.1
Lmin	46.3	59.6	65.7	66.4	0.4	Lmin	47.8	60.1	66.3	66.6	0.3	Lmin	48.0	60.0	66.0	66.9	0.3	Lmin	48.0	60.7	66.8	68.3	0.4

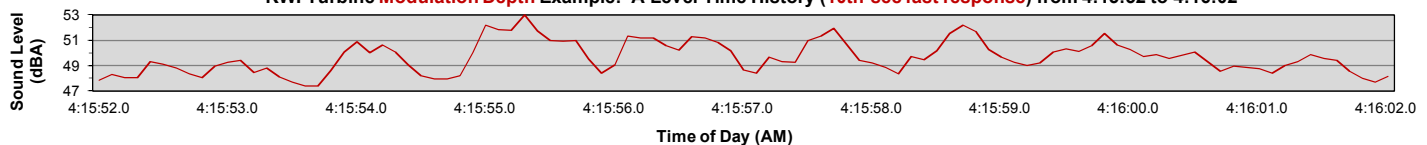


**Slow Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

4:10 to 4:15 AM (31% included)						4:15 to 4:20 AM (20% included)						4:20 to 4:25 AM (8% included)						4:25 to 4:30 AM (18% included)					
9.8 m/s	A	C	Z	G	MD	9.9 m/s	A	C	Z	G	MD	10.0 m/s	A	C	Z	G	MD	10.6 m/s	A	C	Z	G	MD
Lmax	50.4	65.3	71.1	73.8	5.3	Lmax	50.7	64.4	71.0	73.8	5.1	Lmax	51.3	64.8	70.9	72.4	5.8	Lmax	50.7	64.2	70.7	73.1	4.7
L01	50.2	65.0	71.0	73.6	5.3	L01	50.7	64.3	71.0	73.8	4.7	L01	51.2	64.7	70.9	72.3	5.8	L01	50.6	64.1	70.5	72.7	4.5
Leq	48.9	63.0	69.4	71.4	2.5	Leq	49.4	63.0	69.4	71.4	2.6	Leq	50.2	63.0	69.4	70.6	2.5	Leq	49.2	62.5	68.7	70.8	2.4
L50	49.1	63.2	69.4	71.4	2.4	L50	49.4	63.1	69.3	71.3	2.4	L50	50.1	62.8	69.3	70.5	2.5	L50	49.2	62.6	68.4	70.7	2.4
L90	47.5	61.6	68.0	69.6	1.4	L90	48.6	61.8	68.2	69.8	1.5	L90	49.6	61.9	68.2	69.9	1.4	L90	48.4	61.4	67.4	69.2	1.3
Lmin	46.3	59.8	67.0	68.2	0.5	Lmin	47.8	61.4	67.4	68.6	0.7	Lmin	49.3	61.3	67.8	69.5	0.9	Lmin	48.0	60.7	66.8	68.6	0.6



**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 4:15:52 to 4:16:02**

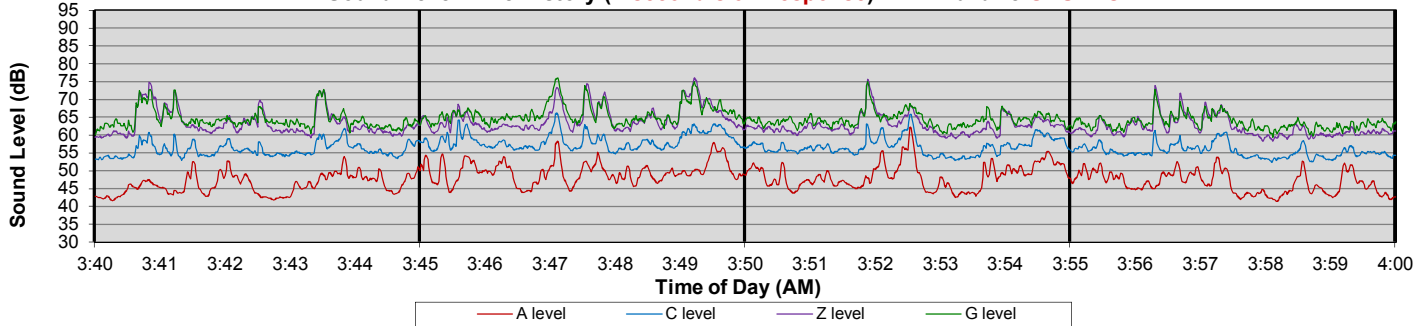


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-151: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/15/2014 from 3:40 to 4:00 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>3:40 to 3:50 AM</b>	Calibrated Wind Speed: <b>10.7 m/s</b>	Wind Direction: <b>182°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>41 °F</b>
Wind Speed Range: <b>0-4 m/s</b>	Time: <b>3:50 to 4:00 AM</b>	Calibrated Wind Speed: <b>11.0 m/s</b>	Wind Direction: <b>182°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>41 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine SHUTDOWN**



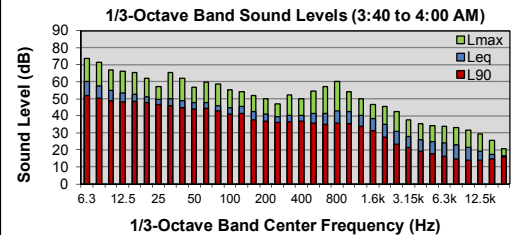
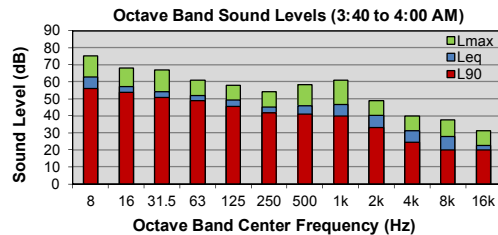
**Event Log**

Traffic on Route 3 **throughout**  
Intermittent wind-generated noise **throughout**  
HMMH consultant makes noise from **3:40:00 to 3:40:06 (EXCLUDE)**  
Loud breaking branch noise from **3:44:09 to 3:44:12 (EXCLUDE)**  
Loud breaking branch noise from **3:57:51 to 3:57:54 (EXCLUDE)**

**Slow Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN**

3:40 to 3:45 AM (97% included)						3:45 to 3:50 AM (100% included)						3:50 to 3:55 AM (100% included)						3:55 to 4:00 AM (99% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	53.9	62.0	74.8	72.8	5.4	Lmax	58.2	66.2	76.0	76.1	6.9	Lmax	62.2	65.9	75.7	74.9	8.2	Lmax	53.8	61.3	73.9	72.8	6.0
L01	52.8	60.8	72.7	72.6	4.0	L01	57.7	64.9	74.7	75.3	5.3	L01	58.3	63.7	72.7	71.5	5.0	L01	52.7	60.6	71.8	69.5	4.3
Leq	47.1	56.3	65.3	65.4	1.2	Leq	50.8	59.1	66.7	67.4	1.5	Leq	50.4	57.6	63.9	65.0	1.4	Leq	47.7	55.8	63.3	63.9	1.3
L50	46.0	55.3	62.0	63.6	1.0	L50	49.5	57.8	63.5	65.3	1.2	L50	48.3	56.5	62.2	64.0	1.1	L50	46.4	55.1	61.1	63.0	1.1
L90	42.6	53.9	60.2	62.1	0.5	L90	45.8	56.0	61.5	63.2	0.6	L90	44.0	53.9	60.1	62.2	0.6	L90	42.9	53.4	59.6	61.3	0.6
Lmin	41.6	52.8	59.1	60.4	0.2	Lmin	43.9	54.7	60.5	61.9	0.3	Lmin	42.6	53.0	59.0	60.5	0.3	Lmin	41.5	52.4	58.3	59.3	0.2

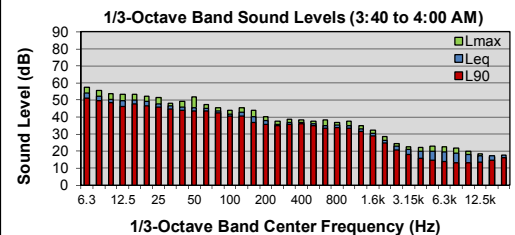
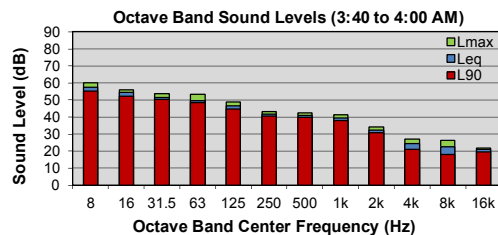
3:40 to 4:00 AM (99% included)					
Avg	A	C	Z	G	MD
Lmax	57.0	63.8	75.1	74.2	6.6
L01	56.8	63.2	73.6	73.5	4.6
Leq	49.3	57.4	65.0	65.6	1.3
L50	47.7	56.2	62.2	64.0	1.1
L90	43.4	53.9	60.1	62.0	0.6
Lmin	41.5	52.4	58.3	59.3	0.2



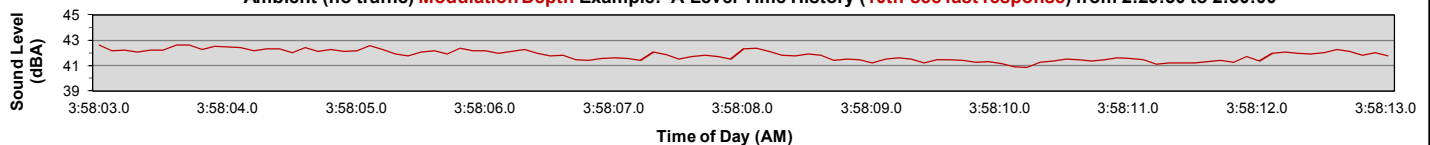
**Slow Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN**

3:40 to 3:45 AM (8% included)						3:45 to 3:50 AM (0% included)						3:50 to 3:55 AM (4% included)						3:55 to 4:00 AM (8% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	44.4	55.0	61.5	64.1	1.9	Lmax	-	-	-	-	-	Lmax	44.0	54.5	62.5	64.6	1.8	Lmax	43.1	55.1	61.4	64.1	2.1
L01	44.4	55.0	61.5	64.0	1.7	L01	-	-	-	-	-	L01	44.0	54.5	62.5	64.6	1.5	L01	43.1	55.0	61.4	64.0	2.1
Leq	42.9	54.4	60.7	62.9	1.0	Leq	-	-	-	-	-	Leq	43.5	53.9	61.0	63.3	0.9	Leq	42.2	53.7	60.2	62.1	0.8
L50	42.6	54.3	60.9	63.2	1.0	L50	-	-	-	-	-	L50	43.6	54.1	61.1	63.2	0.9	L50	42.3	53.6	60.2	61.9	0.8
L90	41.9	53.8	59.5	61.6	0.6	L90	-	-	-	-	-	L90	42.7	53.1	59.3	61.7	0.5	L90	41.8	52.8	59.0	60.4	0.5
Lmin	41.8	53.2	59.2	61.4	0.2	Lmin	-	-	-	-	-	Lmin	42.6	53.0	59.0	61.6	0.4	Lmin	41.5	52.4	58.3	59.3	0.3

3:40 to 4:00 AM (5% included)					
Avg	A	C	Z	G	MD
Lmax	43.8	54.9	61.8	64.3	1.9
L01	44.3	55.0	62.4	64.5	1.9
Leq	42.8	54.0	60.6	62.7	0.9
L50	42.5	54.2	60.7	62.4	0.9
L90	41.9	53.0	59.2	61.1	0.5
Lmin	41.5	52.4	58.3	59.3	0.2



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:29:50 to 2:30:00**



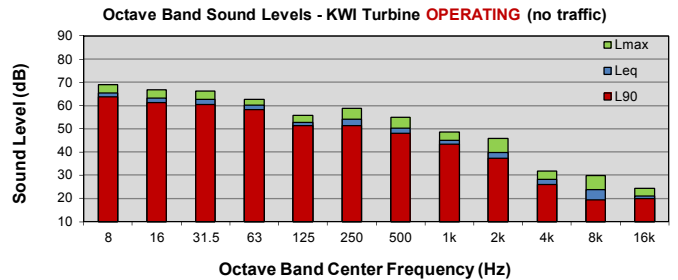
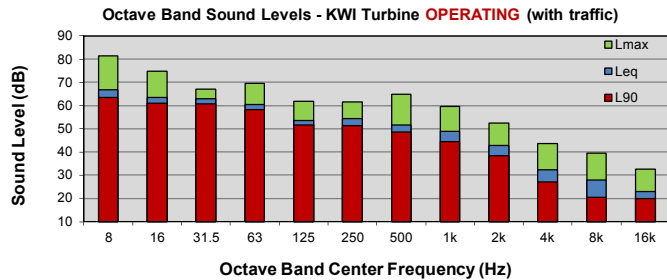
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-152: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 3: 11 Leland Rd. on 3/15/2014 between 3:40 AM and 4:30 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 4:00 to 4:10 AM	Calibrated Wind Speed: 10.1 m/s	Wind Direction: 181°	Average Power Level: 1422 kW	Air Temperature: 41 °F
Time: 4:10 to 4:20 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 180°	Average Power Level: 1826 kW	Air Temperature: 41 °F
Time: 4:20 to 4:30 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 179°	Average Power Level: 1880 kW	Air Temperature: 41 °F

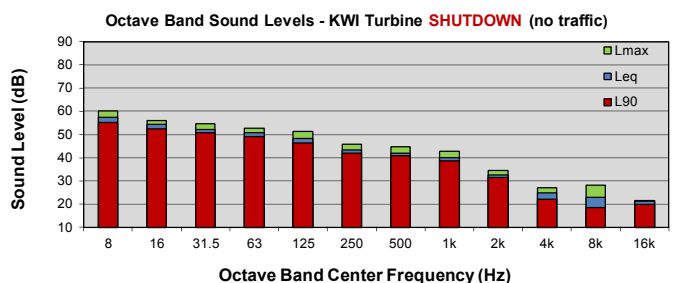
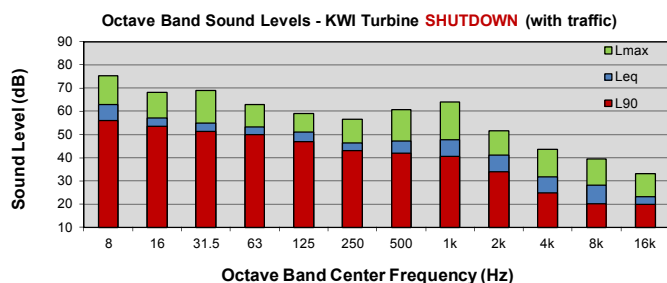
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
4:10 to 4:30 AM (99% included)						4:10 to 4:30 AM (19% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	60.2	71.0	77.6	77.7	6.8	Avg Lmax	53.1	67.6	71.3	73.4	5.2
L01	58.9	69.5	76.4	75.7	5.1	L01	52.8	68.0	71.4	73.8	5.0
Leq	52.7	65.0	70.3	71.7	2.1	Leq	50.4	64.6	69.6	71.3	2.5
L50	51.6	64.7	69.8	71.3	1.1	L50	50.3	64.2	69.6	71.1	2.4
L90	49.6	62.7	68.1	69.3	1.1	L90	48.9	62.6	68.1	69.6	1.4
Lmin	46.3	60.7	65.9	66.5	0.3	Lmin	46.3	61.0	67.0	68.3	0.5



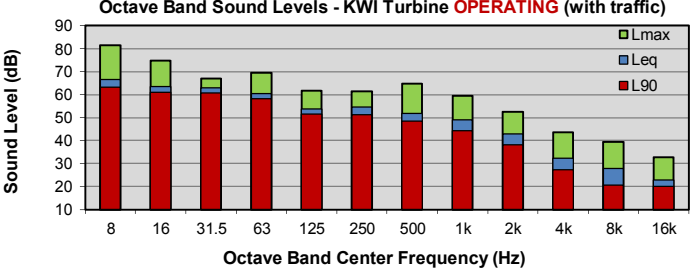
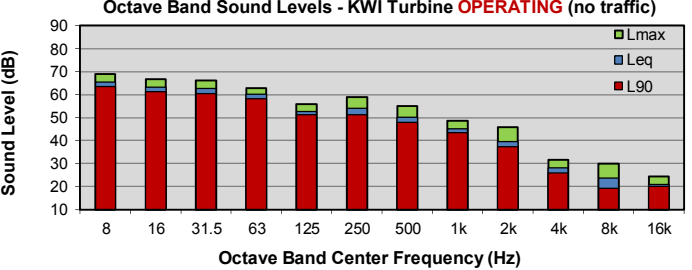
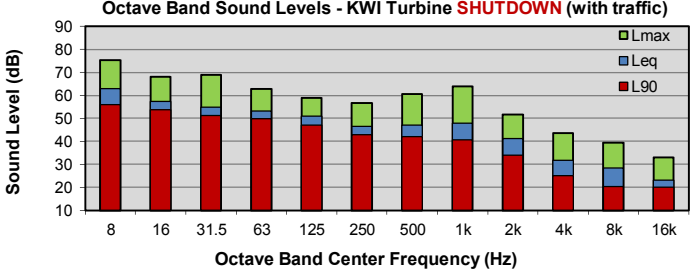
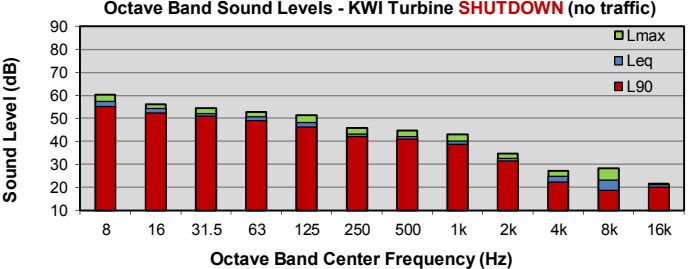
**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 3:40 to 3:50 AM	Calibrated Wind Speed: 10.7 m/s	Wind Direction: 182°	Average Power Level: 000 kW	Air Temperature: 41 °F
Time: 3:50 to 4:00 AM	Calibrated Wind Speed: 11.0 m/s	Wind Direction: 182°	Average Power Level: 000 kW	Air Temperature: 41 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
3:40 to 4:00 AM (99% included)						3:40 to 4:00 AM (5% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	58.8	66.8	75.1	74.2	6.6	Avg Lmax	44.4	56.5	62.0	64.3	1.9
L01	57.7	65.7	73.6	73.5	4.6	L01	44.8	56.5	62.5	64.5	1.9
Leq	49.9	58.6	65.2	65.7	1.3	Leq	43.2	55.3	60.9	62.7	0.9
L50	47.8	57.1	62.7	64.1	1.1	L50	43.1	55.3	60.9	62.5	0.9
L90	43.7	54.9	60.5	62.1	0.6	L90	42.1	53.8	59.4	61.2	0.5
Lmin	41.7	53.0	58.7	59.4	0.2	Lmin	41.7	53.2	58.8	59.4	0.2





Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-153: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/15/2014 between 3:40 AM and 4:30 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.4	2.5	10.3	12.4	16.5	18.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.7	8.3	9.9	10.1	11.0	11.4
	L01	0.1	1.2	8.9	11.0	15.2	17.1		L01	8.4	8.0	9.6	9.7	10.7	11.1
	Leq	-6.1	-5.0	2.8	4.9	9.0	11.0		Leq	6.1	5.7	7.3	7.4	8.3	8.7
	L50	-7.2	-6.1	1.7	3.8	7.9	9.9		L50	5.9	5.5	7.1	7.2	8.1	8.5
	L90	-9.2	-8.1	-0.4	1.7	5.9	7.8		L90	4.5	4.1	5.7	5.8	6.7	7.1
	Lmin	-12.5	-11.3	-3.6	-1.5	2.7	4.6		Lmin	2.0	1.6	3.2	3.3	4.2	4.6
															
															
Operating - Shutdown Differences: Overall Comparison															
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.7	-4.6	3.2	5.3	9.4	11.4								
	L01	-6.0	-4.9	2.9	5.0	9.1	11.1								
	Leq	-8.4	-7.2	0.5	2.6	6.8	8.7								
	L50	-8.5	-7.4	0.3	2.4	6.6	8.5								
	L90	-9.9	-8.8	-1.1	1.0	5.2	7.1								
	Lmin	-12.5	-11.3	-3.6	-1.5	2.7	4.6								
Octave Band Sound Level Comparison: Pure-tone Check															
Including traffic on Route 3:															
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
Excluding traffic on Route 3:															
Leq Octave Band Check: KWI Turbine ONLY				NO KWI PURE TONE		Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check KWI Turbine ONLY				NO KWI PURE TONE		L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							



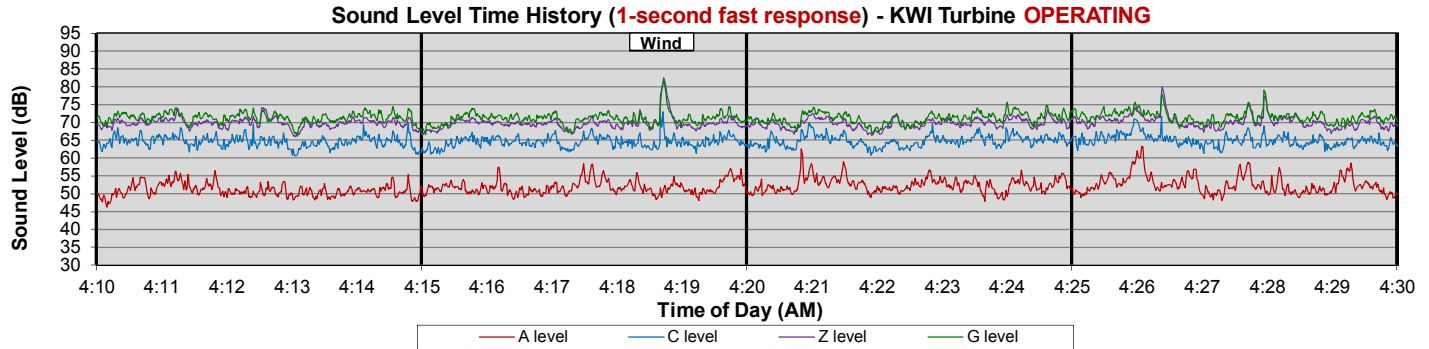
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-154: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/15/2014 between 3:40 AM and 4:30 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	4.3	5.3	12.4	13.9	16.1	18.0	KWI Turbine OPERATING (with traffic)	Avg Lmax	2.4	3.9	12.4	14.9	17.1	18.9
	L01	2.8	3.9	10.9	12.4	14.6	16.5		L01	1.3	2.8	11.2	13.8	16.0	17.7
	Leq	-1.7	-0.6	6.4	7.9	10.1	12.0		Leq	-4.8	-3.3	5.1	7.7	9.9	11.6
	L50	-2.1	-1.0	6.1	7.5	9.7	11.7		L50	-5.4	-3.9	4.6	7.1	9.3	11.1
	L90	-4.0	-2.9	4.1	5.6	7.8	9.7		L90	-7.0	-5.5	2.9	5.4	7.6	9.4
	Lmin	-6.1	-5.0	2.1	3.5	5.7	7.7		Lmin	-9.2	-7.7	0.7	3.3	5.5	7.2
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	11.1	11.1	12.3	12.3	13.8	14.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	9.2	8.7	10.4	10.4	11.8	12.4
	L01	11.5	11.5	12.7	12.7	14.2	14.8		L01	9.3	8.8	10.5	10.4	11.9	12.5
	Leq	8.1	8.0	9.3	9.3	10.8	11.3		Leq	7.5	7.0	8.7	8.6	10.1	10.7
	L50	7.7	7.7	8.9	8.9	10.4	11.0		L50	7.5	7.0	8.7	8.6	10.1	10.7
	L90	6.1	6.1	7.3	7.3	8.8	9.4		L90	6.0	5.5	7.2	7.2	8.6	9.2
	Lmin	4.5	4.5	5.7	5.7	7.2	7.8		Lmin	4.9	4.4	6.1	6.0	7.5	8.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.8	1.9	9.0	10.5	12.6	14.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	-3.9	-2.3	6.1	8.6	10.8	12.6
	L01	1.2	2.3	9.4	10.8	13.0	15.0		L01	-3.8	-2.3	6.2	8.7	10.9	12.7
	Leq	-2.2	-1.1	6.0	7.4	9.6	11.5		Leq	-5.6	-4.1	4.4	6.9	9.1	10.9
	L50	-2.6	-1.5	5.6	7.1	9.2	11.2		L50	-5.6	-4.1	4.4	6.9	9.1	10.9
	L90	-4.2	-3.1	4.0	5.5	7.6	9.6		L90	-7.0	-5.5	2.9	5.4	7.6	9.4
	Lmin	-5.8	-4.7	2.4	3.9	6.1	8.0		Lmin	-8.2	-6.7	1.8	4.3	6.5	8.3

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-155: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 3: 11 Leland Rd. on 3/15/2014 between 3:40 AM and 4:30 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	3.5	4.2	12.1	13.7	15.7	18.3	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.2	2.2	5.4	5.7	6.2	6.6
	L01	1.5	2.2	10.1	11.7	13.7	16.3		L01	-1.5	0.5	3.8	4.0	4.5	4.9
	Leq	-2.5	-1.9	6.0	7.6	9.6	12.3		Leq	-4.5	-2.5	0.8	1.1	1.6	1.9
	L50	-2.9	-2.2	5.7	7.3	9.3	11.9		L50	-5.5	-3.5	-0.2	0.1	0.6	0.9
	L90	-4.9	-4.2	3.7	5.3	7.3	9.9		L90	-5.5	-3.5	-0.3	0.0	0.5	0.9
	Lmin	-7.7	-7.0	0.8	2.4	4.4	7.1		Lmin	-6.3	-4.3	-1.1	-0.8	-0.3	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	9.2	8.9	10.7	11.0	12.2	14.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.3	3.3	4.3	4.4	4.7	5.0
	L01	9.5	9.3	11.1	11.3	12.6	14.4		L01	3.1	3.1	4.1	4.1	4.5	4.8
	Leq	7.0	6.7	8.5	8.8	10.0	11.9		Leq	0.6	0.6	1.6	1.6	2.0	2.3
	L50	6.8	6.5	8.3	8.6	9.8	11.7		L50	0.5	0.5	1.5	1.6	1.9	2.2
	L90	5.3	5.1	6.9	7.1	8.4	10.2		L90	-0.5	-0.5	0.5	0.5	0.9	1.2
	Lmin	4.0	3.7	5.5	5.8	7.0	8.9		Lmin	-1.4	-1.4	-0.4	-0.4	-0.1	0.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.8	-0.1	7.8	9.4	11.4	14.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.4	0.6	3.9	4.1	4.6	5.0
	L01	-0.4	0.3	8.2	9.8	11.8	14.4		L01	-1.6	0.4	3.7	3.9	4.4	4.8
	Leq	-2.9	-2.2	5.6	7.2	9.2	11.9		Leq	-4.1	-2.1	1.1	1.4	1.9	2.3
	L50	-3.1	-2.4	5.4	7.0	9.0	11.7		L50	-4.2	-2.2	1.1	1.3	1.8	2.2
	L90	-4.6	-3.9	3.9	5.5	7.5	10.2		L90	-5.2	-3.2	0.1	0.3	0.8	1.2
	Lmin	-5.9	-5.3	2.6	4.2	6.2	8.9		Lmin	-6.1	-4.1	-0.9	-0.6	-0.1	0.3

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-156: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/15/2014 from 4:10 to 4:30 AM with KWI Turbine OPERATING**

Site data	Supervisory Control and Data Acquisition (SCADA) data				
Distance from KWI: <b>1025 ft</b>	Time: <b>4:00 to 4:10 AM</b>	Calibrated Wind Speed: <b>10.1 m/s</b>	Wind Direction: <b>181°</b>	Avg Power Level: <b>1422 kW</b>	Air Temperature: <b>41 °F</b>
Wind Speed Range: <b>0-4 m/s</b>	Time: <b>4:10 to 4:20 AM</b>	Calibrated Wind Speed: <b>10.4 m/s</b>	Wind Direction: <b>180°</b>	Avg Power Level: <b>1826 kW</b>	Air Temperature: <b>41 °F</b>
	Time: <b>4:20 to 4:30 AM</b>	Calibrated Wind Speed: <b>10.4 m/s</b>	Wind Direction: <b>179°</b>	Avg Power Level: <b>1880 kW</b>	Air Temperature: <b>41 °F</b>

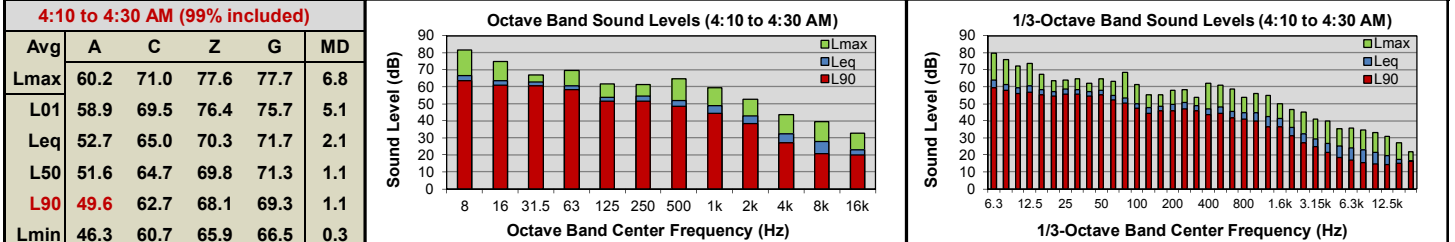


**Event Log**

Traffic on Route 3 **throughout**  
Intermittent wind-generated noise **throughout**  
Loud leaves blowing across street noise from **4:10:14 to 4:10:17 (EXCLUDE)**  
Loud breaking branch noise from **4:11:24 to 4:11:26 (EXCLUDE)**  
Loud breaking branch noise from **4:12:35 to 4:12:37 (EXCLUDE)**

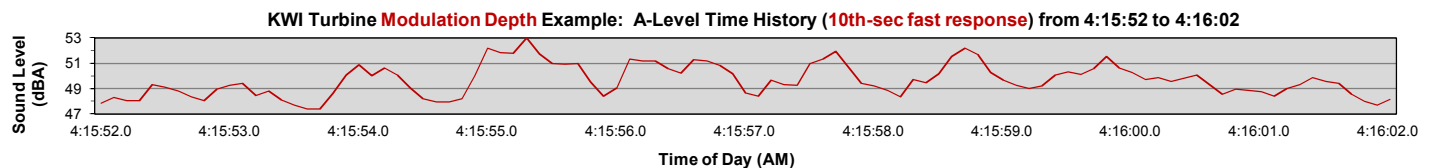
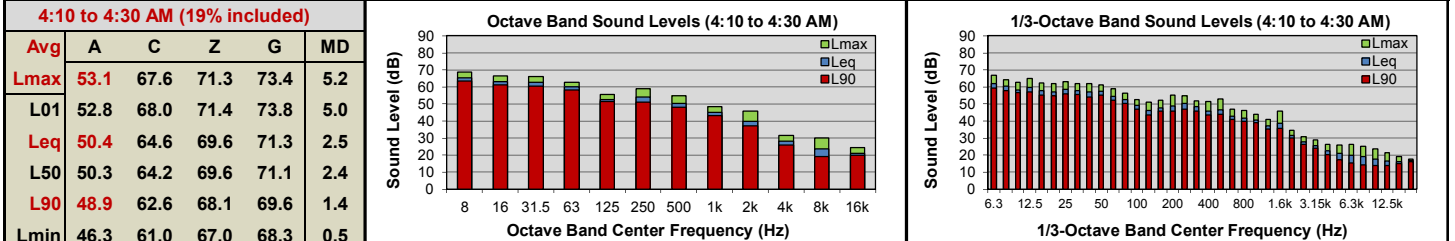
**Fast Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

4:10 to 4:15 AM (97% included)						4:15 to 4:20 AM (100% included)						4:20 to 4:25 AM (100% included)						4:25 to 4:30 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	56.6	69.7	74.1	74.3	7.7	Lmax	58.5	72.9	82.5	81.9	5.6	Lmax	62.5	69.7	73.6	75.7	7.8	Lmax	63.3	71.7	80.0	79.0	6.0
L01	55.9	68.6	73.7	74.0	5.6	L01	57.4	68.7	79.5	79.3	4.6	L01	58.5	68.7	72.4	74.3	5.8	L01	60.7	70.7	77.3	77.8	4.6
Leq	51.3	64.9	70.0	71.5	2.4	Leq	52.3	64.8	70.6	71.7	2.1	Leq	53.0	65.1	69.9	71.4	2.0	Leq	53.7	65.3	70.8	72.0	2.2
L50	50.8	64.7	69.9	71.5	2.2	L50	51.5	64.5	69.6	71.1	1.9	L50	52.3	64.8	69.6	71.2	1.8	L50	52.0	64.8	70.0	71.6	2.0
L90	48.9	62.6	68.3	69.6	1.3	L90	49.8	62.6	67.9	69.0	1.0	L90	50.2	62.8	67.9	69.0	1.0	L90	49.8	63.1	68.2	69.6	1.1
Lmin	46.3	60.7	65.9	66.5	0.4	Lmin	48.0	61.1	66.6	66.6	0.3	Lmin	47.8	60.9	66.4	66.9	0.3	Lmin	48.1	61.3	67.0	68.3	0.4



**Fast Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

4:10 to 4:15 AM (31% included)						4:15 to 4:20 AM (20% included)						4:20 to 4:25 AM (8% included)						4:25 to 4:30 AM (18% included)					
9.8 m/s	A	C	Z	G	MD	9.9 m/s	A	C	Z	G	MD	10.0 m/s	A	C	Z	G	MD	10.6 m/s	A	C	Z	G	MD
Lmax	52.9	69.5	71.7	74.0	5.3	Lmax	53.0	67.2	71.3	74.0	5.1	Lmax	54.2	67.6	71.2	72.6	5.8	Lmax	52.3	66.0	70.9	73.2	4.7
L01	52.1	68.5	71.5	73.8	5.3	L01	52.7	67.0	71.2	73.9	4.7	L01	53.8	67.4	71.2	72.5	5.8	L01	52.1	65.9	70.7	72.8	4.5
Leq	50.1	64.8	69.7	71.5	2.5	Leq	50.6	64.8	69.7	71.5	2.6	Leq	51.4	64.5	69.8	70.7	2.5	Leq	50.3	63.9	69.0	70.8	2.4
L50	50.0	64.5	69.8	71.3	2.4	L50	50.4	64.5	69.7	71.3	2.4	L50	51.1	64.1	69.6	70.6	2.5	L50	50.1	63.9	68.8	70.7	2.4
L90	48.3	62.6	68.2	69.7	1.4	L90	49.1	63.3	68.4	69.8	1.5	L90	50.0	62.6	68.5	69.9	1.4	L90	49.0	62.2	67.7	69.2	1.3
Lmin	46.3	61.0	67.3	68.3	0.5	Lmin	48.0	61.4	67.6	69.1	0.7	Lmin	49.4	61.7	68.1	69.6	0.9	Lmin	48.1	61.5	67.0	68.6	0.6

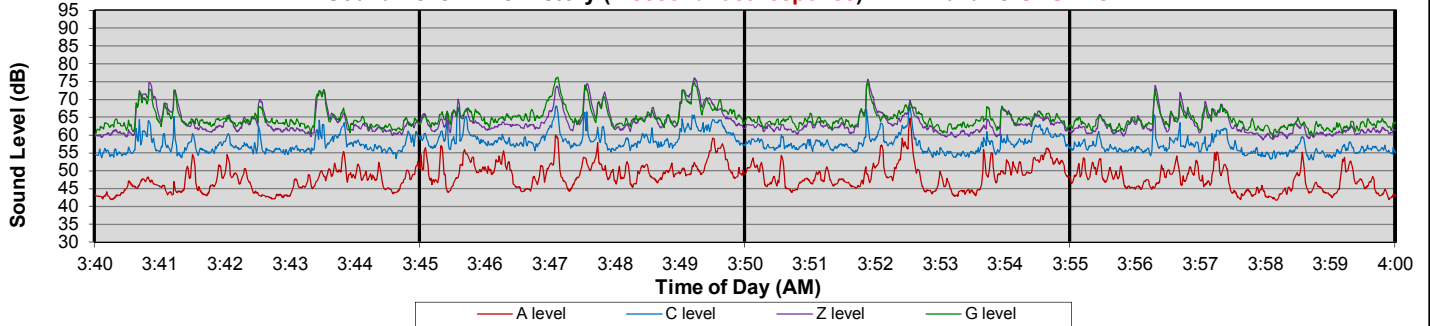


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-157: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 3: **11 Leland Rd. on 3/15/2014 from 3:40 to 4:00 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1025 ft</b>	Time: <b>3:40 to 3:50 AM</b>	Calibrated Wind Speed: <b>10.7 m/s</b>	Wind Direction: <b>182°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>41 °F</b>
Wind Speed Range: <b>0-4 m/s</b>	Time: <b>3:50 to 4:00 AM</b>	Calibrated Wind Speed: <b>11.0 m/s</b>	Wind Direction: <b>182°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>41 °F</b>

**Sound Level Time History (1-second fast response) - KWI Turbine SHUTDOWN**



**Event Log**

Traffic on Route 3 **throughout**  
Intermittent wind-generated noise **throughout**  
HMMH consultant makes noise from **3:40:00 to 3:40:06 (EXCLUDE)**  
Loud breaking branch noise from **3:44:09 to 3:44:12 (EXCLUDE)**  
Loud breaking branch noise from **3:57:51 to 3:57:54 (EXCLUDE)**

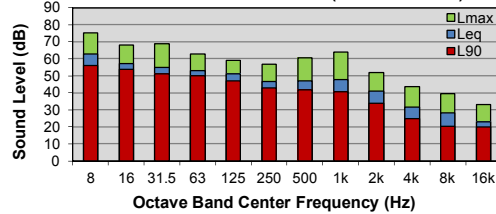
**Fast Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN**

3:40 to 3:45 AM (97% included)						3:45 to 3:50 AM (100% included)						3:50 to 3:55 AM (100% included)						3:55 to 4:00 AM (99% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	55.5	65.3	74.8	72.9	5.4	Lmax	59.8	68.2	76.1	76.1	6.9	Lmax	64.7	67.8	75.7	74.9	8.2	Lmax	55.2	65.7	73.9	72.9	6.0
L01	54.5	64.1	72.8	72.6	4.0	L01	59.1	66.6	74.7	75.3	5.3	L01	59.1	65.6	72.8	71.5	5.0	L01	54.9	62.0	71.8	69.5	4.3
Leq	47.6	57.7	65.4	65.5	1.2	Leq	51.5	60.3	66.9	67.4	1.5	Leq	51.1	58.6	64.2	65.0	1.4	Leq	48.2	57.0	63.5	64.0	1.3
L50	46.2	56.4	62.3	63.7	1.0	L50	49.8	58.6	63.9	65.4	1.2	L50	48.5	57.4	62.7	64.1	1.1	L50	46.6	56.1	61.5	63.1	1.1
L90	43.0	54.9	60.5	62.2	0.5	L90	45.9	56.8	61.9	63.3	0.6	L90	44.4	55.0	60.4	62.2	0.6	L90	43.2	54.5	60.0	61.4	0.6
Lmin	41.9	53.4	59.4	60.4	0.2	Lmin	44.0	55.3	60.5	61.9	0.3	Lmin	42.8	53.7	59.4	60.5	0.3	Lmin	41.7	53.0	58.7	59.4	0.2

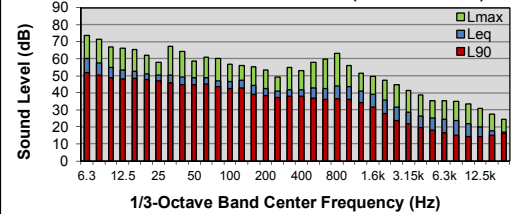
**3:40 to 4:00 AM (99% included)**

Avg	A	C	Z	G	MD
Lmax	58.8	66.8	75.1	74.2	6.6
L01	57.7	65.7	73.6	73.5	4.6
Leq	49.9	58.6	65.2	65.7	1.3
L50	47.8	57.1	62.7	64.1	1.1
L90	43.7	54.9	60.5	62.1	0.6
Lmin	41.7	53.0	58.7	59.4	0.2

**Octave Band Sound Levels (3:40 to 4:00 AM)**



**1/3-Octave Band Sound Levels (3:40 to 4:00 AM)**



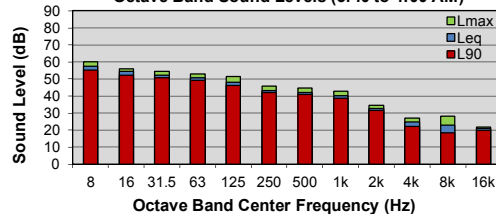
**Fast Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN**

3:40 to 3:45 AM (8% included)						3:45 to 3:50 AM (0% included)						3:50 to 3:55 AM (4% included)						3:55 to 4:00 AM (8% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	44.8	56.5	61.9	64.1	1.9	Lmax	-	-	-	-	-	Lmax	44.7	56.6	62.7	64.6	1.8	Lmax	43.6	56.5	61.6	64.1	2.1
L01	44.8	56.5	61.9	64.1	1.7	L01	-	-	-	-	-	L01	44.7	56.5	62.6	64.6	1.5	L01	43.6	56.5	61.6	64.1	2.1
Leq	43.3	55.5	61.0	62.9	1.0	Leq	-	-	-	-	-	Leq	43.9	55.2	61.2	63.3	0.9	Leq	42.6	55.1	60.5	62.1	0.8
L50	43.3	55.4	61.2	63.3	1.0	L50	-	-	-	-	-	L50	44.2	55.2	61.4	63.2	0.9	L50	42.5	55.1	60.5	61.9	0.8
L90	42.2	54.9	59.9	61.7	0.6	L90	-	-	-	-	-	L90	43.1	53.8	59.6	61.7	0.5	L90	41.8	53.5	59.3	60.5	0.5
Lmin	42.1	53.7	59.4	61.4	0.2	Lmin	-	-	-	-	-	Lmin	42.8	53.8	59.4	61.6	0.4	Lmin	41.7	53.2	58.8	59.4	0.3

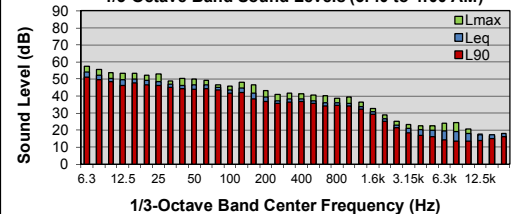
**3:40 to 4:00 AM (5% included)**

Avg	A	C	Z	G	MD
Lmax	44.4	56.5	62.0	64.3	1.9
L01	44.8	56.5	62.5	64.5	1.9
Leq	43.2	55.3	60.9	62.7	0.9
L50	43.1	55.3	60.9	62.5	0.9
L90	42.1	53.8	59.4	61.2	0.5
Lmin	41.7	53.2	58.8	59.4	0.2

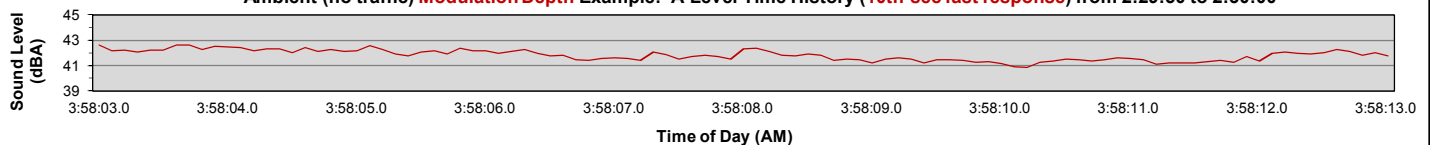
**Octave Band Sound Levels (3:40 to 4:00 AM)**



**1/3-Octave Band Sound Levels (3:40 to 4:00 AM)**



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:29:50 to 2:30:00**



# **Detailed Acoustical Monitoring Data**

## **38 Prospect Street**

### **April 7, 2014**

Slow-response data: Pages D-159 to D-164

Fast-response data: Pages D-165 to D-170

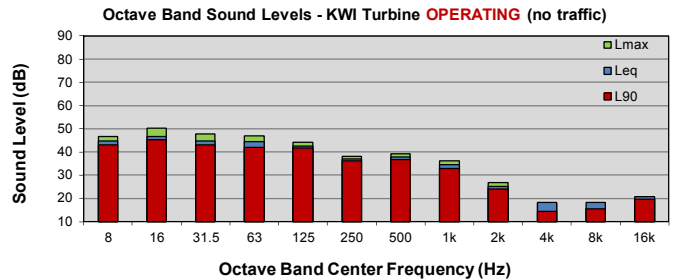
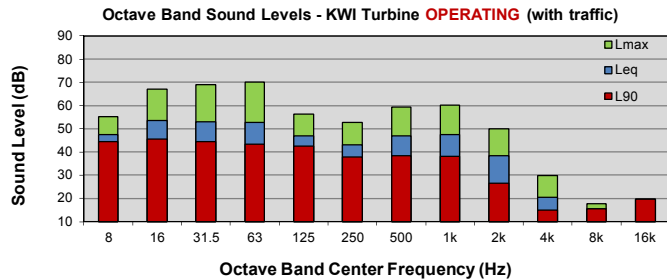
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-159: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 4: 38 Prospect St. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 5.1 m/s	Wind Direction: 257°	Average Power Level: 189 kW	Air Temperature: 52 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 4.5 m/s	Wind Direction: 269°	Average Power Level: 177 kW	Air Temperature: 53 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 4.5 m/s	Wind Direction: 280°	Average Power Level: 173 kW	Air Temperature: 53 °F

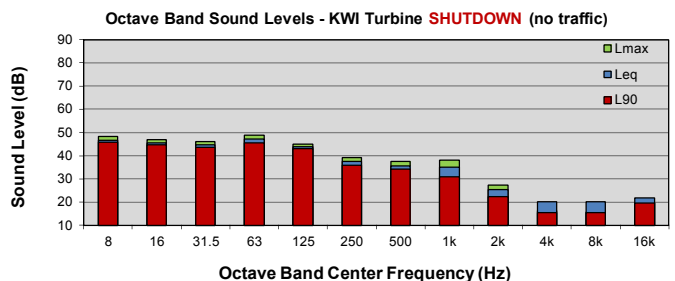
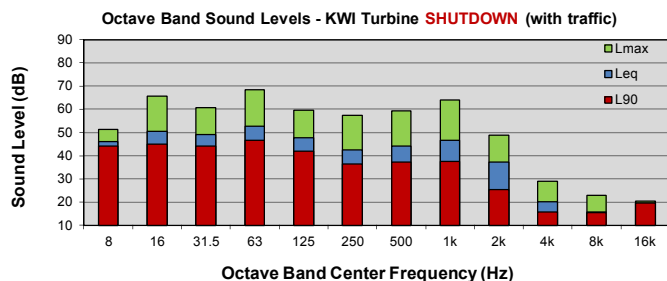
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:25 to 1:45 AM (100% included)						1:25 to 1:45 AM (3% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	59.1	66.7	68.8	73.0	7.3	Avg Lmax	38.9	49.0	52.6	56.2	3.1
L01	59.2	66.6	69.3	71.7	5.0	L01	39.8	50.3	53.7	57.8	3.9
Leq	49.7	56.7	59.3	62.2	1.7	Leq	38.6	48.8	52.2	54.9	1.6
L50	46.5	53.3	56.1	57.4	0.8	L50	38.6	48.4	52.2	54.5	1.5
L90	41.0	49.4	52.4	54.1	0.8	L90	37.6	47.6	51.3	53.4	0.8
Lmin	37.5	47.5	50.9	52.3	0.3	Lmin	37.5	47.5	50.9	52.6	0.3



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 6.9 m/s	Wind Direction: 263°	Average Power Level: 000 kW	Air Temperature: 52 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 6.7 m/s	Wind Direction: 264°	Average Power Level: 000 kW	Air Temperature: 52 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (100% included)						1:00 to 1:20 AM (2% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	59.1	64.1	65.0	64.9	8.2	Avg Lmax	38.9	50.7	53.7	55.0	4.0
L01	57.2	65.3	67.2	70.7	5.8	L01	40.5	51.0	53.8	55.2	5.6
Leq	48.4	55.6	57.6	59.0	1.8	Leq	38.3	49.9	53.0	54.0	1.9
L50	45.8	53.5	55.6	55.5	1.5	L50	37.2	50.2	53.1	53.9	1.6
L90	40.3	50.4	53.2	53.5	0.8	L90	35.8	48.7	52.0	53.2	0.9
Lmin	35.5	47.8	51.3	51.9	0.2	Lmin	35.5	48.6	51.9	52.9	0.6



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-160: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.0	1.9	10.7	13.3	18.8	23.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.0	-1.6	0.6	1.6	3.1	3.4
	L01	0.1	2.0	10.8	13.3	18.9	23.7		L01	0.9	-0.7	1.5	2.6	4.0	4.3
	Leq	-9.4	-7.5	1.3	3.9	9.4	14.3		Leq	-0.3	-1.9	0.3	1.3	2.8	3.1
	L50	-12.6	-10.7	-1.9	0.7	6.2	11.0		L50	-0.3	-1.9	0.3	1.4	2.8	3.1
	L90	-18.1	-16.2	-7.4	-4.8	0.7	5.5		L90	-1.3	-2.9	-0.7	0.3	1.8	2.1
	Lmin	-21.6	-19.7	-10.9	-8.3	-2.8	2.0		Lmin	-1.4	-3.0	-0.8	0.3	1.7	2.0
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p>								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p>							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p>								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p>							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-20.2	-18.4	-9.5	-7.0	-1.4	3.4								
	L01	-19.3	-17.4	-8.6	-6.0	-0.5	4.3								
	Leq	-20.5	-18.6	-9.8	-7.3	-1.7	3.1								
	L50	-20.5	-18.6	-9.8	-7.2	-1.7	3.1								
	L90	-21.5	-19.6	-10.8	-8.3	-2.7	2.1								
	Lmin	-21.6	-19.7	-10.9	-8.3	-2.8	2.0								
								Including traffic on Route 3:							
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
								Excluding traffic on Route 3:							
Leq Octave Band Check: KWI Turbine ONLY				NO KWI PURE TONE		Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check KWI Turbine ONLY				NO KWI PURE TONE		L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							



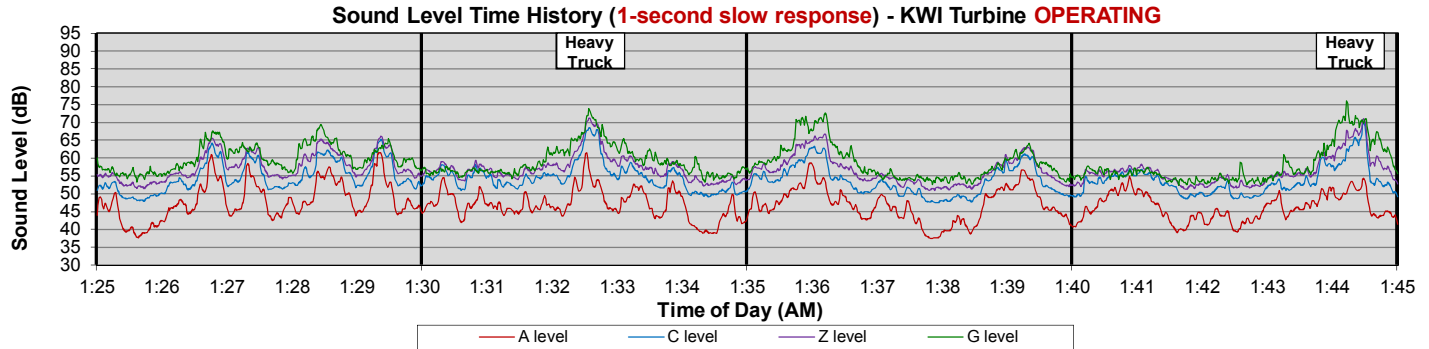
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-161: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.6	1.4	11.2	13.2	16.3	18.9	KWI Turbine OPERATING (with traffic)	Avg Lmax	3.8	1.6	11.2	13.2	15.6	17.5
	L01	2.5	1.3	11.0	13.1	16.2	18.8		L01	4.2	2.1	11.7	13.7	16.1	18.0
	Leq	-7.4	-8.6	1.2	3.2	6.3	8.9		Leq	-5.7	-7.9	1.7	3.7	6.1	8.0
	L50	-10.8	-12.0	-2.3	-0.2	2.9	5.5		L50	-9.0	-11.2	-1.5	0.5	2.9	4.8
	L90	-14.7	-15.9	-6.2	-4.1	-1.0	1.5		L90	-12.6	-14.8	-5.1	-3.2	-0.8	1.1
	Lmin	-16.6	-17.9	-8.1	-6.0	-3.0	-0.4		Lmin	-14.1	-16.3	-6.6	-4.7	-2.2	-0.3
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.7	-2.0	-0.9	-1.2	0.3	0.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.1	-1.2	-0.3	-0.5	0.6	0.7
	L01	-0.5	-0.7	0.4	0.1	1.5	1.7		L01	0.0	-0.1	0.7	0.6	1.7	1.8
	Leq	-1.9	-2.2	-1.1	-1.3	0.1	0.2		Leq	-1.5	-1.6	-0.8	-0.9	0.2	0.3
	L50	-2.3	-2.5	-1.5	-1.7	-0.3	-0.1		L50	-1.5	-1.6	-0.8	-0.9	0.2	0.3
	L90	-3.2	-3.4	-2.3	-2.6	-1.2	-1.0		L90	-2.5	-2.5	-1.7	-1.8	-0.7	-0.6
	Lmin	-3.3	-3.5	-2.5	-2.7	-1.3	-1.1		Lmin	-2.8	-2.9	-2.0	-2.2	-1.1	-1.0
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-15.1	-16.3	-6.6	-4.5	-1.4	1.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	-12.4	-14.6	-4.9	-3.0	-0.5	1.3
	L01	-13.8	-15.0	-5.3	-3.2	-0.1	2.4		L01	-11.3	-13.5	-3.9	-1.9	0.5	2.4
	Leq	-15.3	-16.5	-6.7	-4.6	-1.6	1.0		Leq	-12.8	-15.0	-5.4	-3.4	-1.0	0.9
	L50	-15.6	-16.9	-7.1	-5.0	-2.0	0.6		L50	-12.8	-15.0	-5.4	-3.4	-1.0	0.9
	L90	-16.5	-17.7	-8.0	-5.9	-2.8	-0.3		L90	-13.8	-16.0	-6.3	-4.3	-1.9	0.0
	Lmin	-16.6	-17.9	-8.1	-6.0	-3.0	-0.4		Lmin	-14.1	-16.3	-6.6	-4.7	-2.2	-0.3

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-162: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	8.1	2.2	14.0	17.5	19.5	21.0	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.9	1.5	5.5	5.8	6.5	7.1
	L01	6.9	1.0	12.8	16.3	18.3	19.8		L01	-3.3	-0.8	3.2	3.4	4.2	4.8
	Leq	-2.7	-8.5	3.2	6.7	8.7	10.3		Leq	-6.6	-4.1	-0.1	0.1	0.9	1.5
	L50	-7.5	-13.3	-1.6	1.9	3.9	5.5		L50	-7.4	-5.0	-1.0	-0.7	0.0	0.6
	L90	-10.8	-16.6	-4.8	-1.4	0.7	2.2		L90	-7.5	-5.0	-1.0	-0.8	-0.1	0.5
	Lmin	-12.6	-18.4	-6.6	-3.2	-1.1	0.4		Lmin	-8.0	-5.5	-1.5	-1.3	-0.5	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	1.2	1.0	2.2	2.3	3.0	3.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.9	-2.5	1.2	1.5	2.3	2.5
	L01	2.8	2.6	3.8	3.9	4.6	4.9		L01	-0.1	-1.7	2.0	2.3	3.1	3.4
	Leq	-0.2	-0.4	0.8	0.9	1.6	1.9		Leq	-2.4	-4.0	-0.3	0.0	0.8	1.0
	L50	-0.5	-0.7	0.5	0.6	1.3	1.6		L50	-2.5	-4.1	-0.4	-0.1	0.6	0.9
	L90	-1.6	-1.8	-0.6	-0.5	0.2	0.5		L90	-3.2	-4.8	-1.1	-0.8	0.0	0.2
	Lmin	-2.5	-2.7	-1.4	-1.4	-0.6	-0.4		Lmin	-3.7	-5.3	-1.6	-1.3	-0.5	-0.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.7	-14.5	-2.7	0.8	2.8	4.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.1	-2.7	1.3	1.6	2.3	2.9
	L01	-7.1	-12.9	-1.1	2.3	4.4	5.9		L01	-4.3	-1.9	2.1	2.4	3.1	3.7
	Leq	-10.0	-15.9	-4.1	-0.6	1.4	2.9		Leq	-6.6	-4.2	-0.2	0.1	0.8	1.4
	L50	-10.4	-16.2	-4.4	-1.0	1.0	2.6		L50	-6.7	-4.3	-0.3	0.0	0.7	1.3
	L90	-11.4	-17.3	-5.5	-2.0	0.0	1.5		L90	-7.4	-5.0	-1.0	-0.7	0.0	0.6
	Lmin	-12.3	-18.1	-6.4	-2.9	-0.9	0.7		Lmin	-7.9	-5.5	-1.5	-1.2	-0.5	0.1

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-163: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 4/7/2014 from 1:25 to 1:45 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>5.1 m/s</b>	Wind Direction: <b>257°</b>	Avg Power Level: <b>189 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>4.5 m/s</b>	Wind Direction: <b>269°</b>	Avg Power Level: <b>177 kW</b>	Air Temperature: <b>53 °F</b>
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>4.5 m/s</b>	Wind Direction: <b>280°</b>	Avg Power Level: <b>173 kW</b>	Air Temperature: <b>53 °F</b>

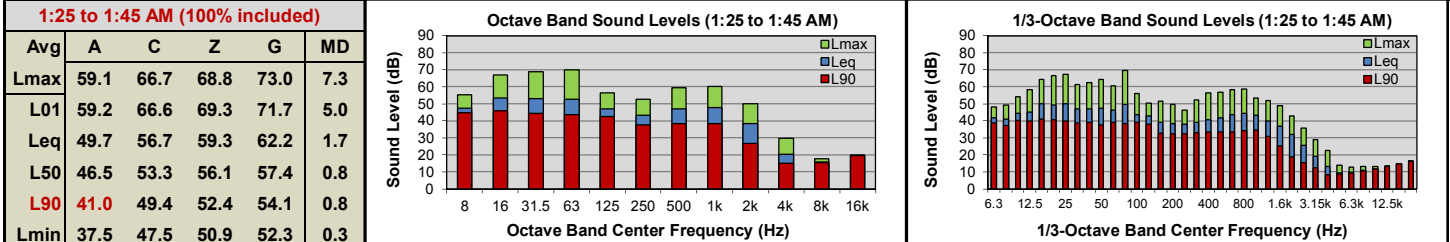


**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**

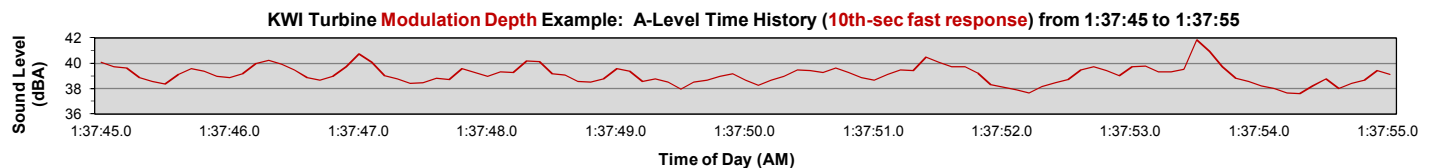
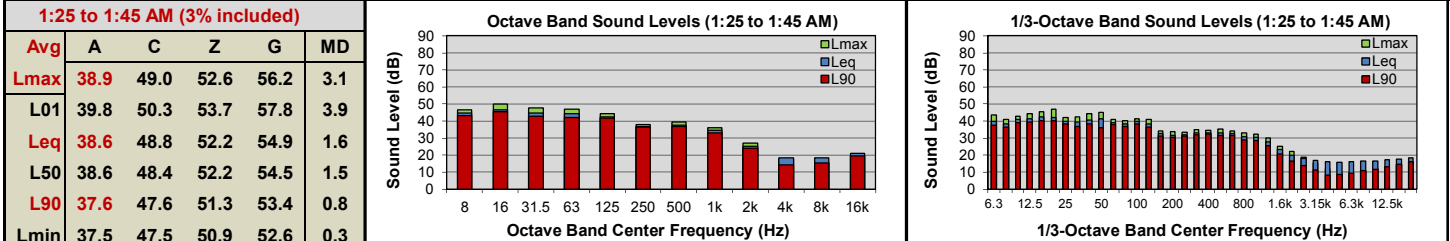
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (100% included)						1:30 to 1:35 AM (100% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	61.5	65.3	66.1	69.5	8.0	Lmax	61.4	68.4	71.3	73.8	9.3	Lmax	58.6	63.3	66.7	72.6	5.9	Lmax	54.8	69.9	71.0	76.0	6.2
L01	60.9	64.5	65.6	68.5	5.3	L01	59.3	67.9	70.3	72.0	5.3	L01	58.2	62.8	66.0	71.7	4.2	L01	54.0	66.6	68.4	71.9	4.8
Leq	51.5	57.0	59.4	61.7	1.9	Leq	49.3	57.5	59.9	62.0	1.7	Leq	49.5	55.6	58.6	62.4	1.6	Leq	47.8	56.6	59.1	62.7	1.5
L50	46.9	53.4	56.3	59.4	1.7	L50	46.6	54.5	56.8	57.4	1.4	L50	46.6	53.2	55.7	57.3	1.4	L50	45.6	52.8	55.5	55.8	1.3
L90	41.0	49.5	53.2	55.6	0.9	L90	42.0	50.3	53.4	55.1	0.8	L90	39.8	48.5	51.9	53.9	0.8	L90	41.2	49.3	52.1	53.4	0.7
Lmin	37.6	47.9	51.4	53.3	0.3	Lmin	38.8	49.1	52.2	53.2	0.3	Lmin	37.5	47.5	50.9	52.6	0.3	Lmin	39.2	48.6	51.2	52.3	0.3



**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (2% included)						1:30 to 1:35 AM (6% included)						1:35 to 1:40 AM (4% included)						1:40 to 1:45 AM (0% included)					
4.6 m/s	A	C	Z	G	MD	4.8 m/s	A	C	Z	G	MD	4.7 m/s	A	C	Z	G	MD		A	C	Z	G	MD
Lmax	38.7	48.5	52.2	55.6	2.8	Lmax	39.8	50.4	53.8	58.5	2.4	Lmax	38.1	48.0	51.9	54.6	4.3	Lmax	-	-	-	-	-
L01	38.7	48.5	52.2	55.6	2.7	L01	39.8	50.3	53.8	58.2	2.4	L01	38.1	48.0	51.9	54.6	4.3	L01	-	-	-	-	-
Leq	38.2	48.3	51.9	54.9	1.8	Leq	39.2	49.7	52.8	55.4	1.1	Leq	37.7	47.7	51.4	53.9	2.2	Leq	-	-	-	-	-
L50	38.2	48.2	51.9	55.0	1.7	L50	39.1	49.8	52.7	55.0	1.0	L50	37.7	47.7	51.4	53.9	2.0	L50	-	-	-	-	-
L90	37.7	48.1	51.6	54.0	1.2	L90	38.9	49.3	52.4	53.8	0.7	L90	37.5	47.5	51.0	53.2	1.3	L90	-	-	-	-	-
Lmin	37.6	48.0	51.4	53.3	0.8	Lmin	38.8	49.1	52.2	53.2	0.3	Lmin	37.5	47.5	50.9	52.6	1.0	Lmin	-	-	-	-	-

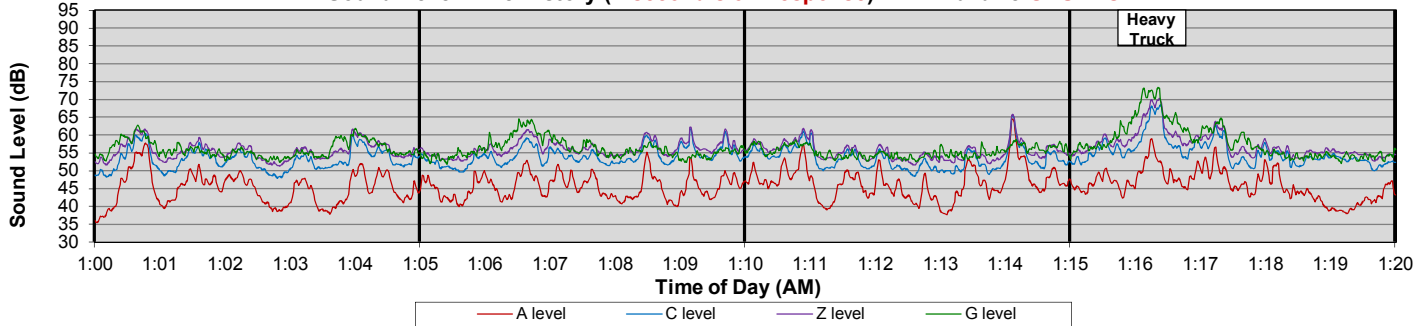


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-164: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 4/7/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>6.9 m/s</b>	Wind Direction: <b>263°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>6.7 m/s</b>	Wind Direction: <b>264°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine SHUTDOWN**



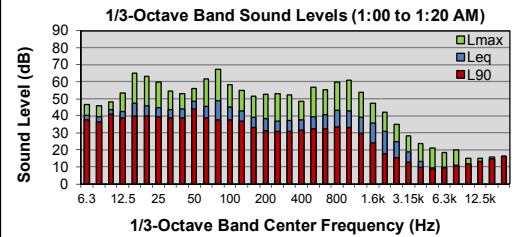
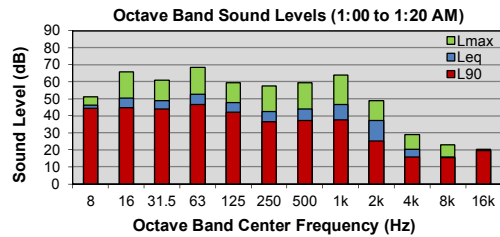
**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**

**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (100% included)						1:05 to 1:10 AM (100% included)						1:10 to 1:15 AM (100% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	57.7	60.5	61.8	62.8	8.2	Lmax	55.2	61.7	62.3	64.6	9.1	Lmax	64.6	65.6	65.8	58.8	8.6	Lmax	58.9	68.5	70.2	73.4	7.1
L01	56.8	60.0	61.5	62.0	5.1	L01	53.7	60.8	61.7	63.8	6.2	L01	61.9	63.2	63.6	58.5	5.7	L01	56.7	67.9	69.7	72.8	5.8
Leq	47.6	54.1	56.3	56.8	1.7	Leq	46.8	54.8	56.8	57.2	1.8	Leq	50.2	54.7	56.3	55.6	1.9	Leq	48.4	57.7	59.8	62.5	1.8
L50	45.4	52.6	55.3	55.4	1.5	L50	45.2	53.6	55.9	55.5	1.6	L50	46.3	52.7	54.9	55.1	1.6	L50	45.9	54.0	56.3	56.5	1.4
L90	39.1	49.3	52.6	53.5	0.8	L90	41.6	51.4	53.9	53.5	0.9	L90	40.8	50.0	52.8	53.4	0.9	L90	40.3	51.6	54.0	53.5	0.8
Lmin	35.5	47.8	51.3	52.3	0.3	Lmin	39.9	49.6	52.6	51.9	0.2	Lmin	37.7	48.5	51.6	52.5	0.3	Lmin	38.0	50.0	52.7	51.9	0.4

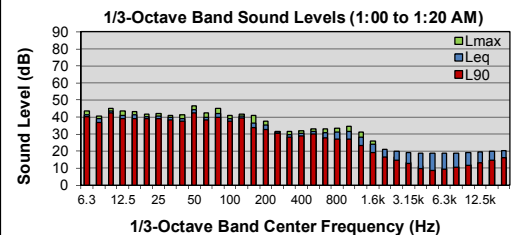
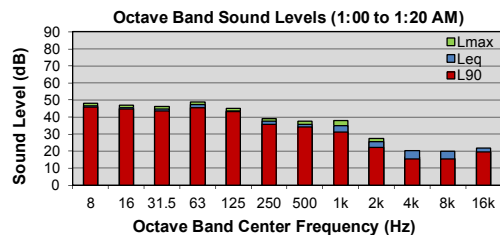
1:00 to 1:20 AM (100% included)					
Avg	A	C	Z	G	MD
Lmax	59.1	64.1	65.0	64.9	8.2
L01	57.2	65.3	67.2	70.7	5.8
Leq	48.4	55.6	57.6	59.0	1.8
L50	45.8	53.5	55.6	55.5	1.5
L90	40.3	50.4	53.2	53.5	0.8
Lmin	35.5	47.8	51.3	51.9	0.2



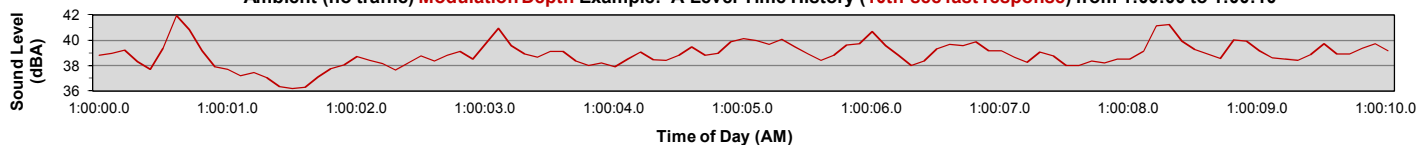
**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (3% included)						1:05 to 1:10 AM (0% included)						1:10 to 1:15 AM (3% included)						1:15 to 1:20 AM (0% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	37.2	50.5	53.8	54.7	5.8	Lmax	-	-	-	-	-	Lmax	40.5	51.0	53.7	55.4	2.2	Lmax	-	-	-	-	-
L01	37.2	50.4	53.8	54.7	5.8	L01	-	-	-	-	-	L01	40.5	51.0	53.7	55.3	2.2	L01	-	-	-	-	-
Leq	36.6	49.3	52.6	54.1	2.5	Leq	-	-	-	-	-	Leq	39.7	50.6	53.4	54.0	1.2	Leq	-	-	-	-	-
L50	36.9	48.8	52.3	54.0	2.5	L50	-	-	-	-	-	L50	39.5	50.6	53.3	53.8	1.2	L50	-	-	-	-	-
L90	35.6	48.7	52.0	53.4	1.3	L90	-	-	-	-	-	L90	39.2	50.2	53.1	53.2	0.7	L90	-	-	-	-	-
Lmin	35.5	48.6	51.9	52.9	1.1	Lmin	-	-	-	-	-	Lmin	39.1	50.0	53.1	53.1	0.6	Lmin	-	-	-	-	-

1:00 to 1:20 AM (2% included)					
Avg	A	C	Z	G	MD
Lmax	38.9	50.7	53.7	55.0	4.0
L01	40.5	51.0	53.8	55.2	5.6
Leq	38.3	49.9	53.0	54.0	1.9
L50	37.2	50.2	53.1	53.9	1.6
L90	35.8	48.7	52.0	53.2	0.9
Lmin	35.5	48.6	51.9	52.9	0.6



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:00:00 to 1:00:10**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-165: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 4: 38 Prospect St. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 5.1 m/s	Wind Direction: 257°	Average Power Level: 189 kW	Air Temperature: 52 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 4.5 m/s	Wind Direction: 269°	Average Power Level: 177 kW	Air Temperature: 53 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 4.5 m/s	Wind Direction: 280°	Average Power Level: 173 kW	Air Temperature: 53 °F

**20-minute Acoustical Metrics (including traffic on Route 3)**

**20-minute Acoustical Metrics (excluding traffic on Route 3)**

**KWI Turbine OPERATING (wind turbine plus traffic)**

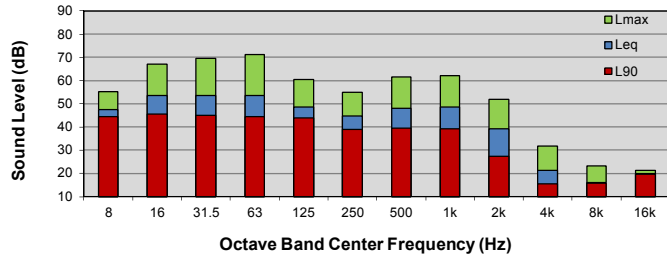
**KWI Turbine OPERATING (wind turbine only)**

**1:25 to 1:45 AM (100% included)**

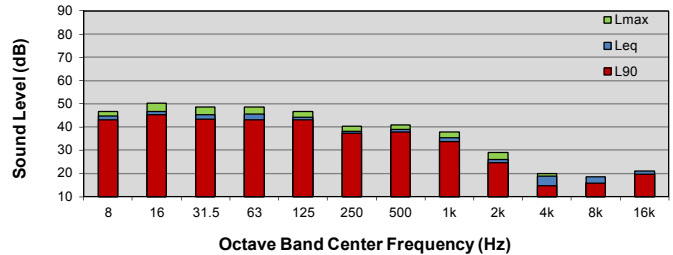
**1:25 to 1:45 AM (3% included)**

FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	61.0	68.0	69.7	73.2	7.3	Avg Lmax	40.1	50.3	53.2	56.3	3.1
L01	60.8	67.3	69.6	71.8	5.0	L01	41.3	51.8	54.4	57.9	3.9
Leq	50.8	57.6	59.9	62.3	1.7	Leq	39.7	49.9	52.8	54.9	1.6
L50	47.5	54.4	56.8	57.4	0.8	L50	39.7	49.6	52.6	54.6	1.5
L90	42.0	50.4	53.0	54.2	0.8	L90	38.7	48.5	51.9	53.5	0.8
Lmin	38.4	48.2	51.4	52.4	0.3	Lmin	38.4	48.2	51.4	52.6	0.3

**Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)**



**Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)**



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 6.9 m/s	Wind Direction: 263°	Average Power Level: 000 kW	Air Temperature: 52 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 6.7 m/s	Wind Direction: 264°	Average Power Level: 000 kW	Air Temperature: 52 °F

**20-minute Acoustical Metrics (including traffic on Route 3)**

**20-minute Acoustical Metrics (excluding traffic on Route 3)**

**KWI Turbine SHUTDOWN (ambient - with traffic)**

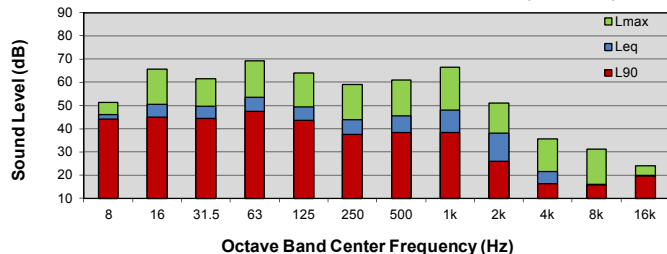
**KWI Turbine SHUTDOWN (ambient - no traffic)**

**1:00 to 1:20 AM (100% included)**

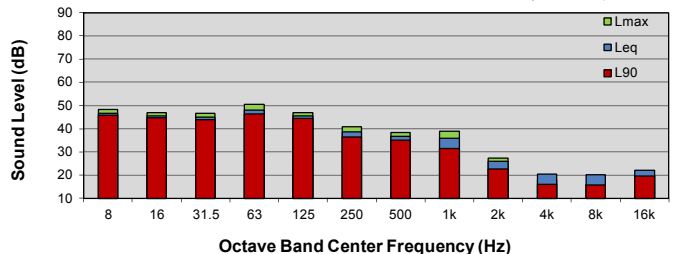
**1:00 to 1:20 AM (2% included)**

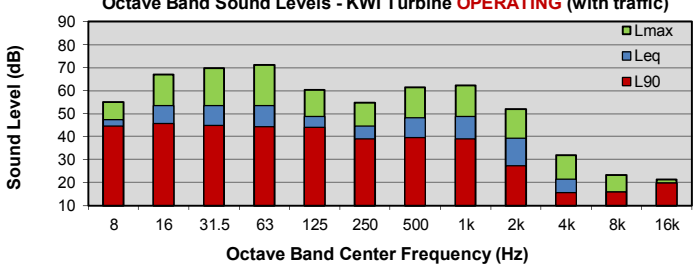
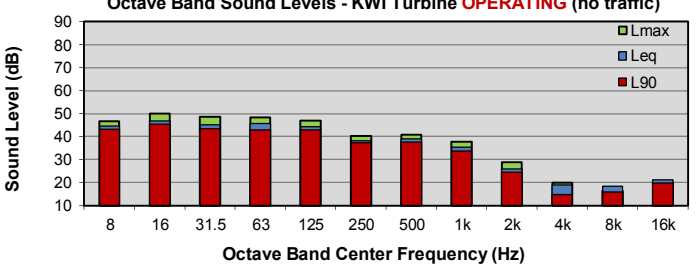
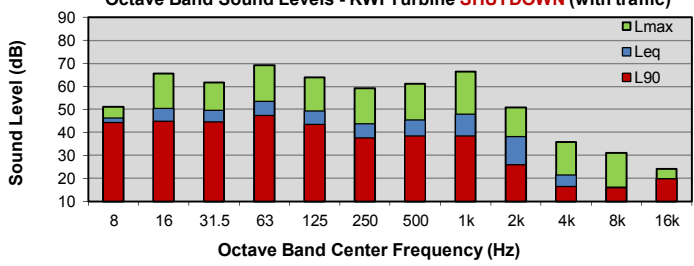
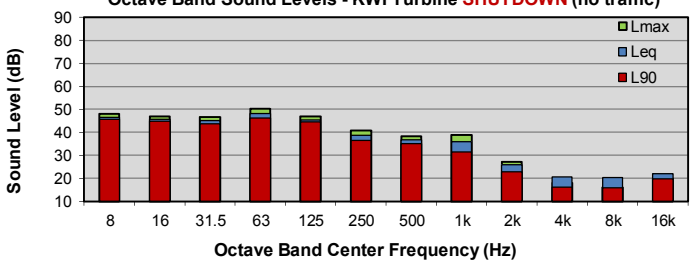
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	61.6	66.3	67.0	65.0	8.2	Avg Lmax	40.0	52.1	54.6	55.1	4.0
L01	58.6	66.6	68.0	70.8	5.8	L01	41.2	52.2	54.7	55.3	5.6
Leq	49.6	56.5	58.3	59.0	1.8	Leq	39.3	50.9	53.6	54.1	1.9
L50	46.6	54.3	56.3	55.6	1.5	L50	38.7	50.9	53.6	54.0	1.6
L90	41.2	51.3	53.8	53.5	0.8	L90	36.8	49.7	52.7	53.3	0.9
Lmin	36.2	48.9	51.9	52.0	0.2	Lmin	36.2	49.5	52.6	53.1	0.6

**Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)**



**Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)**



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-166: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.6	2.4	11.3	14.4	19.8	24.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	0.1	-1.0	0.9	1.4	3.4	3.9
	L01	-0.8	2.2	11.1	14.2	19.6	24.5		L01	1.3	0.1	2.0	2.6	4.5	5.1
	Leq	-10.8	-7.8	1.2	4.3	9.6	14.6		Leq	-0.4	-1.5	0.4	1.0	2.9	3.5
	L50	-14.1	-11.1	-2.1	0.9	6.3	11.2		L50	-0.3	-1.4	0.5	1.0	3.0	3.5
	L90	-19.6	-16.6	-7.6	-4.6	0.8	5.8		L90	-1.4	-2.5	-0.6	-0.1	1.9	2.4
	Lmin	-23.2	-20.2	-11.2	-8.1	-2.8	2.2		Lmin	-1.6	-2.7	-0.8	-0.3	1.7	2.2
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-21.4	-18.5	-9.5	-6.4	-1.1	3.9								
	L01	-20.3	-17.3	-8.3	-5.3	0.1	5.1								
	Leq	-21.9	-18.9	-9.9	-6.9	-1.5	3.5								
	L50	-21.9	-18.9	-9.9	-6.8	-1.5	3.5								
	L90	-22.9	-19.9	-11.0	-7.9	-2.6	2.4								
	Lmin	-23.2	-20.2	-11.2	-8.1	-2.8	2.2								
								Including traffic on Route 3:							
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
								Excluding traffic on Route 3:							
Leq Octave Band Check: KWI Turbine ONLY				NO KWI PURE TONE		Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check KWI Turbine ONLY				NO KWI PURE TONE		L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-167: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.7	1.4	11.4	13.6	16.7	19.1	KWI Turbine OPERATING (with traffic)	Avg Lmax	2.7	1.8	11.4	13.5	16.0	17.8
	L01	1.0	0.7	10.8	13.0	16.0	18.4		L01	2.5	1.6	11.3	13.3	15.8	17.6
	Leq	-8.6	-9.0	1.1	3.3	6.4	8.8		Leq	-7.1	-8.1	1.6	3.7	6.1	8.0
	L50	-11.9	-12.2	-2.2	0.0	3.1	5.5		L50	-10.3	-11.2	-1.5	0.5	3.0	4.8
	L90	-15.9	-16.2	-6.2	-3.9	-0.9	1.5		L90	-14.0	-15.0	-5.3	-3.3	-0.8	1.1
	Lmin	-18.1	-18.4	-8.4	-6.2	-3.1	-0.7		Lmin	-15.7	-16.6	-6.9	-4.9	-2.4	-0.6
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.8	-1.9	-0.6	-0.6	0.6	0.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.4	-1.5	-0.4	-0.4	0.5	0.6
	L01	-0.3	-0.4	0.9	0.9	2.1	2.3		L01	-0.2	-0.3	0.8	0.8	1.8	1.8
	Leq	-2.2	-2.3	-1.0	-1.0	0.2	0.4		Leq	-1.8	-1.9	-0.8	-0.8	0.1	0.2
	L50	-2.6	-2.6	-1.4	-1.4	-0.1	0.0		L50	-2.0	-2.1	-1.0	-1.0	0.0	0.0
	L90	-3.6	-3.7	-2.4	-2.4	-1.2	-1.0		L90	-2.7	-2.9	-1.7	-1.8	-0.8	-0.7
	Lmin	-3.9	-4.0	-2.7	-2.7	-1.5	-1.3		Lmin	-3.2	-3.4	-2.2	-2.3	-1.3	-1.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-15.9	-16.3	-6.2	-4.0	-1.0	1.5	KWI Turbine OPERATING (no traffic)	Avg Lmax	-13.8	-14.8	-5.1	-3.1	-0.6	1.3
	L01	-14.5	-14.8	-4.8	-2.6	0.5	2.9		L01	-12.6	-13.5	-3.9	-1.8	0.7	2.5
	Leq	-16.4	-16.7	-6.6	-4.4	-1.4	1.0		Leq	-14.2	-15.2	-5.5	-3.4	-1.0	0.9
	L50	-16.7	-17.0	-7.0	-4.8	-1.7	0.7		L50	-14.4	-15.3	-5.7	-3.6	-1.1	0.7
	L90	-17.8	-18.1	-8.1	-5.9	-2.8	-0.4		L90	-15.2	-16.1	-6.4	-4.4	-1.9	-0.1
	Lmin	-18.1	-18.4	-8.4	-6.2	-3.1	-0.7		Lmin	-15.7	-16.6	-6.9	-4.9	-2.4	-0.6

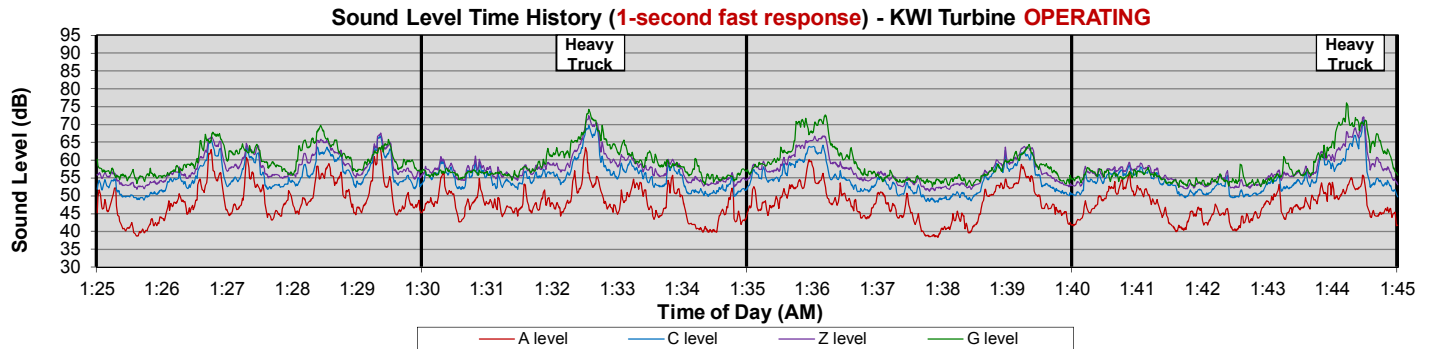


Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-168: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 4/7/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	8.2	2.4	14.1	17.6	19.6	21.2	KWI Turbine OPERATING (with traffic)	Avg Lmax	-0.9	1.5	5.5	5.8	6.5	7.1
	L01	6.8	1.0	12.7	16.2	18.2	19.7		L01	-3.3	-0.8	3.2	3.4	4.2	4.8
	Leq	-2.7	-8.5	3.3	6.7	8.8	10.3		Leq	-6.6	-4.1	-0.1	0.1	0.9	1.5
	L50	-7.5	-13.4	-1.6	1.8	3.9	5.4		L50	-7.4	-5.0	-1.0	-0.7	0.0	0.6
	L90	-10.8	-16.6	-4.8	-1.4	0.7	2.2		L90	-7.5	-5.0	-1.0	-0.8	-0.1	0.5
	Lmin	-12.6	-18.4	-6.6	-3.2	-1.1	0.4		Lmin	-8.0	-5.5	-1.5	-1.3	-0.5	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	1.2	1.0	2.2	2.3	3.0	3.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	-0.9	-2.5	1.2	1.5	2.3	2.5
	L01	2.7	2.5	3.8	3.9	4.6	4.8		L01	-0.1	-1.7	2.0	2.3	3.1	3.4
	Leq	-0.2	-0.4	0.8	0.9	1.6	1.8		Leq	-2.4	-4.0	-0.3	0.0	0.8	1.0
	L50	-0.6	-0.8	0.5	0.6	1.3	1.5		L50	-2.5	-4.1	-0.4	-0.1	0.6	0.9
	L90	-1.6	-1.8	-0.6	-0.5	0.2	0.4		L90	-3.2	-4.8	-1.1	-0.8	0.0	0.2
	Lmin	-2.5	-2.7	-1.5	-1.3	-0.6	-0.4		Lmin	-3.7	-5.3	-1.6	-1.3	-0.5	-0.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.7	-14.5	-2.7	0.7	2.8	4.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.1	-2.7	1.3	1.6	2.3	2.9
	L01	-7.1	-12.9	-1.2	2.3	4.3	5.8		L01	-4.3	-1.9	2.1	2.4	3.1	3.7
	Leq	-10.1	-15.9	-4.1	-0.7	1.3	2.9		Leq	-6.6	-4.2	-0.2	0.1	0.8	1.4
	L50	-10.4	-16.2	-4.5	-1.0	1.0	2.5		L50	-6.7	-4.3	-0.3	0.0	0.7	1.3
	L90	-11.5	-17.3	-5.5	-2.1	0.0	1.5		L90	-7.4	-5.0	-1.0	-0.7	0.0	0.6
	Lmin	-12.3	-18.2	-6.4	-3.0	-0.9	0.6		Lmin	-7.9	-5.5	-1.5	-1.2	-0.5	0.1

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-169: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 4/7/2014 from 1:25 to 1:45 AM with KWI Turbine OPERATING**

Site data	Supervisory Control and Data Acquisition (SCADA) data				
Distance from KWI: <b>1410 ft</b>	Time: <b>1:20 to 1:30 AM</b>	Calibrated Wind Speed: <b>5.1 m/s</b>	Wind Direction: <b>257°</b>	Avg Power Level: <b>189 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:30 to 1:40 AM</b>	Calibrated Wind Speed: <b>4.5 m/s</b>	Wind Direction: <b>269°</b>	Avg Power Level: <b>177 kW</b>	Air Temperature: <b>53 °F</b>
	Time: <b>1:40 to 1:50 AM</b>	Calibrated Wind Speed: <b>4.5 m/s</b>	Wind Direction: <b>280°</b>	Avg Power Level: <b>173 kW</b>	Air Temperature: <b>53 °F</b>

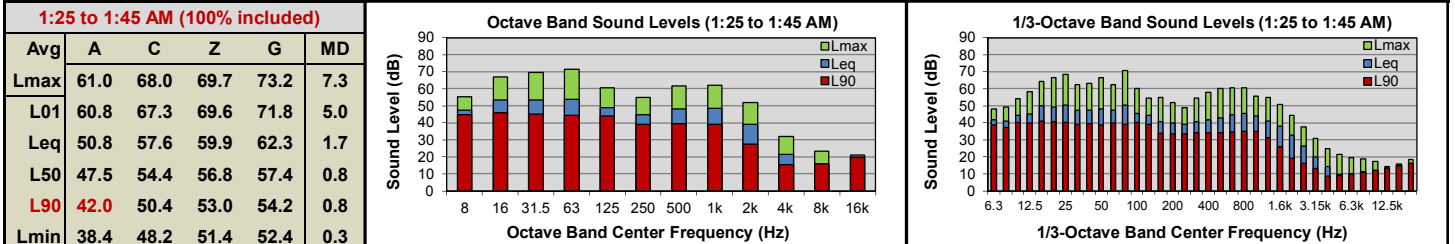


**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**

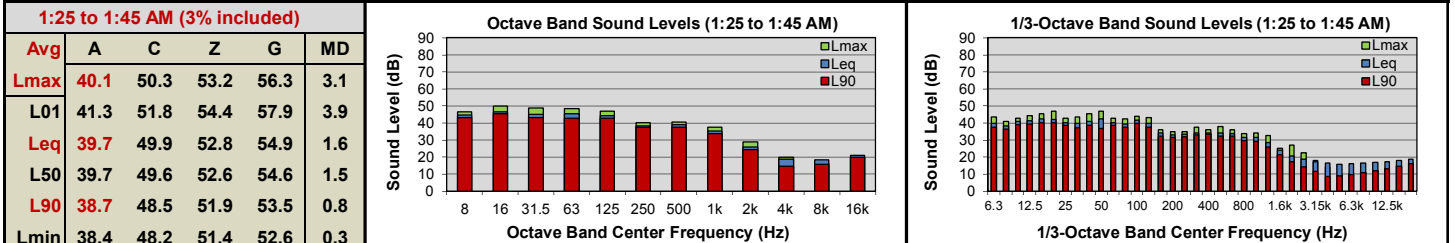
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (100% included)						1:30 to 1:35 AM (100% included)						1:35 to 1:40 AM (100% included)						1:40 to 1:45 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	63.5	66.8	67.5	69.8	8.0	Lmax	63.5	69.8	72.4	74.3	9.3	Lmax	60.1	64.1	66.8	72.6	5.9	Lmax	56.8	71.2	72.1	76.0	6.2
L01	62.9	66.1	66.7	68.5	5.3	L01	60.0	68.8	71.4	72.9	5.3	L01	59.4	63.7	66.5	71.7	4.2	L01	55.2	67.1	69.1	72.0	4.8
Leq	52.7	58.0	60.1	61.8	1.9	Leq	50.3	58.3	60.6	62.1	1.7	Leq	50.5	56.6	59.2	62.5	1.6	Leq	48.8	57.4	59.6	62.7	1.5
L50	48.0	54.4	56.9	59.4	1.7	L50	47.6	55.5	57.4	57.6	1.4	L50	47.6	54.1	56.4	57.4	1.4	L50	46.6	53.7	56.3	55.8	1.3
L90	42.2	50.6	53.6	55.7	0.9	L90	42.6	51.3	54.0	55.3	0.8	L90	40.9	49.7	52.5	53.9	0.8	L90	42.0	50.3	52.8	53.5	0.7
Lmin	38.7	48.8	51.9	53.3	0.3	Lmin	39.7	49.8	52.6	53.2	0.3	Lmin	38.4	48.2	51.4	52.6	0.3	Lmin	40.0	49.5	51.9	52.4	0.3

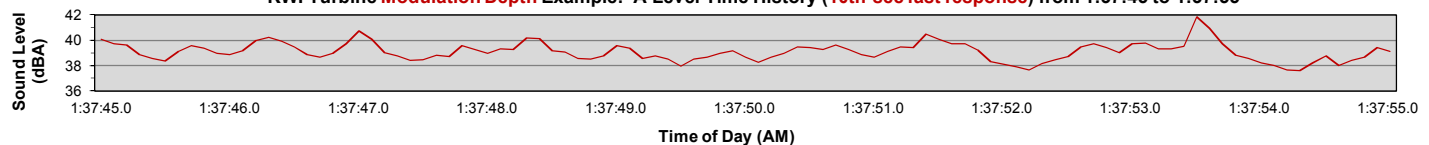


**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (2% included)						1:30 to 1:35 AM (6% included)						1:35 to 1:40 AM (4% included)						1:40 to 1:45 AM (0% included)					
4.6 m/s	A	C	Z	G	MD	4.8 m/s	A	C	Z	G	MD	4.7 m/s	A	C	Z	G	MD		A	C	Z	G	MD
Lmax	39.9	49.6	52.8	55.7	2.8	Lmax	41.4	52.0	54.5	58.5	2.4	Lmax	39.1	49.4	52.3	54.7	4.3	Lmax	-	-	-	-	-
L01	39.9	49.6	52.8	55.6	2.7	L01	41.4	51.9	54.4	58.2	2.4	L01	39.1	49.4	52.3	54.7	4.3	L01	-	-	-	-	-
Leq	39.4	49.3	52.5	54.9	1.8	Leq	40.4	50.8	53.5	55.5	1.1	Leq	38.8	48.7	52.0	54.0	2.2	Leq	-	-	-	-	-
L50	39.4	49.4	52.5	55.0	1.7	L50	40.4	50.7	53.3	55.0	1.0	L50	38.7	48.7	52.0	54.0	2.0	L50	-	-	-	-	-
L90	38.7	49.0	52.2	54.0	1.2	L90	39.8	50.2	52.9	53.8	0.7	L90	38.5	48.3	51.5	53.3	1.3	L90	-	-	-	-	-
Lmin	38.7	48.9	51.9	53.3	0.8	Lmin	39.7	49.8	52.6	53.2	0.3	Lmin	38.4	48.2	51.4	52.6	1.0	Lmin	-	-	-	-	-



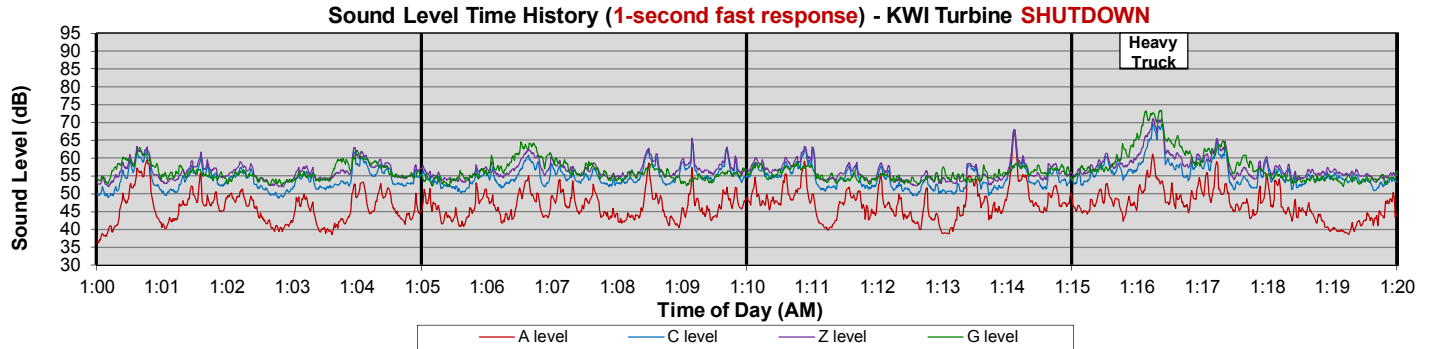
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:37:45 to 1:37:55**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-170: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 4/7/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>6.9 m/s</b>	Wind Direction: <b>263°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>
Wind Speed Range: <b>0-1 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>6.7 m/s</b>	Wind Direction: <b>264°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>52 °F</b>



**Event Log**

Traffic on Route 3 **throughout**  
Spring peeper noise **removed**

**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

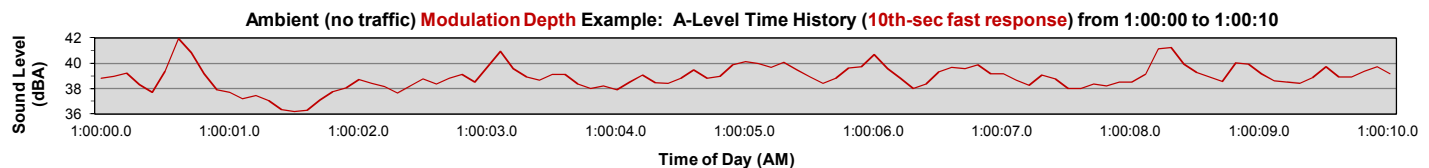
1:00 to 1:05 AM (100% included)						1:05 to 1:10 AM (100% included)						1:10 to 1:15 AM (100% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	59.6	62.3	63.3	63.0	8.2	Lmax	58.6	65.3	65.7	64.6	9.1	Lmax	67.0	67.8	68.0	58.9	8.6	Lmax	61.2	69.6	71.1	73.4	7.1
L01	58.4	61.6	62.9	62.0	5.1	L01	55.4	62.2	62.8	64.0	6.2	L01	62.3	63.6	63.9	58.6	5.7	L01	58.4	69.2	70.6	72.8	5.8
Leq	48.6	55.1	57.0	56.8	1.7	Leq	48.0	55.8	57.5	57.3	1.8	Leq	51.4	55.9	57.2	55.7	1.9	Leq	49.5	58.5	60.4	62.6	1.8
L50	45.7	53.5	55.9	55.5	1.5	L50	46.0	54.4	56.4	55.6	1.6	L50	47.2	53.7	55.5	55.2	1.6	L50	46.8	55.1	56.9	56.6	1.4
L90	40.2	50.3	53.3	53.6	0.8	L90	42.5	52.3	54.5	53.6	0.9	L90	41.6	50.8	53.4	53.5	0.9	L90	41.1	52.5	54.6	53.5	0.8
Lmin	36.2	48.9	51.9	52.3	0.3	Lmin	40.6	50.0	53.2	52.0	0.2	Lmin	38.7	49.5	52.2	52.6	0.3	Lmin	38.6	50.9	53.3	52.0	0.4

1:00 to 1:20 AM (100% included)						Octave Band Sound Levels (1:00 to 1:20 AM)												1/3-Octave Band Sound Levels (1:00 to 1:20 AM)											
Avg	A	C	Z	G	MD																								
Lmax	61.6	66.3	67.0	65.0	8.2																								
L01	58.6	66.6	68.0	70.8	5.8																								
Leq	49.6	56.5	58.3	59.0	1.8																								
L50	46.6	54.3	56.3	55.6	1.5																								
L90	41.2	51.3	53.8	53.5	0.8																								
Lmin	36.2	48.9	51.9	52.0	0.2																								

**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (3% included)						1:05 to 1:10 AM (0% included)						1:10 to 1:15 AM (3% included)						1:15 to 1:20 AM (0% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	38.8	52.0	54.8	54.8	5.8	Lmax	-	-	-	-	-	Lmax	41.2	52.2	54.4	55.4	2.2	Lmax	-	-	-	-	-
L01	38.8	51.9	54.7	54.8	5.8	L01	-	-	-	-	-	L01	41.2	52.2	54.4	55.4	2.2	L01	-	-	-	-	-
Leq	37.9	50.3	53.2	54.1	2.5	Leq	-	-	-	-	-	Leq	40.5	51.6	54.0	54.1	1.2	Leq	-	-	-	-	-
L50	38.1	50.1	52.8	54.0	2.5	L50	-	-	-	-	-	L50	40.5	51.6	54.0	53.9	1.2	L50	-	-	-	-	-
L90	36.5	49.6	52.6	53.5	1.3	L90	-	-	-	-	-	L90	40.1	51.0	53.6	53.3	0.7	L90	-	-	-	-	-
Lmin	36.2	49.5	52.6	53.1	1.1	Lmin	-	-	-	-	-	Lmin	39.8	50.8	53.6	53.3	0.6	Lmin	-	-	-	-	-

1:00 to 1:20 AM (2% included)						Octave Band Sound Levels (1:00 to 1:20 AM)												1/3-Octave Band Sound Levels (1:00 to 1:20 AM)											
Avg	A	C	Z	G	MD																								
Lmax	40.0	52.1	54.6	55.1	4.0																								
L01	41.2	52.2	54.7	55.3	5.6																								
Leq	39.3	50.9	53.6	54.1	1.9																								
L50	38.7	50.9	53.6	54.0	1.6																								
L90	36.8	49.7	52.7	53.3	0.9																								
Lmin	36.2	49.5	52.6	53.1	0.6																								



**Detailed Acoustical Monitoring Data**  
**38 Prospect Street**  
**March 22, 2014**

Slow-response data: Pages D-172 to D-177

Fast-response data: Pages D-178 to D-183

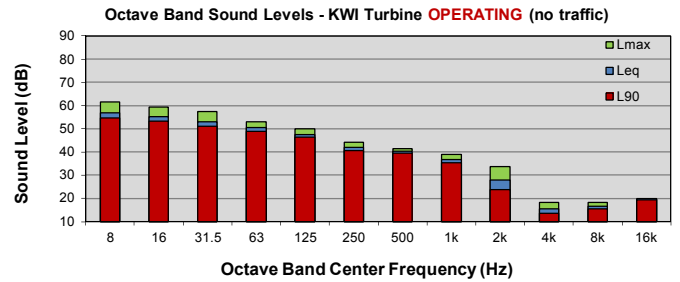
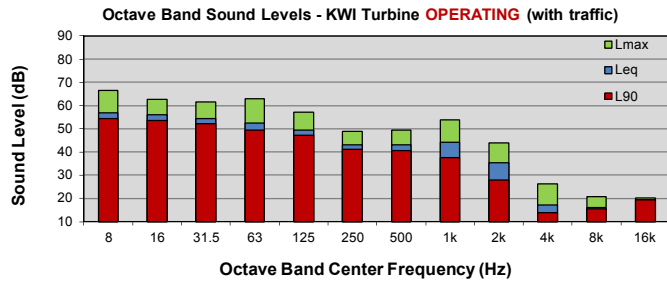
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-172: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 4: 38 Prospect St. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 7.6 m/s	Wind Direction: 230°	Average Power Level: 614 kW	Air Temperature: 32 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 228°	Average Power Level: 819 kW	Air Temperature: 32 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 229°	Average Power Level: 586 kW	Air Temperature: 32 °F

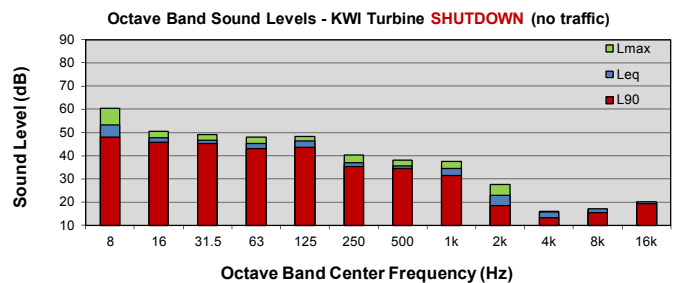
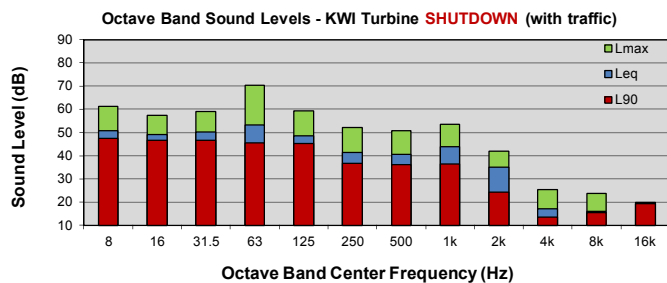
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:25 to 1:45 AM (94% included)						1:25 to 1:45 AM (10% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.9	61.4	66.3	68.0	5.1	Avg Lmax	42.1	56.4	62.8	65.9	3.1
L01	52.8	61.5	66.0	69.1	3.5	L01	42.3	56.3	63.0	66.5	2.8
Leq	46.3	56.6	61.7	63.8	1.4	Leq	41.2	54.8	60.9	63.2	1.6
L50	45.3	56.0	61.3	63.4	0.8	L50	41.2	54.8	60.9	62.7	1.6
L90	41.8	54.6	60.0	61.8	0.7	L90	40.3	53.5	59.6	61.3	0.9
Lmin	39.9	52.9	58.2	59.7	0.3	Lmin	39.9	52.9	58.2	59.7	0.5

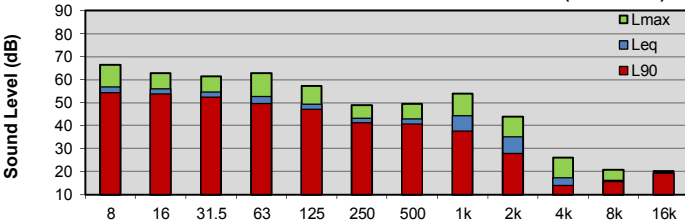
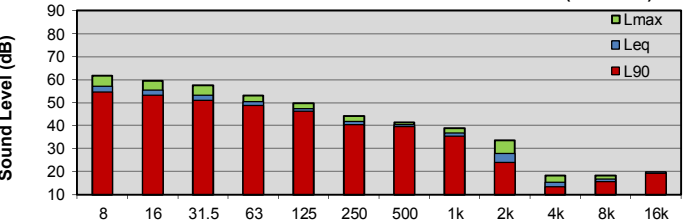
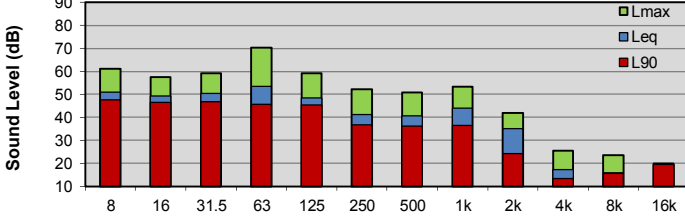
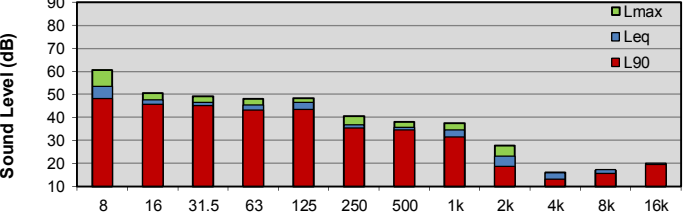


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 227°	Average Power Level: 000 kW	Air Temperature: 32 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 228°	Average Power Level: 000 kW	Air Temperature: 32 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (94% included)						1:00 to 1:20 AM (6% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	51.7	63.1	64.7	62.9	6.4	Avg Lmax	39.1	51.0	57.4	57.8	1.7
L01	52.5	65.9	66.9	63.1	4.2	L01	39.9	51.5	61.2	58.9	1.7
Leq	45.7	55.4	58.1	57.9	1.3	Leq	37.9	50.4	56.1	56.2	0.9
L50	44.8	53.6	56.8	57.1	1.1	L50	37.7	50.5	55.2	55.8	0.9
L90	39.5	50.8	54.7	55.1	0.6	L90	36.1	49.4	53.6	54.6	0.6
Lmin	35.9	48.5	52.6	53.3	0.2	Lmin	35.9	48.5	53.2	53.4	0.3



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-173: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.2	0.4	7.2	8.1	13.4	17.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.0	2.2	4.3	4.4	6.0	6.3
	L01	1.1	0.4	7.2	8.1	13.4	17.0		L01	3.2	2.4	4.5	4.6	6.2	6.5
	Leq	-5.4	-6.1	0.7	1.6	6.9	10.5		Leq	2.1	1.4	3.4	3.5	5.1	5.4
	L50	-6.4	-7.1	-0.3	0.6	5.9	9.5		L50	2.1	1.3	3.3	3.5	5.1	5.4
	L90	-9.9	-10.6	-3.8	-2.9	2.3	6.0		L90	1.2	0.5	2.5	2.6	4.2	4.5
	Lmin	-11.8	-12.6	-5.8	-4.9	0.4	4.1		Lmin	0.8	0.0	2.0	2.2	3.8	4.1
<div>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</div> 								<div>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</div> 							
<div>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</div> 								<div>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</div> 							
Operating - Shutdown Differences: Overall Comparison															
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Octave Band Sound Level Comparison: Pure-tone Check							
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-9.6	-10.4	-3.6	-2.6	2.6	6.3	<div>Including traffic on Route 3:</div> <div>L90 Octave Band Check: KWI Turbine OPERATING</div> <div>L90 Pure-tone? NO</div> <div>NO KWI PURE TONE</div> <div>L90 Octave Band Check KWI Turbine SHUTDOWN</div> <div>L90 Pure-tone? NO</div> <div>Excluding traffic on Route 3:</div> <div>Leq Octave Band Check: KWI Turbine ONLY</div> <div>Leq Pure-tone? NO</div> <div>NO KWI PURE TONE</div> <div>Leq Octave Band Check Ambient (no traffic)</div> <div>Leq Pure-tone? NO</div> <div>L90 Octave Band Check KWI Turbine ONLY</div> <div>L90 Pure-tone? NO</div> <div>NO KWI PURE TONE</div> <div>L90 Octave Band Check Ambient (no traffic)</div> <div>L90 Pure-tone? NO</div>							
	L01	-9.4	-10.2	-3.3	-2.4	2.8	6.5								
	Leq	-10.5	-11.2	-4.4	-3.5	1.8	5.4								
	L50	-10.5	-11.3	-4.5	-3.6	1.7	5.4								
	L90	-11.4	-12.2	-5.3	-4.4	0.8	4.5								
	Lmin	-11.8	-12.6	-5.8	-4.9	0.4	4.1								

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-174: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.7	-4.5	6.0	7.8	10.6	12.9	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.6	-0.6	8.2	9.4	11.6	13.7
	L01	-1.6	-4.4	6.1	7.9	10.7	13.0		L01	1.3	-0.9	7.9	9.1	11.3	13.4
	Leq	-6.5	-9.3	1.2	3.0	5.8	8.1		Leq	-3.0	-5.2	3.6	4.9	7.0	9.1
	L50	-7.1	-9.9	0.6	2.4	5.2	7.5		L50	-3.4	-5.6	3.2	4.5	6.7	8.7
	L90	-8.5	-11.3	-0.9	1.0	3.8	6.1		L90	-4.7	-6.9	1.9	3.2	5.3	7.4
	Lmin	-10.2	-13.0	-2.6	-0.8	2.1	4.4		Lmin	-6.4	-8.7	0.1	1.4	3.6	5.7
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	5.5	4.9	6.0	5.9	7.0	7.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	5.4	1.6	6.7	7.6	9.3	9.7
	L01	5.3	4.8	5.9	5.8	6.9	7.8		L01	5.5	1.8	6.9	7.8	9.4	9.8
	Leq	3.9	3.3	4.4	4.3	5.4	6.3		Leq	3.5	-0.3	4.8	5.7	7.4	7.8
	L50	3.9	3.3	4.4	4.3	5.5	6.3		L50	3.4	-0.3	4.8	5.7	7.3	7.7
	L90	2.5	1.9	3.0	3.0	4.1	5.0		L90	2.2	-1.6	3.5	4.4	6.0	6.4
	Lmin	1.9	1.3	2.4	2.4	3.5	4.4		Lmin	0.8	-3.0	2.1	3.0	4.7	5.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.7	-9.5	1.0	2.8	5.6	7.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.8	-4.1	4.7	6.0	8.2	10.2
	L01	-6.8	-9.6	0.9	2.7	5.5	7.8		L01	-1.7	-3.9	4.8	6.1	8.3	10.4
	Leq	-8.3	-11.1	-0.6	1.2	4.0	6.3		Leq	-3.8	-6.0	2.8	4.1	6.3	8.3
	L50	-8.3	-11.1	-0.6	1.2	4.1	6.3		L50	-3.8	-6.1	2.7	4.0	6.2	8.3
	L90	-9.6	-12.4	-2.0	-0.1	2.7	5.0		L90	-5.1	-7.3	1.5	2.8	4.9	7.0
	Lmin	-10.2	-13.0	-2.6	-0.8	2.1	4.4		Lmin	-6.4	-8.7	0.1	1.4	3.6	5.7



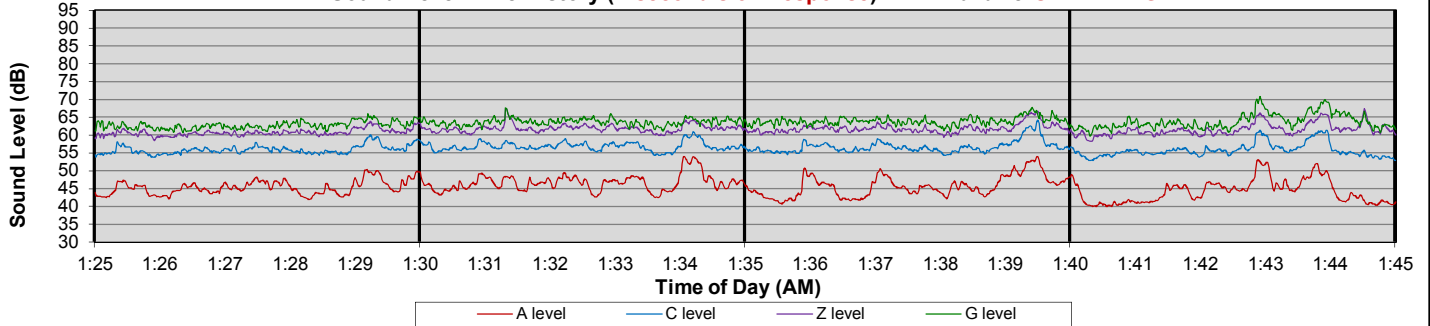
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-175: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	5.1	4.9	10.2	10.9	12.9	14.7	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.3	0.8	3.7	4.0	4.4	4.8
	L01	6.2	6.0	11.2	12.0	13.9	15.7		L01	-2.8	-0.7	2.2	2.4	2.9	3.3
	Leq	0.9	0.7	6.0	6.7	8.7	10.5		Leq	-5.0	-2.9	0.0	0.3	0.7	1.1
	L50	0.5	0.3	5.5	6.3	8.2	10.0		L50	-5.6	-3.5	-0.6	-0.4	0.1	0.5
	L90	-1.1	-1.3	3.9	4.7	6.6	8.4		L90	-5.6	-3.5	-0.6	-0.4	0.1	0.5
	Lmin	-3.3	-3.4	1.8	2.5	4.5	6.3		Lmin	-6.1	-4.0	-1.1	-0.9	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.1	7.0	9.7	10.1	11.3	12.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	1.4	1.5	2.2	2.3	2.6	2.9
	L01	8.7	7.6	10.3	10.8	12.0	13.2		L01	1.1	1.1	1.9	1.9	2.2	2.5
	Leq	5.4	4.3	7.0	7.5	8.6	9.9		Leq	-0.1	0.0	0.7	0.8	1.1	1.3
	L50	5.0	3.8	6.5	7.0	8.2	9.4		L50	-0.1	-0.1	0.7	0.7	1.0	1.3
	L90	3.5	2.4	5.1	5.5	6.7	7.9		L90	-0.8	-0.7	0.0	0.1	0.4	0.7
	Lmin	1.9	0.8	3.4	3.9	5.1	6.3		Lmin	-1.2	-1.1	-0.4	-0.3	0.0	0.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	3.0	2.8	8.0	8.8	10.8	12.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	-3.2	-1.1	1.8	2.0	2.5	2.9
	L01	3.6	3.4	8.7	9.4	11.4	13.2		L01	-3.6	-1.5	1.4	1.6	2.1	2.5
	Leq	0.3	0.1	5.3	6.1	8.1	9.9		Leq	-4.7	-2.6	0.3	0.5	1.0	1.4
	L50	-0.2	-0.4	4.9	5.6	7.6	9.4		L50	-4.8	-2.7	0.2	0.5	0.9	1.3
	L90	-1.6	-1.8	3.4	4.2	6.2	7.9		L90	-5.4	-3.3	-0.4	-0.2	0.3	0.7
	Lmin	-3.3	-3.4	1.8	2.5	4.5	6.3		Lmin	-5.8	-3.7	-0.8	-0.6	-0.1	0.3

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-176: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/22/2014 from 1:25 to 1:45 AM** with KWI Turbine **OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data					
Distance from KWI: 1410 ft	Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 7.6 m/s	Wind Direction: 230°	Avg Power Level: 614 kW	Air Temperature: 32 °F		
Wind Speed Range: 0-2 m/s	Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 228°	Avg Power Level: 819 kW	Air Temperature: 32 °F		
	Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 229°	Avg Power Level: 586 kW	Air Temperature: 32 °F		

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**



**Event Log**

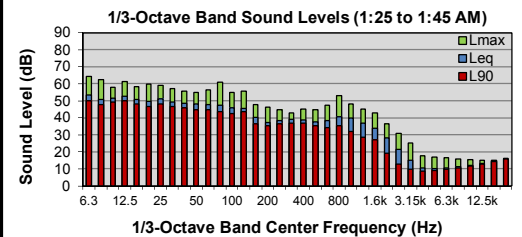
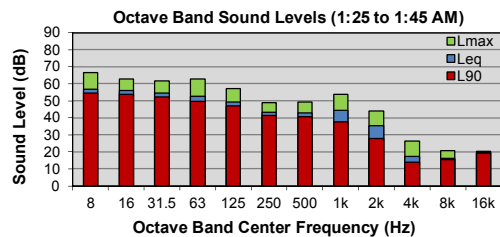
Traffic on Route 3 **throughout**  
Loud cord tapping on flagpole noise from **1:31:40 to 1:32:05 (EXCLUDE)**  
Local vehicle from **1:34:10 to 1:34:27 (EXCLUDE)**  
Loud cord tapping on flagpole noise from **1:35:29 to 1:35:50 (EXCLUDE)**  
Loud cord tapping on flagpole noise from **1:43:29 to 1:43:37 (EXCLUDE)**

**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (100% included)						1:30 to 1:35 AM (86% included)						1:35 to 1:40 AM (93% included)						1:40 to 1:45 AM (97% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	50.3	60.0	63.8	66.0	4.2	Lmax	54.0	60.1	67.4	67.5	5.9	Lmax	54.1	64.1	66.6	67.8	5.1	Lmax	53.1	61.4	67.4	70.8	5.1
L01	50.0	59.6	63.3	65.1	3.4	L01	53.2	59.6	65.5	65.9	4.1	L01	53.0	62.7	66.1	67.0	3.6	L01	52.6	61.2	66.1	69.7	3.3
Leq	45.8	56.1	60.8	62.9	1.3	Leq	47.0	56.9	62.0	63.8	1.4	Leq	47.0	57.2	62.1	64.1	1.4	Leq	45.6	56.3	61.9	64.5	1.4
L50	45.1	55.7	60.6	62.7	1.2	L50	46.4	56.6	61.8	63.7	1.3	L50	45.7	56.4	61.7	63.9	1.3	L50	43.9	55.4	61.2	63.1	1.3
L90	42.8	54.6	59.7	61.4	0.7	L90	43.9	55.3	60.6	62.4	0.7	L90	42.2	55.3	60.7	62.6	0.7	L90	40.6	53.9	59.8	61.6	0.7
Lmin	41.9	53.7	58.5	60.7	0.3	Lmin	42.5	54.3	59.9	61.1	0.3	Lmin	41.6	54.4	59.4	61.0	0.3	Lmin	39.9	52.9	58.2	59.7	0.3

**1:25 to 1:45 AM (94% included)**

Avg	A	C	Z	G	MD
Lmax	52.9	61.4	66.3	68.0	5.1
L01	52.8	61.5	66.0	69.1	3.5
Leq	46.3	56.6	61.7	63.8	1.4
L50	45.3	56.0	61.3	63.4	0.8
L90	41.8	54.6	60.0	61.8	0.7
Lmin	39.9	52.9	58.2	59.7	0.3

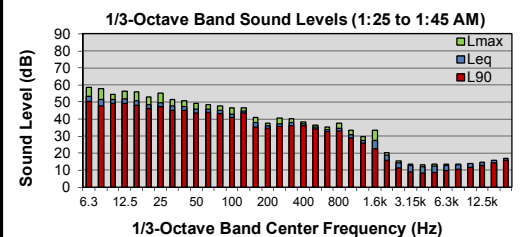
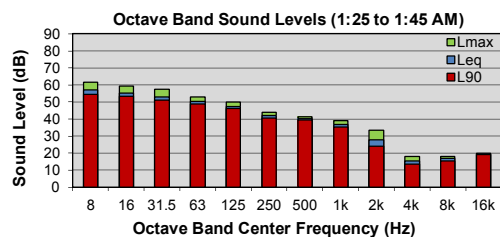


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

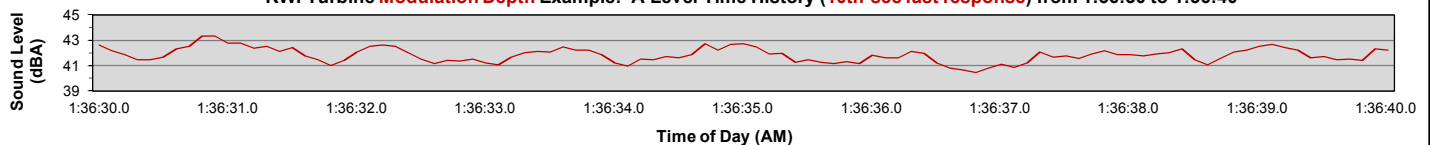
1:25 to 1:30 AM (0% included)						1:30 to 1:35 AM (0% included)						1:35 to 1:40 AM (10% included)						1:40 to 1:45 AM (31% included)					
	A	C	Z	G	MD		A	C	Z	G	MD	7.9 m/s	A	C	Z	G	MD	7.6 m/s	A	C	Z	G	MD
Lmax	-	-	-	-	-	Lmax	-	-	-	-	-	Lmax	42.3	56.9	62.6	65.2	2.6	Lmax	41.9	55.9	63.1	66.6	3.7
L01	-	-	-	-	-	L01	-	-	-	-	-	L01	42.3	56.7	62.5	65.2	2.5	L01	41.8	55.9	63.0	66.5	3.1
Leq	-	-	-	-	-	Leq	-	-	-	-	-	Leq	42.0	55.7	61.3	64.1	1.6	Leq	40.9	54.5	60.8	62.9	1.6
L50	-	-	-	-	-	L50	-	-	-	-	-	L50	42.0	55.6	61.3	64.0	1.6	L50	41.0	54.5	60.7	62.5	1.6
L90	-	-	-	-	-	L90	-	-	-	-	-	L90	41.8	55.1	60.7	63.1	1.0	L90	40.2	53.4	59.5	61.2	0.9
Lmin	-	-	-	-	0.0	Lmin	-	-	-	-	-	Lmin	41.6	54.9	60.0	61.8	0.6	Lmin	39.9	52.9	58.2	59.7	0.5

**1:25 to 1:45 AM (10% included)**

Avg	A	C	Z	G	MD
Lmax	42.1	56.4	62.8	65.9	3.1
L01	42.3	56.3	63.0	66.5	2.8
Leq	41.2	54.8	60.9	63.2	1.6
L50	41.2	54.8	60.9	62.7	1.6
L90	40.3	53.5	59.6	61.3	0.9
Lmin	39.9	52.9	58.2	59.7	0.5



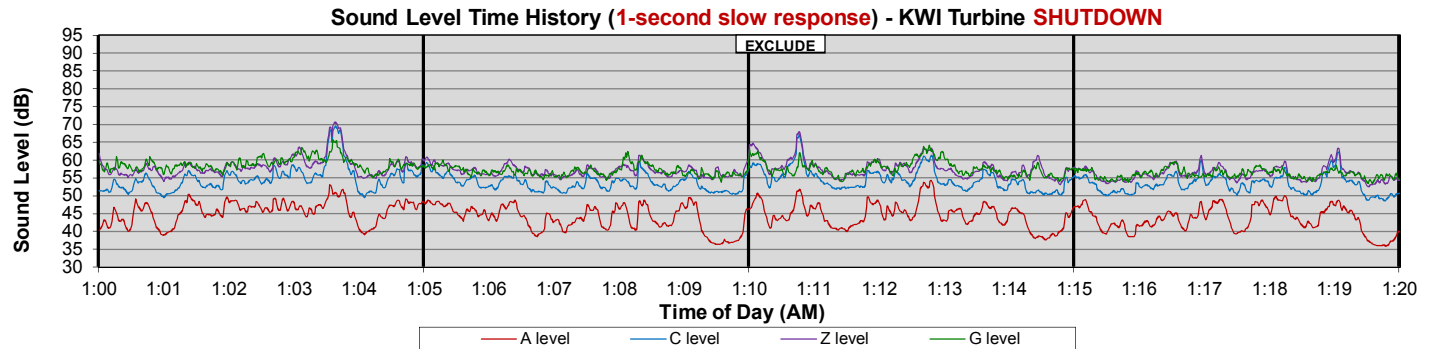
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:36:30 to 1:36:40**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-177: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/22/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>227°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>32 °F</b>
Wind Speed Range: <b>0-2 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>228°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>32 °F</b>

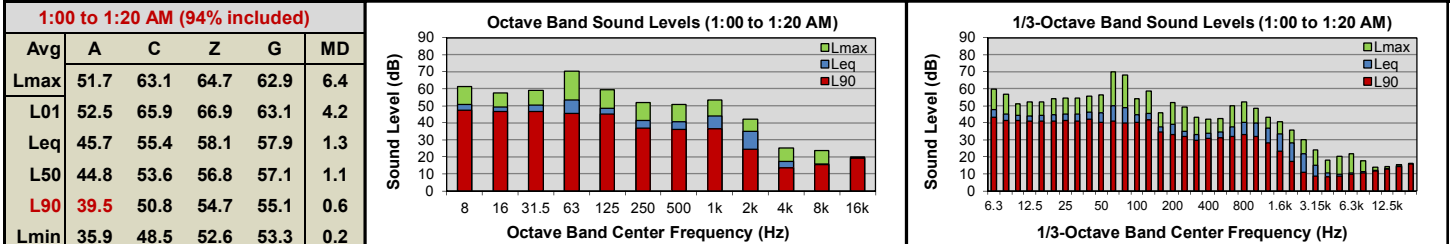


**Event Log**

Traffic on Route 3 **throughout**  
Loud cord tapping on flagpole noise from **1:05:16 to 1:05:19 (EXCLUDE)**  
HMMH consultant makes noise from **1:09:36 to 1:09:41 (EXCLUDE)**  
Local vehicle from **1:09:50 to 1:10:54 (EXCLUDE)**

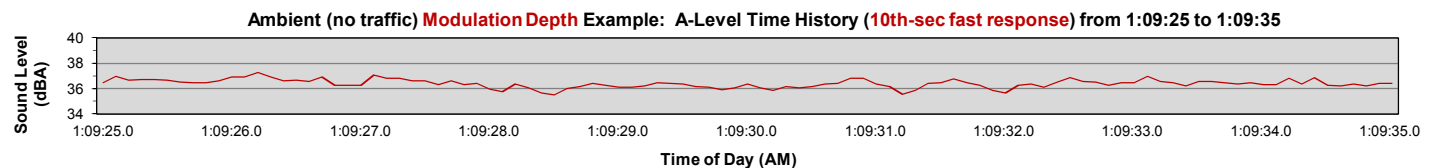
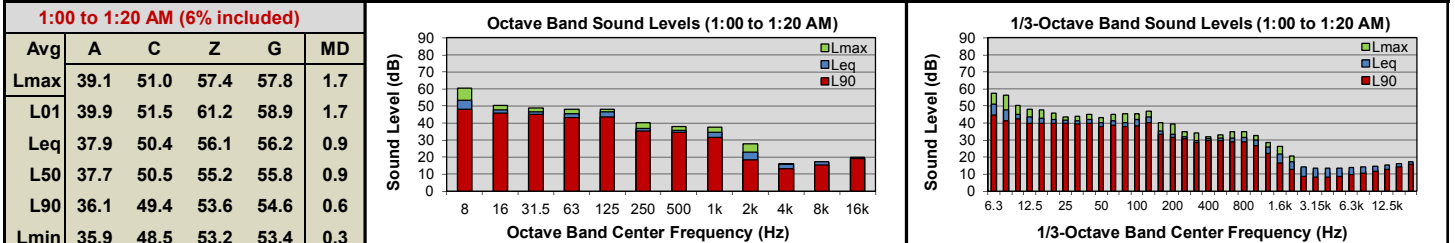
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (100% included)						1:05 to 1:10 AM (94% included)						1:10 to 1:15 AM (82% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	53.0	69.5	70.7	65.5	7.3	Lmax	49.5	59.4	61.4	62.4	6.8	Lmax	54.4	61.3	63.5	64.2	5.7	Lmax	50.0	62.2	63.2	59.5	5.7
L01	51.6	68.9	70.1	64.9	4.8	L01	48.9	59.1	60.8	60.9	4.1	L01	53.7	60.9	63.0	63.3	4.5	L01	49.5	60.1	61.3	59.2	3.3
Leq	46.6	57.7	60.0	59.4	1.4	Leq	45.0	54.0	57.2	57.2	1.3	Leq	46.0	54.7	57.8	58.1	1.4	Leq	44.8	53.9	56.6	56.2	1.2
L50	46.2	54.4	57.9	58.7	1.2	L50	44.3	53.1	56.7	56.7	1.1	L50	44.6	53.6	57.0	57.3	1.2	L50	43.5	53.0	55.8	56.0	1.1
L90	40.6	51.0	55.6	56.9	0.7	L90	39.0	51.1	55.3	55.5	0.6	L90	39.4	51.1	54.7	55.0	0.7	L90	38.5	50.2	53.9	54.6	0.6
Lmin	39.0	49.5	54.0	55.1	0.2	Lmin	36.3	50.4	54.4	53.9	0.3	Lmin	37.7	50.2	53.1	53.9	0.4	Lmin	35.9	48.5	52.6	53.3	0.3



**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (4% included)						1:05 to 1:10 AM (9% included)						1:10 to 1:15 AM (5% included)						1:15 to 1:20 AM (7% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	39.9	50.6	55.7	58.6	1.8	Lmax	39.2	51.3	58.1	57.2	1.7	Lmax	38.7	51.6	61.3	59.3	1.5	Lmax	38.6	50.4	54.6	56.1	1.8
L01	39.9	50.6	55.7	58.5	1.5	L01	39.2	51.3	58.1	57.2	1.7	L01	38.7	51.6	61.3	59.2	1.5	L01	38.6	50.4	54.6	56.1	1.5
Leq	39.4	50.1	55.0	57.5	0.9	Leq	37.3	50.9	56.2	55.9	0.9	Leq	38.3	50.8	58.5	56.9	0.9	Leq	36.9	49.6	53.8	55.0	1.0
L50	39.4	50.4	55.1	57.6	0.8	L50	36.9	51.0	55.8	55.7	0.8	L50	38.2	50.7	57.9	56.1	0.9	L50	36.2	49.7	53.8	55.1	1.0
L90	39.1	49.6	54.4	56.2	0.6	L90	36.4	50.5	54.9	54.9	0.6	L90	37.8	50.4	55.1	55.0	0.5	L90	36.0	48.9	53.3	53.9	0.6
Lmin	39.0	49.5	54.0	55.9	0.4	Lmin	36.3	50.4	54.4	53.9	0.3	Lmin	37.7	50.3	54.8	55.0	0.4	Lmin	35.9	48.5	53.2	53.4	0.3



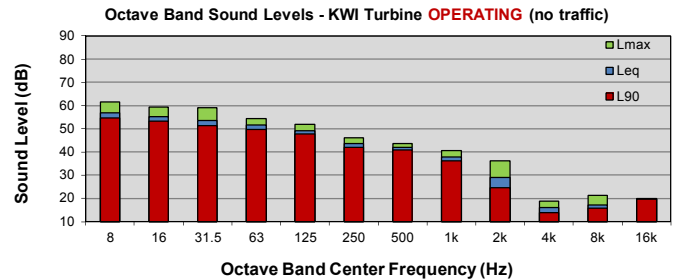
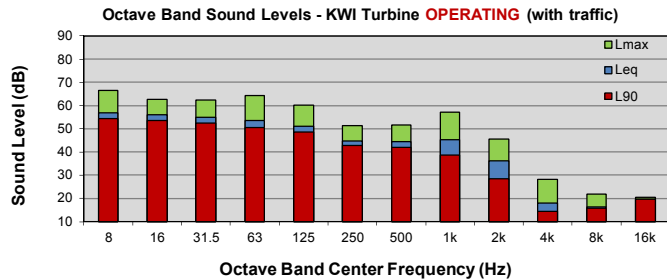
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-178: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 4: 38 Prospect St. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 7.6 m/s	Wind Direction: 230°	Average Power Level: 614 kW	Air Temperature: 32 °F
Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 228°	Average Power Level: 819 kW	Air Temperature: 32 °F
Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 229°	Average Power Level: 586 kW	Air Temperature: 32 °F

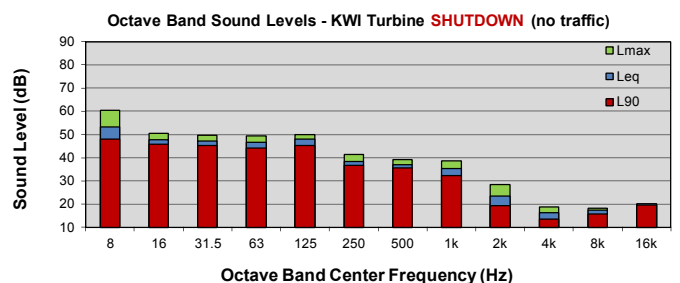
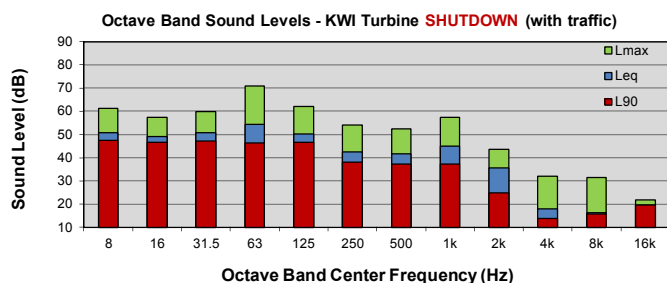
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
1:25 to 1:45 AM (94% included)						1:25 to 1:45 AM (10% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	54.5	63.1	66.8	68.2	5.1	Avg Lmax	43.4	59.6	63.2	66.1	3.1
L01	53.7	62.9	66.5	69.1	3.5	L01	43.6	58.4	63.2	66.5	2.8
Leq	47.0	57.8	62.1	63.9	1.4	Leq	42.0	56.2	61.3	63.3	1.6
L50	45.7	57.3	61.7	63.4	0.8	L50	42.0	55.9	61.1	62.8	1.6
L90	42.6	55.6	60.4	61.8	0.7	L90	40.7	54.6	60.0	61.4	0.9
Lmin	40.4	53.6	58.7	59.7	0.3	Lmin	40.4	53.6	58.7	59.7	0.5

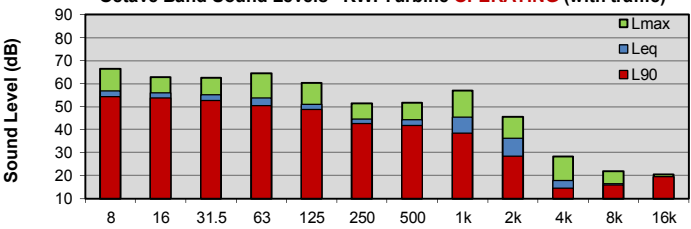
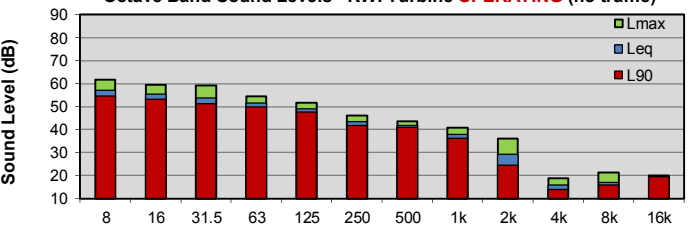
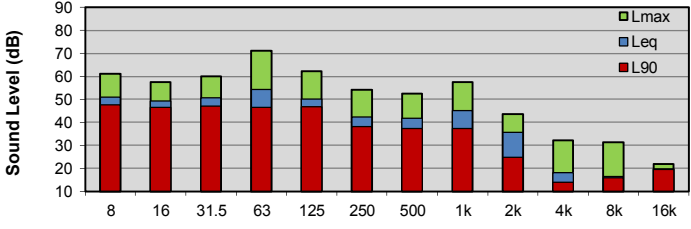
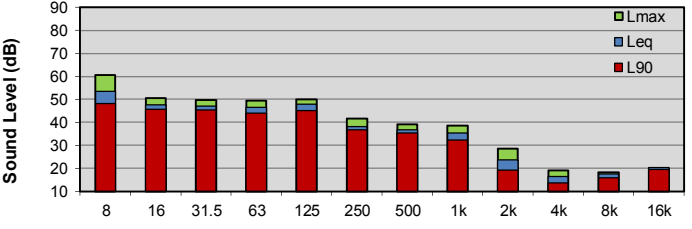


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 1:00 to 1:10 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 227°	Average Power Level: 000 kW	Air Temperature: 32 °F
Time: 1:10 to 1:20 AM	Calibrated Wind Speed: 7.3 m/s	Wind Direction: 228°	Average Power Level: 000 kW	Air Temperature: 32 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
1:00 to 1:20 AM (94% included)						1:00 to 1:20 AM (6% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.6	65.4	66.2	63.0	6.4	Avg Lmax	39.7	52.5	57.8	57.9	1.7
L01	53.6	66.4	67.3	63.3	4.2	L01	40.3	53.0	61.4	59.0	1.7
Leq	46.3	56.6	58.9	58.0	1.3	Leq	38.3	51.4	56.5	56.3	0.9
L50	45.1	54.4	57.5	57.2	1.1	L50	38.1	51.4	55.8	55.8	0.9
L90	39.8	51.6	55.3	55.2	0.6	L90	36.6	50.2	54.4	54.7	0.6
Lmin	36.3	49.1	53.1	53.2	0.2	Lmin	36.3	49.2	53.8	53.4	0.3



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-179: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.9	1.0	8.3	9.5	14.7	18.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.7	3.1	5.2	5.4	6.8	7.1
	L01	0.1	0.2	7.4	8.6	13.9	17.4		L01	3.8	3.2	5.3	5.5	6.9	7.2
	Leq	-6.7	-6.6	0.7	1.9	7.2	10.7		Leq	2.3	1.7	3.7	3.9	5.4	5.7
	L50	-7.9	-7.8	-0.5	0.7	5.9	9.4		L50	2.3	1.7	3.7	3.9	5.4	5.7
	L90	-11.1	-11.0	-3.7	-2.5	2.7	6.2		L90	1.0	0.4	2.5	2.7	4.1	4.4
	Lmin	-13.2	-13.2	-5.9	-4.7	0.6	4.1		Lmin	0.7	0.1	2.1	2.3	3.8	4.1
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-10.2	-10.1	-2.8	-1.6	3.6	7.1	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-10.1	-10.0	-2.7	-1.5	3.7	7.2	Excluding traffic on Route 3:							
	Leq	-11.6	-11.6	-4.3	-3.1	2.2	5.7	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L50	-11.6	-11.6	-4.3	-3.1	2.2	5.7	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L90	-12.9	-12.8	-5.5	-4.3	0.9	4.4	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
	Lmin	-13.2	-13.2	-5.9	-4.7	0.6	4.1	L90 Pure-tone?	NO		L90 Pure-tone?	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-180: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-2.3	-3.3	6.6	8.7	11.5	14.0	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.6	-0.5	8.0	9.3	11.5	13.7
	L01	-2.5	-3.5	6.4	8.6	11.3	13.8		L01	0.3	-0.9	7.6	8.9	11.2	13.3
	Leq	-7.6	-8.6	1.3	3.5	6.2	8.7		Leq	-4.1	-5.2	3.3	4.6	6.9	9.0
	L50	-8.2	-9.2	0.7	2.9	5.6	8.1		L50	-4.5	-5.6	2.9	4.2	6.5	8.6
	L90	-9.8	-10.8	-0.9	1.3	4.0	6.5		L90	-5.8	-6.9	1.6	2.9	5.1	7.3
	Lmin	-11.9	-12.9	-3.0	-0.8	1.9	4.4		Lmin	-7.5	-8.7	-0.2	1.1	3.4	5.5
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	7.1	6.6	8.1	8.2	9.3	10.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	5.5	1.9	6.8	7.5	8.9	9.5
	L01	5.9	5.5	7.0	7.0	8.2	9.3		L01	5.4	1.8	6.7	7.4	8.8	9.4
	Leq	3.7	3.2	4.7	4.8	5.9	7.0		Leq	3.5	-0.1	4.8	5.5	6.9	7.5
	L50	3.4	3.0	4.5	4.5	5.7	6.8		L50	3.4	-0.2	4.6	5.4	6.8	7.4
	L90	2.1	1.6	3.1	3.2	4.3	5.4		L90	2.3	-1.4	3.5	4.3	5.7	6.3
	Lmin	1.1	0.6	2.1	2.2	3.3	4.4		Lmin	0.9	-2.7	2.2	2.9	4.3	4.9
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.9	-6.9	3.0	5.2	7.9	10.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	-3.0	-4.1	4.4	5.7	8.0	10.1
	L01	-7.0	-8.0	1.9	4.0	6.8	9.3		L01	-3.0	-4.2	4.3	5.7	7.9	10.1
	Leq	-9.2	-10.3	-0.4	1.8	4.5	7.0		Leq	-4.9	-6.1	2.4	3.7	6.0	8.1
	L50	-9.5	-10.5	-0.6	1.5	4.3	6.8		L50	-5.1	-6.2	2.3	3.6	5.9	8.0
	L90	-10.8	-11.8	-2.0	0.2	2.9	5.4		L90	-6.2	-7.3	1.2	2.5	4.7	6.9
	Lmin	-11.9	-12.9	-3.0	-0.8	1.9	4.4		Lmin	-7.5	-8.7	-0.2	1.1	3.4	5.5



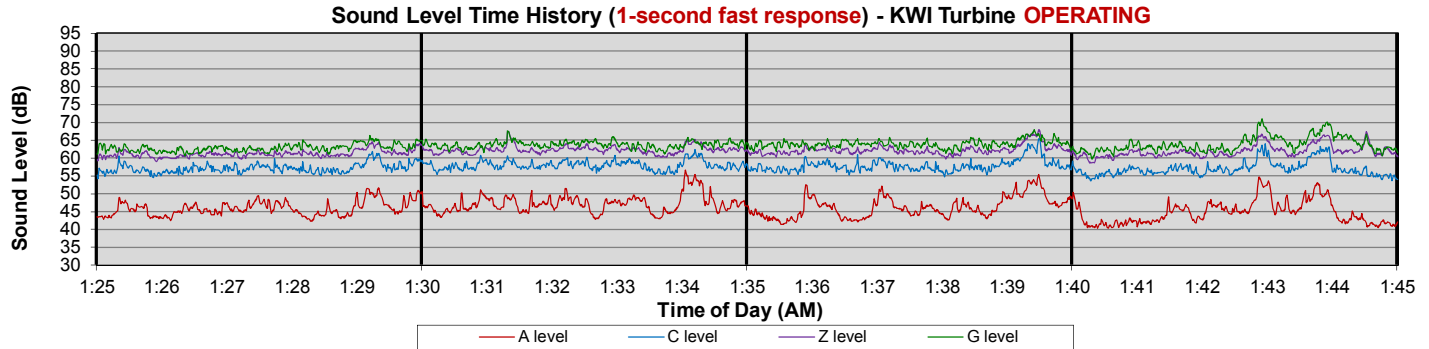
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-181: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/22/2014 between 1:00 AM and 1:45 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	5.2	4.9	10.2	11.0	13.0	15.0	KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.3	0.8	3.7	4.0	4.4	4.8
	L01	6.2	5.8	11.2	11.9	14.0	15.9		L01	-2.8	-0.7	2.2	2.4	2.9	3.3
	Leq	0.9	0.6	6.0	6.7	8.7	10.7		Leq	-5.0	-2.9	0.0	0.3	0.7	1.1
	L50	0.5	0.1	5.5	6.2	8.3	10.2		L50	-5.6	-3.5	-0.6	-0.4	0.1	0.5
	L90	-1.2	-1.5	3.9	4.6	6.6	8.6		L90	-5.6	-3.5	-0.6	-0.4	0.1	0.5
	Lmin	-3.3	-3.6	1.8	2.5	4.5	6.5		Lmin	-6.1	-4.0	-1.1	-0.9	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.2	7.1	9.8	10.3	11.4	12.7	KWI Turbine OPERATING (no traffic)	Avg Lmax	1.4	1.5	2.2	2.3	2.6	2.9
	L01	8.7	7.5	10.3	10.7	11.8	13.1		L01	1.1	1.1	1.9	1.9	2.2	2.5
	Leq	5.4	4.3	7.0	7.5	8.6	9.9		Leq	-0.1	0.0	0.7	0.8	1.1	1.3
	L50	5.0	3.9	6.6	7.0	8.2	9.4		L50	-0.1	-0.1	0.7	0.7	1.0	1.3
	L90	3.5	2.4	5.1	5.5	6.7	7.9		L90	-0.8	-0.7	0.0	0.1	0.4	0.7
	Lmin	1.8	0.7	3.4	3.9	5.0	6.3		Lmin	-1.2	-1.1	-0.4	-0.3	0.0	0.3
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	3.1	2.8	8.1	8.9	10.9	12.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	-3.2	-1.1	1.8	2.0	2.5	2.9
	L01	3.6	3.2	8.6	9.3	11.4	13.3		L01	-3.6	-1.5	1.4	1.6	2.1	2.5
	Leq	0.3	0.0	5.3	6.1	8.1	10.1		Leq	-4.7	-2.6	0.3	0.5	1.0	1.4
	L50	-0.1	-0.5	4.9	5.6	7.7	9.6		L50	-4.8	-2.7	0.2	0.5	0.9	1.3
	L90	-1.6	-2.0	3.4	4.2	6.2	8.1		L90	-5.4	-3.3	-0.4	-0.2	0.3	0.7
	Lmin	-3.3	-3.6	1.8	2.5	4.5	6.5		Lmin	-5.8	-3.7	-0.8	-0.6	-0.1	0.3



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-182: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/22/2014 from 1:25 to 1:45 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 1410 ft	Time: 1:20 to 1:30 AM	Calibrated Wind Speed: 7.6 m/s	Wind Direction: 230°	Avg Power Level: 614 kW	Air Temperature: 32 °F
Wind Speed Range: 0-2 m/s	Time: 1:30 to 1:40 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 228°	Avg Power Level: 819 kW	Air Temperature: 32 °F
	Time: 1:40 to 1:50 AM	Calibrated Wind Speed: 7.1 m/s	Wind Direction: 229°	Avg Power Level: 586 kW	Air Temperature: 32 °F

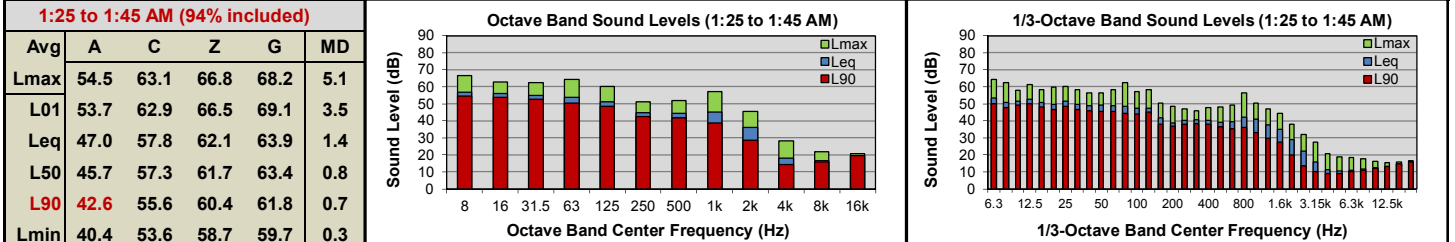


**Event Log**

Traffic on Route 3 **throughout**  
Loud cord tapping on flagpole noise from **1:31:40 to 1:32:05 (EXCLUDE)**  
Local vehicle from **1:34:10 to 1:34:27 (EXCLUDE)**  
Loud cord tapping on flagpole noise from **1:35:29 to 1:35:50 (EXCLUDE)**  
Loud cord tapping on flagpole noise from **1:43:29 to 1:43:37 (EXCLUDE)**

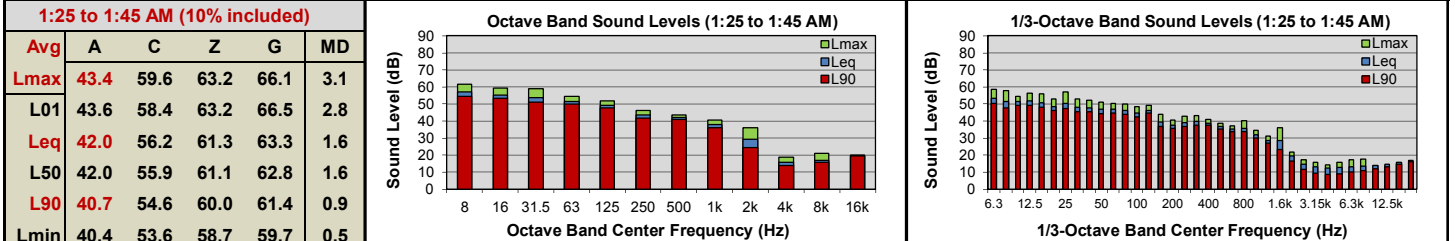
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (100% included)						1:30 to 1:35 AM (86% included)						1:35 to 1:40 AM (93% included)						1:40 to 1:45 AM (97% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	51.6	61.8	64.5	66.3	4.2	Lmax	56.6	61.2	67.5	67.6	5.9	Lmax	55.4	65.4	67.9	67.9	5.1	Lmax	54.6	64.0	67.4	71.0	5.1
L01	51.3	61.2	64.0	65.3	3.4	L01	54.3	61.0	65.8	66.0	4.1	L01	53.9	63.8	66.7	67.0	3.6	L01	53.7	63.0	66.5	69.9	3.3
Leq	46.4	57.3	61.3	63.0	1.3	Leq	47.7	58.1	62.4	63.9	1.4	Leq	47.6	58.4	62.6	64.2	1.4	Leq	46.1	57.6	62.3	64.6	1.4
L50	45.6	56.9	61.0	62.7	1.2	L50	46.8	57.9	62.2	63.8	1.3	L50	46.2	57.7	62.1	63.9	1.3	L50	44.2	56.5	61.5	63.2	1.3
L90	43.5	55.7	60.1	61.5	0.7	L90	44.3	56.3	61.0	62.5	0.7	L90	43.0	56.2	61.0	62.7	0.7	L90	41.1	54.9	60.3	61.6	0.7
Lmin	42.3	54.1	59.0	60.6	0.3	Lmin	42.9	55.4	60.2	61.1	0.3	Lmin	42.2	54.8	59.8	61.1	0.3	Lmin	40.4	53.6	58.7	59.7	0.3

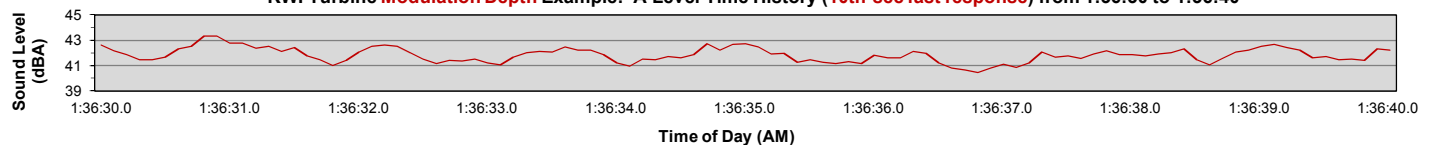


**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

1:25 to 1:30 AM (0% included)						1:30 to 1:35 AM (0% included)						1:35 to 1:40 AM (10% included)						1:40 to 1:45 AM (31% included)					
	A	C	Z	G	MD		A	C	Z	G	MD	7.9 m/s	A	C	Z	G	MD	7.6 m/s	A	C	Z	G	MD
Lmax	-	-	-	-	-	Lmax	-	-	-	-	-	Lmax	43.6	61.0	63.2	65.5	2.6	Lmax	43.2	58.1	63.3	66.6	3.7
L01	-	-	-	-	-	L01	-	-	-	-	-	L01	43.6	60.3	63.1	65.5	2.5	L01	43.1	57.7	63.2	66.6	3.1
Leq	-	-	-	-	-	Leq	-	-	-	-	-	Leq	42.8	57.2	61.7	64.2	1.6	Leq	41.7	55.8	61.1	63.0	1.6
L50	-	-	-	-	-	L50	-	-	-	-	-	L50	42.7	56.8	61.5	64.0	1.6	L50	41.7	55.7	61.0	62.6	1.6
L90	-	-	-	-	-	L90	-	-	-	-	-	L90	42.3	55.9	61.0	63.2	1.0	L90	40.7	54.4	59.9	61.2	0.9
Lmin	-	-	-	-	0.0	Lmin	-	-	-	-	-	Lmin	42.2	55.2	60.3	61.9	0.6	Lmin	40.4	53.6	58.7	59.7	0.5



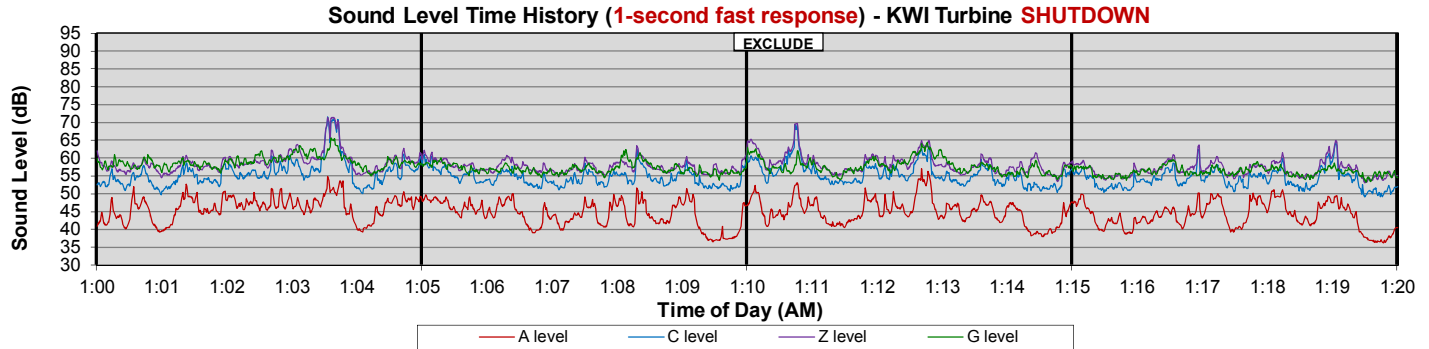
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 1:36:30 to 1:36:40**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-183: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/22/2014 from 1:00 to 1:20 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>1:00 to 1:10 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>227°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>32 °F</b>
Wind Speed Range: <b>0-2 m/s</b>	Time: <b>1:10 to 1:20 AM</b>	Calibrated Wind Speed: <b>7.3 m/s</b>	Wind Direction: <b>228°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>32 °F</b>

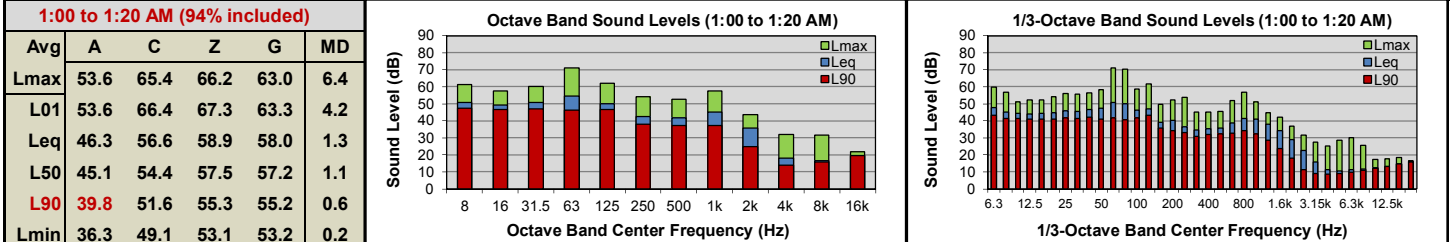


**Event Log**

Traffic on Route 3 **throughout**  
Loud cord tapping on flagpole noise from **1:05:16 to 1:05:19 (EXCLUDE)**  
HMMH consultant makes noise from **1:09:36 to 1:09:41 (EXCLUDE)**  
Local vehicle from **1:09:50 to 1:10:54 (EXCLUDE)**

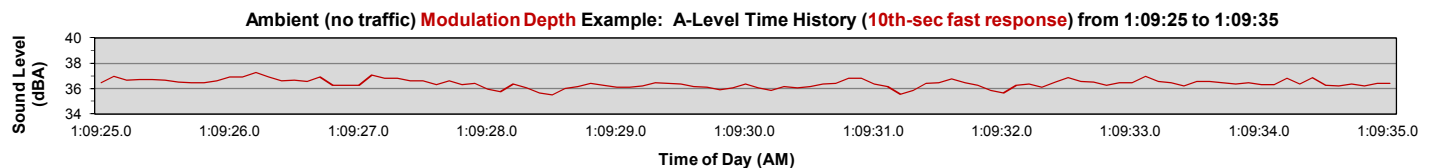
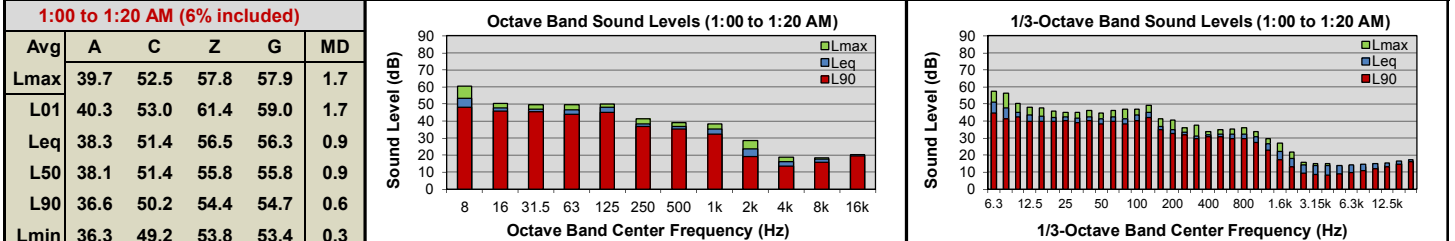
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (100% included)						1:05 to 1:10 AM (94% included)						1:10 to 1:15 AM (82% included)						1:15 to 1:20 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.8	71.5	71.4	65.6	7.3	Lmax	51.6	62.5	63.4	62.5	6.8	Lmax	57.1	63.3	65.0	64.3	5.7	Lmax	51.1	64.3	65.0	59.5	5.7
L01	53.6	70.5	71.0	64.9	4.8	L01	50.6	60.2	61.7	61.0	4.1	L01	54.7	62.4	64.3	63.5	4.5	L01	50.7	62.5	63.3	59.3	3.3
Leq	47.3	58.9	60.8	59.4	1.4	Leq	45.6	55.1	57.8	57.3	1.3	Leq	46.7	55.7	58.5	58.2	1.4	Leq	45.3	55.0	57.3	56.3	1.2
L50	46.4	55.3	58.5	58.8	1.2	L50	44.5	54.2	57.4	56.8	1.1	L50	44.9	54.4	57.6	57.3	1.2	L50	43.8	53.7	56.4	56.1	1.1
L90	41.1	51.9	56.1	56.9	0.7	L90	39.1	52.0	55.8	55.5	0.6	L90	40.1	52.0	55.4	55.1	0.7	L90	38.8	50.9	54.4	54.6	0.6
Lmin	39.2	49.7	54.5	55.1	0.2	Lmin	36.6	50.8	54.7	53.9	0.3	Lmin	38.0	50.5	53.5	53.9	0.4	Lmin	36.3	49.1	53.1	53.2	0.3



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

1:00 to 1:05 AM (4% included)						1:05 to 1:10 AM (9% included)						1:10 to 1:15 AM (5% included)						1:15 to 1:20 AM (7% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	40.6	52.3	56.1	58.6	1.8	Lmax	39.8	52.9	58.4	57.3	1.7	Lmax	39.4	53.2	61.4	59.3	1.5	Lmax	39.3	51.7	55.2	56.2	1.8
L01	40.5	52.2	56.1	58.6	1.5	L01	39.8	52.8	58.3	57.3	1.7	L01	39.4	53.1	61.4	59.3	1.5	L01	39.2	51.6	55.2	56.2	1.5
Leq	39.8	51.0	55.5	57.5	0.9	Leq	37.7	51.9	56.6	55.9	0.9	Leq	38.7	51.8	58.8	57.0	0.9	Leq	37.4	50.6	54.4	55.1	1.0
L50	39.7	50.9	55.5	57.6	0.8	L50	37.3	51.9	56.2	55.8	0.8	L50	38.7	51.8	58.1	56.1	0.9	L50	36.9	50.7	54.4	55.3	1.0
L90	39.3	50.1	54.7	56.2	0.6	L90	36.9	51.3	55.4	55.0	0.6	L90	38.2	51.1	55.6	55.1	0.5	L90	36.4	49.5	53.9	53.9	0.6
Lmin	39.2	49.7	54.5	56.0	0.4	Lmin	36.6	50.8	55.1	53.9	0.3	Lmin	38.0	50.7	55.4	55.1	0.4	Lmin	36.3	49.2	53.8	53.4	0.3



**Detailed Acoustical Monitoring Data**  
**38 Prospect Street**  
**March 2, 2014**

Slow-response data: Pages D-185 to D-190

Fast-response data: Pages D-191 to D-196

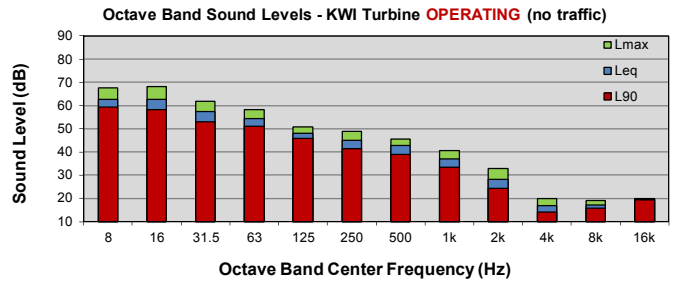
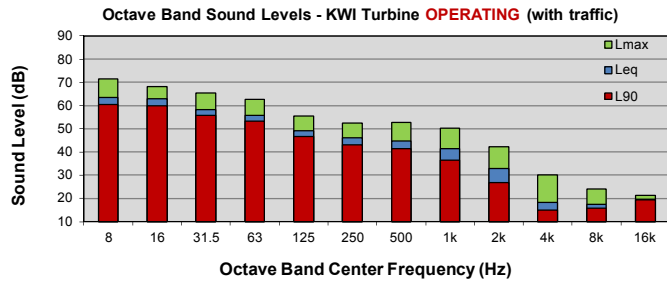
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-185: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 4: 38 Prospect St. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 200°	Average Power Level: 949 kW	Air Temperature: 33 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 201°	Average Power Level: 1026 kW	Air Temperature: 33 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 205°	Average Power Level: 831 kW	Air Temperature: 33 °F

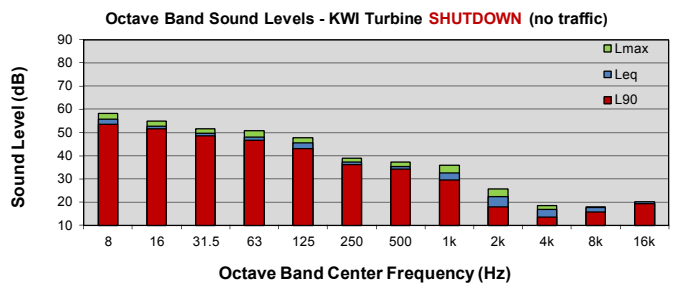
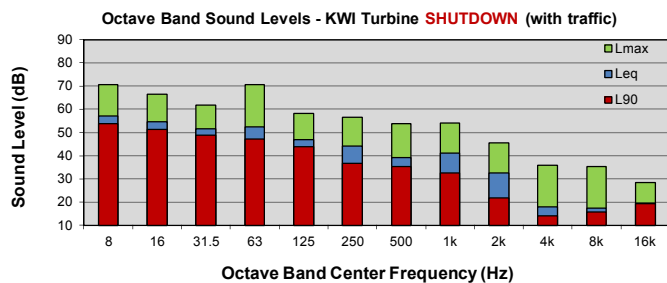
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:45 to 3:05 AM (96% included)						2:45 to 3:05 AM (19% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	50.9	63.1	71.2	73.3	6.4	Avg Lmax	44.7	61.2	69.6	72.7	4.4
L01	51.3	63.6	70.6	73.1	4.5	L01	45.6	62.1	70.2	73.5	4.4
Leq	45.6	59.9	67.4	70.1	2.1	Leq	43.0	59.0	66.7	69.6	2.0
L50	45.1	59.9	67.3	70.0	1.1	L50	43.2	58.9	66.6	69.4	1.9
L90	42.2	57.5	64.7	67.4	1.1	L90	39.4	55.2	63.0	65.6	1.1
Lmin	38.7	54.3	61.4	63.7	0.3	Lmin	38.7	54.3	61.4	63.7	0.6

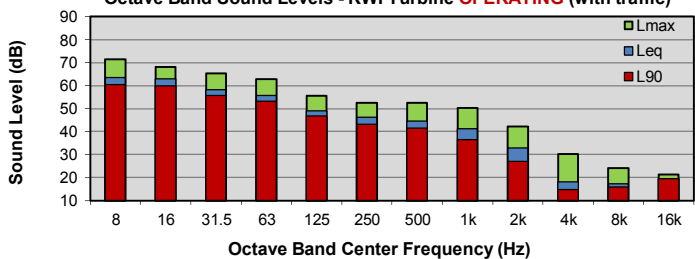
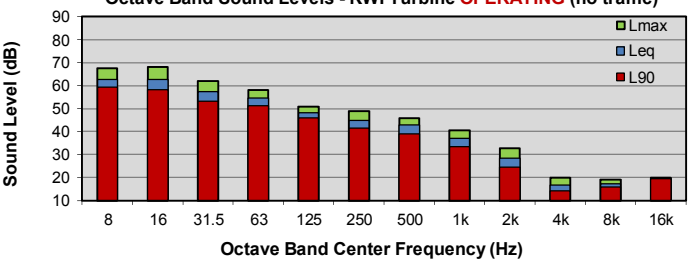
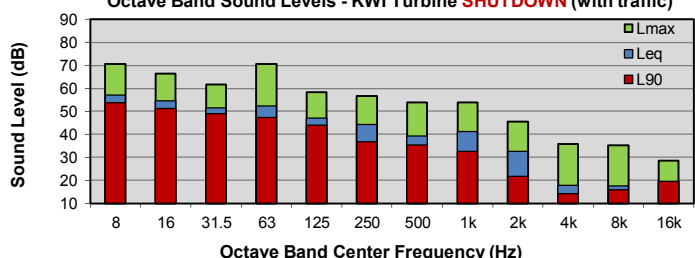
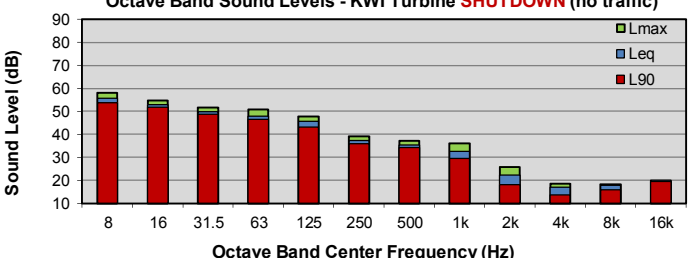


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 197°	Average Power Level: 000 kW	Air Temperature: 33 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 8.7 m/s	Wind Direction: 199°	Average Power Level: 000 kW	Air Temperature: 33 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (81% included)						2:20 to 2:40 AM (7% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	49.5	60.8	66.7	68.5	5.9	Avg Lmax	38.3	53.5	60.6	62.4	1.7
L01	52.6	63.6	68.0	72.2	3.9	L01	38.8	53.7	60.5	62.4	1.7
Leq	43.6	55.3	60.8	62.7	1.2	Leq	37.0	52.1	58.8	60.9	0.9
L50	41.9	53.3	59.6	61.1	1.1	L50	36.6	51.9	58.5	60.7	0.9
L90	37.2	51.7	57.9	59.6	0.6	L90	35.7	51.0	57.7	59.8	0.6
Lmin	35.4	50.2	56.5	57.4	0.2	Lmin	35.4	50.6	57.2	59.3	0.4



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-186: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.4	-1.7	7.3	9.1	13.7	15.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	6.4	5.8	7.7	8.0	8.9	9.3
	L01	1.8	-1.3	7.7	9.4	14.1	15.9		L01	7.4	6.8	8.7	9.0	9.9	10.3
	Leq	-3.9	-7.0	2.0	3.8	8.4	10.3		Leq	4.8	4.2	6.1	6.4	7.3	7.7
	L50	-4.4	-7.5	1.5	3.3	7.9	9.8		L50	4.9	4.4	6.2	6.5	7.4	7.8
	L90	-7.3	-10.4	-1.4	0.3	5.0	6.8		L90	1.1	0.6	2.4	2.7	3.6	4.0
	Lmin	-10.8	-13.9	-4.9	-3.1	1.5	3.4		Lmin	0.5	-0.1	1.7	2.1	3.0	3.4
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.8	-7.9	1.0	2.8	7.5	9.3	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-3.9	-6.9	2.0	3.8	8.4	10.3	Excluding traffic on Route 3:							
	Leq	-6.5	-9.6	-0.6	1.2	5.8	7.7	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L50	-6.3	-9.4	-0.4	1.3	6.0	7.8	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L90	-10.1	-13.2	-4.3	-2.5	2.2	4.0	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
	Lmin	-10.8	-13.9	-4.9	-3.1	1.5	3.4	L90 Pure-tone?	NO		L90 Pure-tone?	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-187: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)							Operating - Shutdown Differences (including traffic on Route 3)								
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.3	-0.5	7.8	9.8	11.4	12.9	KWI Turbine OPERATING (with traffic)	Avg Lmax	4.6	3.2	10.5	11.6	13.3	14.7
	L01	2.8	0.1	8.3	10.3	11.9	13.4		L01	3.9	2.5	9.8	11.0	12.7	14.0
	Leq	-0.9	-3.6	4.6	6.6	8.3	9.8		Leq	0.7	-0.6	6.6	7.8	9.5	10.9
	L50	-0.9	-3.6	4.6	6.6	8.2	9.7		L50	0.7	-0.7	6.5	7.7	9.4	10.8
	L90	-3.4	-6.1	2.2	4.1	5.8	7.3		L90	-2.0	-3.3	3.9	5.1	6.8	8.1
	Lmin	-6.6	-9.3	-1.0	1.0	2.6	4.1		Lmin	-5.3	-6.6	0.6	1.8	3.5	4.9
Operating - Shutdown Differences (excluding traffic on Route 3)							Operating - Shutdown Differences (excluding traffic on Route 3)								
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	7.7	7.5	9.2	9.4	10.2	10.6	KWI Turbine OPERATING (no traffic)	Avg Lmax	9.0	9.1	10.8	11.0	11.8	12.4
	L01	8.5	8.3	10.0	10.2	11.1	11.4		L01	9.7	9.7	11.4	11.7	12.5	13.1
	Leq	5.4	5.2	6.9	7.1	8.0	8.3		Leq	6.1	6.2	7.9	8.1	8.9	9.5
	L50	5.4	5.2	6.9	7.1	7.9	8.3		L50	6.0	6.1	7.7	8.0	8.8	9.4
	L90	1.7	1.5	3.2	3.4	4.2	4.6		L90	2.4	2.5	4.2	4.5	5.3	5.8
	Lmin	0.8	0.6	2.2	2.4	3.3	3.7		Lmin	0.9	0.9	2.6	2.9	3.7	4.3
Operating - Shutdown Differences: Overall Comparison							Operating - Shutdown Differences: Overall Comparison								
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.4	-2.3	5.9	7.9	9.5	11.1	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.9	1.5	8.8	10.0	11.7	13.0
	L01	1.2	-1.5	6.7	8.7	10.4	11.9		L01	3.5	2.2	9.4	10.6	12.3	13.7
	Leq	-1.9	-4.6	3.6	5.6	7.3	8.8		Leq	0.0	-1.3	5.9	7.1	8.8	10.1
	L50	-1.9	-4.6	3.6	5.6	7.3	8.8		L50	-0.1	-1.5	5.8	6.9	8.7	10.0
	L90	-5.6	-8.3	-0.1	1.9	3.6	5.1		L90	-3.7	-5.0	2.2	3.4	5.1	6.4
	Lmin	-6.6	-9.3	-1.0	1.0	2.6	4.1		Lmin	-5.3	-6.6	0.6	1.8	3.5	4.9

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-188: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	4.8	1.1	10.6	12.2	13.7	16.0	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.5	2.5	5.2	5.4	5.8	6.2
	L01	4.6	0.9	10.5	12.0	13.5	15.8		L01	-1.4	0.6	3.3	3.4	3.9	4.3
	Leq	1.6	-2.1	7.4	9.0	10.4	12.7		Leq	-3.9	-1.8	0.8	1.0	1.5	1.8
	L50	1.5	-2.2	7.3	8.9	10.3	12.6		L50	-4.8	-2.8	-0.1	0.1	0.5	0.9
	L90	-1.1	-4.8	4.7	6.3	7.7	10.0		L90	-4.8	-2.8	-0.2	0.0	0.5	0.8
	Lmin	-4.8	-8.5	1.1	2.6	4.1	6.4		Lmin	-5.6	-3.6	-0.9	-0.7	-0.3	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	10.3	10.3	11.8	11.9	12.8	13.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.6	2.6	3.4	3.4	3.8	4.0
	L01	11.1	11.2	12.7	12.8	13.7	14.2		L01	2.7	2.7	3.5	3.5	3.8	4.1
	Leq	7.2	7.2	8.7	8.9	9.8	10.2		Leq	0.3	0.3	1.1	1.1	1.5	1.7
	L50	7.0	7.0	8.5	8.6	9.5	10.0		L50	0.2	0.2	1.0	1.0	1.4	1.6
	L90	3.2	3.2	4.8	4.9	5.8	6.3		L90	-0.6	-0.6	0.2	0.2	0.6	0.8
	Lmin	1.3	1.4	2.9	3.0	3.9	4.4		Lmin	-1.1	-1.2	-0.4	-0.4	0.0	0.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	4.2	0.5	10.0	11.6	13.0	15.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.6	0.4	3.1	3.3	3.7	4.1
	L01	5.0	1.3	10.9	12.4	13.9	16.2		L01	-1.5	0.5	3.2	3.3	3.8	4.2
	Leq	1.1	-2.6	6.9	8.5	9.9	12.2		Leq	-3.9	-1.9	0.8	1.0	1.4	1.8
	L50	0.9	-2.8	6.7	8.3	9.7	12.0		L50	-4.0	-2.0	0.7	0.9	1.3	1.7
	L90	-2.9	-6.6	2.9	4.5	6.0	8.3		L90	-4.8	-2.8	-0.1	0.1	0.5	0.9
	Lmin	-4.8	-8.5	1.1	2.6	4.1	6.4		Lmin	-5.4	-3.4	-0.7	-0.5	0.0	0.3

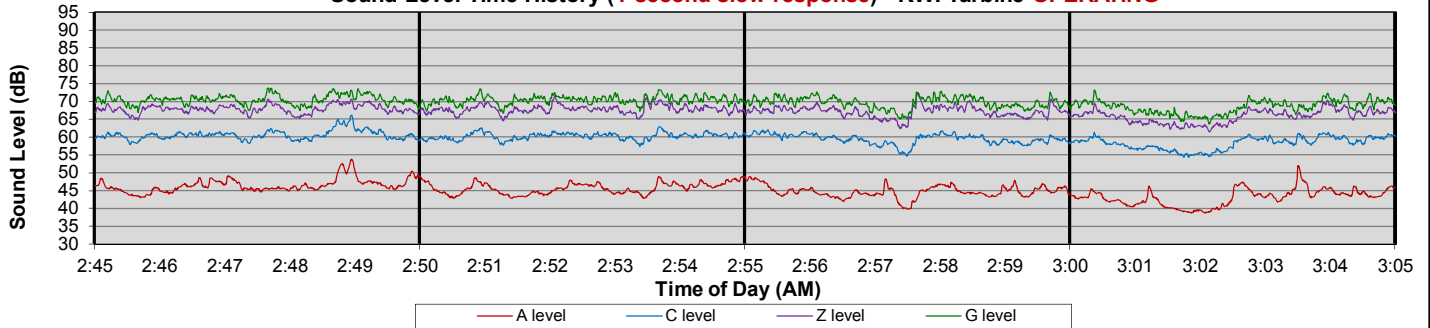


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-189: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/2/2014 from 2:45 to 3:05 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>2:40 to 2:50 AM</b>	Calibrated Wind Speed: <b>8.9 m/s</b>	Wind Direction: <b>200°</b>	Avg Power Level: <b>949 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-2 m/s</b>	Time: <b>2:50 to 3:00 AM</b>	Calibrated Wind Speed: <b>8.4 m/s</b>	Wind Direction: <b>201°</b>	Avg Power Level: <b>1026 kW</b>	Air Temperature: <b>33 °F</b>
	Time: <b>3:00 to 3:10 AM</b>	Calibrated Wind Speed: <b>7.7 m/s</b>	Wind Direction: <b>205°</b>	Avg Power Level: <b>831 kW</b>	Air Temperature: <b>33 °F</b>

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**



**Event Log**

Traffic on Route 3 **throughout**

Loud leaves blowing across driveway noise from **3:04:08 to 3:04:14 (EXCLUDE)**

HMMH consultant makes noise from **2:47:32 to 2:47:36, 2:48:14 to 2:48:19, and 2:57:28 to 2:57:33 (EXCLUDE)**

Loud cord tapping on flagpole noise from **2:46:09 to 2:46:12, 2:46:14 to 2:46:18, 2:47:23 to 2:47:32, 2:58:10 to 2:58:16, and 3:00:09 to 3:00:11 (EXCLUDE)**

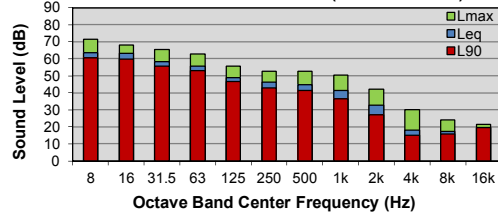
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (91% included)						2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (96% included)						3:00 to 3:05 AM (97% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	53.8	66.1	70.7	73.8	5.3	Lmax	48.9	62.9	71.6	73.4	5.0	Lmax	49.0	62.1	72.5	72.9	8.1	Lmax	52.0	61.3	70.2	73.1	7.3
L01	52.7	64.7	70.5	73.6	4.4	L01	48.8	62.6	70.8	73.1	4.3	L01	48.6	61.8	71.1	72.6	4.3	L01	49.0	61.1	69.4	72.2	4.9
Leq	47.1	60.9	68.1	70.8	2.3	Leq	45.9	60.4	68.0	70.6	2.1	Leq	45.0	59.7	67.3	69.9	2.0	Leq	43.8	58.6	66.0	68.8	2.0
L50	46.3	60.5	67.9	70.6	2.2	L50	45.6	60.3	67.8	70.5	2.0	L50	44.5	59.7	67.2	69.7	1.9	L50	43.3	58.5	65.9	68.6	1.8
<b>L90</b>	<b>44.5</b>	<b>59.1</b>	<b>66.3</b>	<b>68.8</b>	<b>1.3</b>	<b>L90</b>	<b>43.6</b>	<b>59.0</b>	<b>66.5</b>	<b>69.0</b>	<b>1.1</b>	<b>L90</b>	<b>43.2</b>	<b>57.8</b>	<b>65.1</b>	<b>67.6</b>	<b>1.0</b>	<b>L90</b>	<b>39.6</b>	<b>55.5</b>	<b>63.1</b>	<b>65.8</b>	<b>1.0</b>
Lmin	43.1	58.0	64.7	66.9	0.5	Lmin	42.8	57.3	64.5	66.6	0.3	Lmin	39.7	54.6	62.3	65.1	0.4	Lmin	38.7	54.3	61.4	63.7	0.3

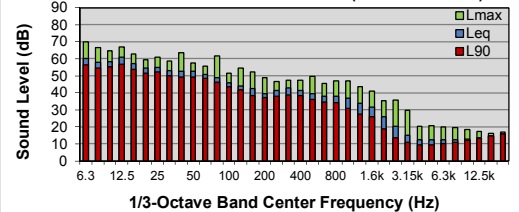
**2:45 to 3:05 AM (96% included)**

Avg	A	C	Z	G	MD
Lmax	50.9	63.1	71.2	73.3	6.4
L01	51.3	63.6	70.6	73.1	4.5
Leq	45.6	59.9	67.4	70.1	2.1
L50	45.1	59.9	67.3	70.0	1.1
<b>L90</b>	<b>42.2</b>	<b>57.5</b>	<b>64.7</b>	<b>67.4</b>	<b>1.1</b>
Lmin	38.7	54.3	61.4	63.7	0.3

**Octave Band Sound Levels (2:45 to 3:05 AM)**



**1/3-Octave Band Sound Levels (2:45 to 3:05 AM)**



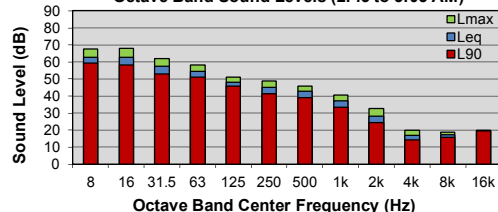
**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (9% included)						2:50 to 2:55 AM (5% included)						2:55 to 3:00 AM (29% included)						3:00 to 3:05 AM (34% included)					
8.8 m/s	A	C	Z	G	MD	8.7 m/s	A	C	Z	G	MD	8.5 m/s	A	C	Z	G	MD	7.8 m/s	A	C	Z	G	MD
Lmax	45.8	62.4	70.7	73.8	4.4	Lmax	43.5	60.4	68.6	72.0	3.3	Lmax	45.9	61.6	70.3	72.7	5.0	Lmax	43.5	60.5	68.8	72.2	4.7
L01	45.7	62.3	70.6	73.8	4.4	L01	43.5	60.4	68.5	71.9	3.3	L01	45.7	61.5	69.9	72.4	4.3	L01	43.4	60.5	68.5	72.0	4.2
Leq	44.8	60.4	68.0	71.0	2.6	Leq	43.3	59.6	67.4	70.4	2.0	Leq	44.0	59.8	67.6	70.4	2.2	Leq	41.2	57.4	65.0	68.0	1.7
L50	45.4	60.4	68.1	70.2	2.5	L50	43.3	59.5	67.3	70.4	1.9	L50	44.0	59.9	67.6	70.4	2.1	L50	40.5	56.9	64.1	67.6	1.6
<b>L90</b>	<b>43.5</b>	<b>58.3</b>	<b>65.3</b>	<b>68.1</b>	<b>1.8</b>	<b>L90</b>	<b>43.0</b>	<b>59.1</b>	<b>66.7</b>	<b>69.4</b>	<b>1.5</b>	<b>L90</b>	<b>42.6</b>	<b>58.4</b>	<b>65.8</b>	<b>68.2</b>	<b>1.3</b>	<b>L90</b>	<b>39.1</b>	<b>54.9</b>	<b>62.5</b>	<b>65.2</b>	<b>0.9</b>
Lmin	43.1	58.0	64.7	66.9	1.3	Lmin	42.9	58.8	66.6	68.7	1.1	Lmin	39.7	54.6	62.7	65.2	0.6	Lmin	38.7	54.3	61.4	63.7	0.6

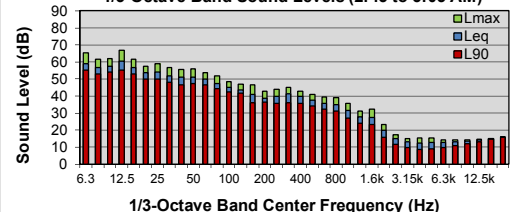
**2:45 to 3:05 AM (19% included)**

Avg	A	C	Z	G	MD
Lmax	44.7	61.2	69.6	72.7	4.4
L01	45.6	62.1	70.2	73.5	4.4
Leq	43.0	58.9	66.7	69.6	2.0
L50	43.2	59.0	66.6	69.4	1.9
<b>L90</b>	<b>39.4</b>	<b>55.2</b>	<b>63.0</b>	<b>65.6</b>	<b>1.1</b>
Lmin	38.7	54.3	61.4	63.7	0.6

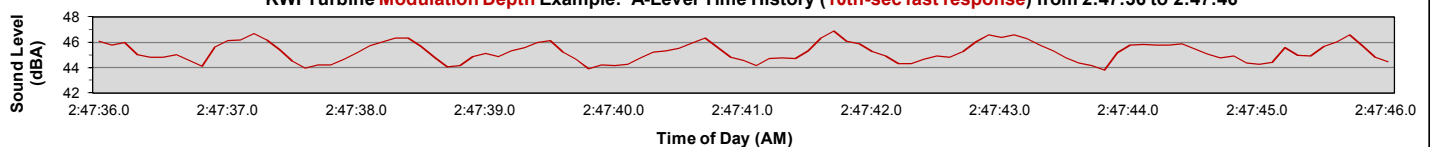
**Octave Band Sound Levels (2:45 to 3:05 AM)**



**1/3-Octave Band Sound Levels (2:45 to 3:05 AM)**



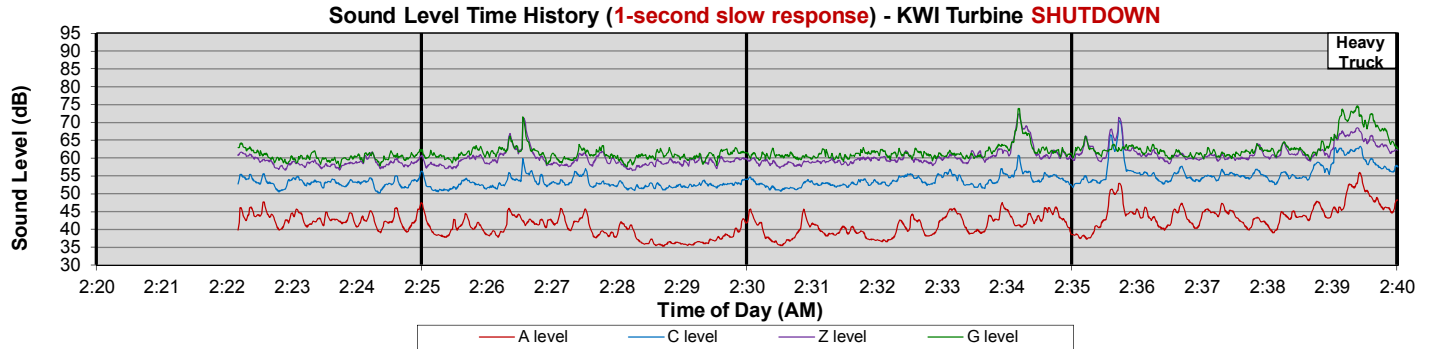
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:47:36 to 2:47:46**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-190: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/2/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>197°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-2 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>8.7 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>



**Event Log**

Monitoring initiated at **2:22:10**

Traffic on Route 3 **throughout**

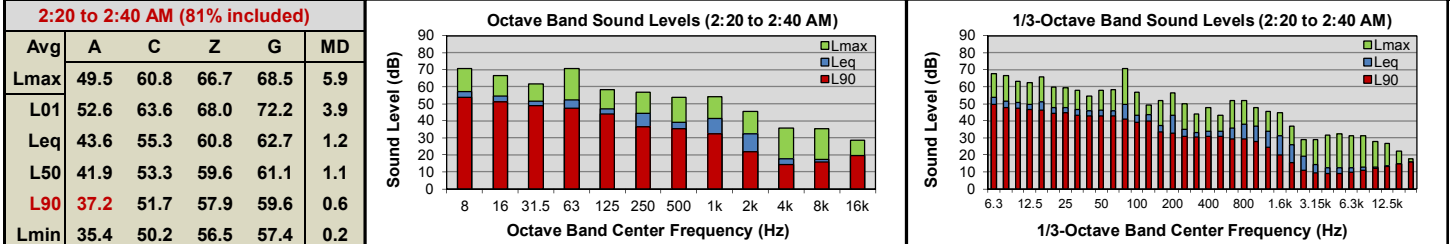
Local vehicle from **2:38:50 to 2:39:11 (EXCLUDE)**

Loud cord tapping on flagpole noise from **2:26:20 to 2:26:29, 2:28:37 to 2:28:42, 2:31:53 to 2:31:56, 2:38:03 to 2:38:08, and 2:38:28 to 2:38:34 (EXCLUDE)**

HMMH consultant makes noise from **2:24:53 to 2:24:56, 2:25:27 to 2:25:32, 2:29:18 to 2:29:22, 2:33:52 to 2:33:56, 2:34:02 to 2:34:30, 2:34:58 to 2:35:03, and 2:35:11 to 2:35:15 (EXCLUDE)**

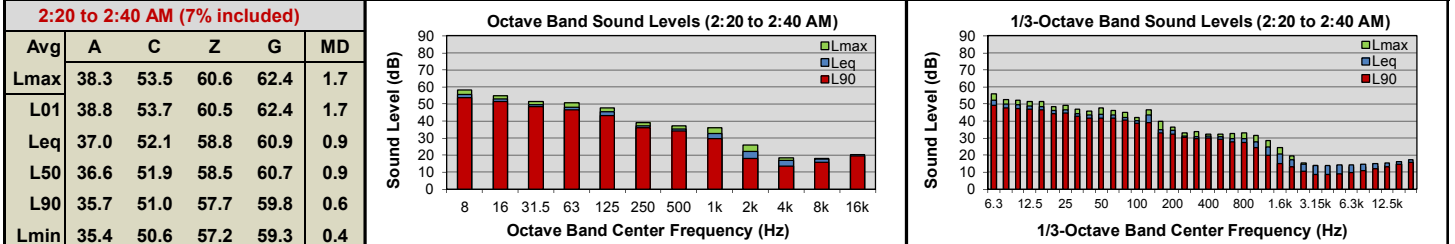
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (56% included)						2:25 to 2:30 AM (92% included)						2:30 to 2:35 AM (88% included)						2:35 to 2:40 AM (87% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	47.7	56.3	61.8	64.1	7.1	Lmax	47.4	59.8	71.3	71.6	5.9	Lmax	46.9	56.8	62.4	63.6	5.6	Lmax	56.0	70.5	71.3	74.6	5.1
L01	47.5	55.6	61.6	63.8	5.5	L01	45.8	57.1	68.5	66.5	3.1	L01	46.2	56.1	62.1	63.4	4.0	L01	54.9	67.7	69.2	73.6	3.7
Leq	43.3	53.3	58.9	60.5	1.4	Leq	40.5	53.1	60.1	61.4	1.2	Leq	41.6	53.5	59.7	61.2	1.2	Leq	46.6	58.3	62.8	65.2	1.2
L50	42.6	53.2	58.6	60.2	1.1	L50	39.5	52.5	59.0	60.9	1.1	L50	40.2	53.1	59.5	61.0	1.0	L50	44.3	55.5	61.1	62.2	1.1
L90	40.4	51.6	57.4	59.0	0.6	L90	36.1	51.4	57.7	59.5	0.6	L90	37.0	51.7	58.3	59.9	0.6	L90	40.4	53.5	59.7	60.5	0.6
Lmin	39.2	50.2	56.6	57.4	0.3	Lmin	35.4	50.6	56.5	57.5	0.3	Lmin	35.5	50.8	57.3	59.0	0.3	Lmin	37.5	52.8	58.4	59.6	0.2

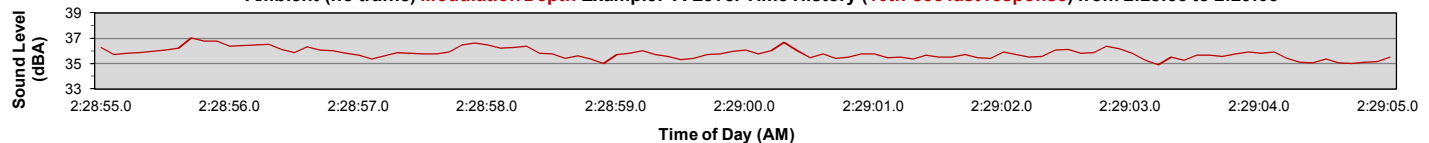


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (0% included)						2:25 to 2:30 AM (18% included)						2:30 to 2:35 AM (9% included)						2:35 to 2:40 AM (0% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	-	-	-	-	-	Lmax	39.0	53.1	60.7	62.4	1.6	Lmax	37.5	53.9	60.4	62.4	1.8	Lmax	-	-	-	-	-
L01	-	-	-	-	-	L01	38.9	53.0	60.5	62.1	1.6	L01	37.4	53.9	60.4	62.4	1.8	L01	-	-	-	-	-
Leq	-	-	-	-	-	Leq	37.1	51.8	58.5	60.6	0.9	Leq	36.7	52.6	59.4	61.3	1.0	Leq	-	-	-	-	-
L50	-	-	-	-	-	L50	36.3	51.8	58.3	60.6	0.9	L50	36.9	52.7	59.7	61.1	1.0	L50	-	-	-	-	-
L90	-	-	-	-	-	L90	35.7	51.0	57.8	59.7	0.6	L90	35.7	51.1	57.7	60.2	0.6	L90	-	-	-	-	-
Lmin	-	-	-	-	-	Lmin	35.4	50.6	57.2	59.3	0.4	Lmin	35.5	50.8	57.3	59.5	0.4	Lmin	-	-	-	-	-



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:28:55 to 2:29:05**



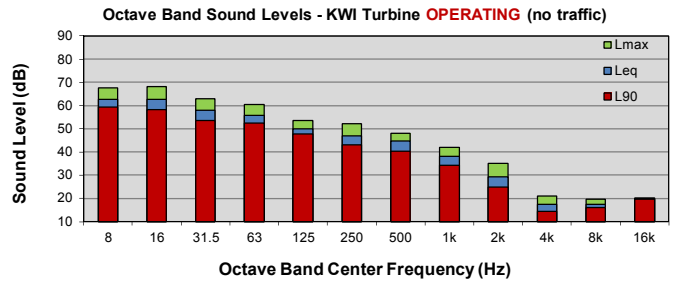
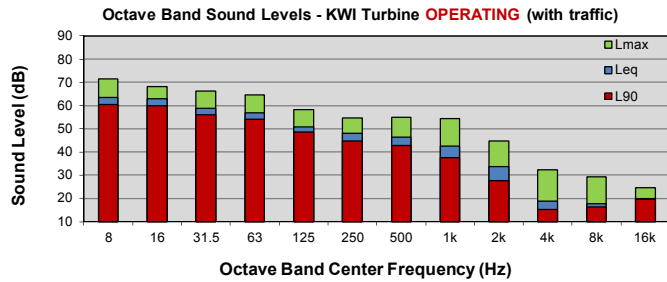
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-191: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 4: 38 Prospect St. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 200°	Average Power Level: 949 kW	Air Temperature: 33 °F
Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 201°	Average Power Level: 1026 kW	Air Temperature: 33 °F
Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 205°	Average Power Level: 831 kW	Air Temperature: 33 °F

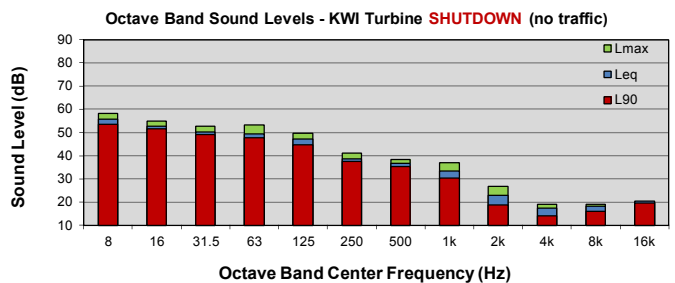
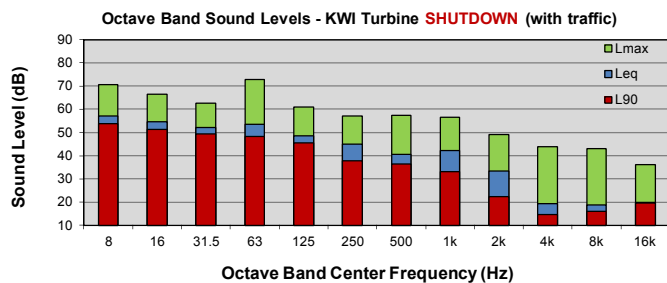
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
2:45 to 3:05 AM (96% included)						2:45 to 3:05 AM (19% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.9	65.7	71.4	73.4	6.4	Avg Lmax	46.3	64.1	69.8	72.7	4.4
L01	51.7	65.1	70.8	73.2	4.5	L01	47.1	64.3	70.4	73.6	4.4
Leq	46.6	61.5	67.7	70.1	2.1	Leq	44.1	60.6	66.9	69.6	2.0
L50	46.1	61.3	67.6	70.0	1.1	L50	44.1	60.4	66.8	69.4	1.9
L90	42.9	58.6	65.0	67.4	1.1	L90	40.1	56.7	63.2	65.7	1.1
Lmin	39.1	54.9	61.6	63.7	0.3	Lmin	39.1	54.9	61.6	63.7	0.6

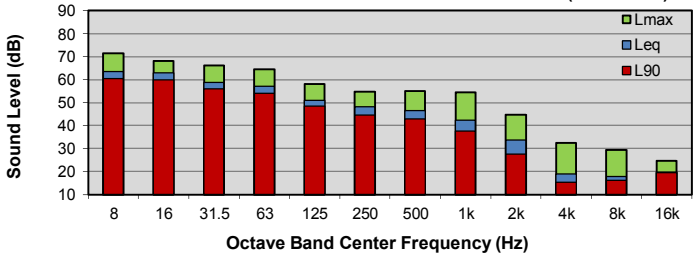
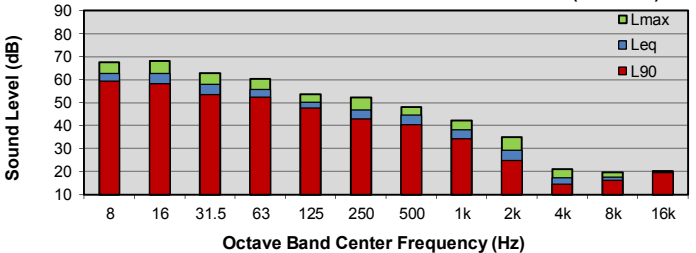
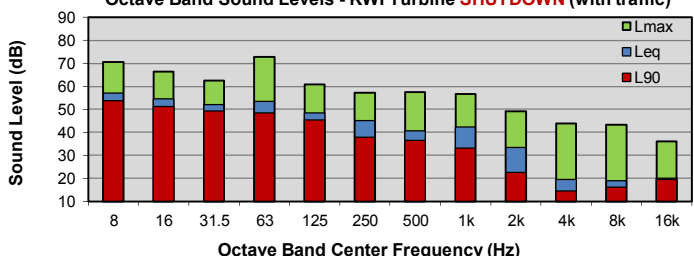
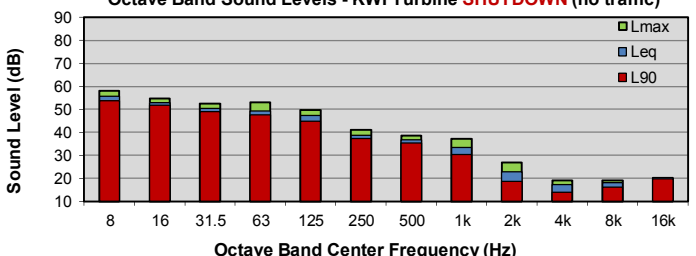


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 2:20 to 2:30 AM	Calibrated Wind Speed: 7.8 m/s	Wind Direction: 197°	Average Power Level: 000 kW	Air Temperature: 33 °F
Time: 2:30 to 2:40 AM	Calibrated Wind Speed: 8.7 m/s	Wind Direction: 199°	Average Power Level: 000 kW	Air Temperature: 33 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
2:20 to 2:40 AM (81% included)						2:20 to 2:40 AM (7% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	51.4	63.8	67.4	68.5	5.9	Avg Lmax	38.8	55.8	60.9	62.4	1.7
L01	53.3	64.5	68.7	72.2	3.9	L01	39.2	55.8	60.8	62.4	1.7
Leq	44.2	56.5	61.1	62.7	1.2	Leq	37.5	53.3	59.1	60.9	0.9
L50	42.1	54.6	60.0	61.2	1.1	L50	37.1	53.1	58.9	60.8	0.9
L90	37.7	52.7	58.3	59.7	0.6	L90	36.0	52.1	58.0	59.9	0.6
Lmin	35.7	51.1	56.9	57.5	0.2	Lmin	35.7	51.3	57.4	59.4	0.4



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-192: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.4	-0.4	8.7	10.8	15.2	17.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.5	7.1	8.8	9.2	10.3	10.6
	L01	0.3	-1.6	7.5	9.6	14.0	16.0		L01	8.3	7.9	9.6	10.0	11.0	11.3
	Leq	-4.9	-6.8	2.4	4.5	8.8	10.8		Leq	5.3	4.9	6.6	7.0	8.1	8.4
	L50	-5.3	-7.2	1.9	4.1	8.4	10.4		L50	5.3	4.9	6.7	7.0	8.1	8.4
	L90	-8.5	-10.4	-1.3	0.9	5.2	7.2		L90	1.3	0.9	2.6	3.0	4.1	4.4
	Lmin	-12.3	-14.2	-5.1	-2.9	1.4	3.4		Lmin	0.3	0.0	1.7	2.0	3.1	3.4
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						Including traffic on Route 3:							
		Avg Lmax	L01	Leq	L50	L90	Lmin	L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.1	-7.0	2.1	4.2	8.6	10.6	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L01	-4.4	-6.3	2.9	5.0	9.3	11.3	Excluding traffic on Route 3:							
	Leq	-7.3	-9.2	-0.1	2.0	6.4	8.4	Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
	L50	-7.3	-9.2	-0.1	2.1	6.4	8.4	L90 Pure-tone?	NO		L90 Pure-tone?	NO			
	L90	-11.4	-13.2	-4.1	-2.0	2.4	4.4	L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
	Lmin	-12.3	-14.2	-5.1	-2.9	1.4	3.4	L90 Pure-tone?	NO		L90 Pure-tone?	NO			

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-193: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	1.9	1.2	9.2	11.1	13.0	14.6	KWI Turbine OPERATING (with traffic)	Avg Lmax	4.0	2.7	10.3	11.4	13.2	14.5
	L01	1.3	0.6	8.6	10.5	12.3	14.0		L01	3.4	2.0	9.6	10.8	12.5	13.8
	Leq	-2.3	-3.0	5.0	6.9	8.8	10.4		Leq	0.3	-1.1	6.5	7.7	9.4	10.7
	L50	-2.5	-3.2	4.8	6.7	8.6	10.2		L50	0.2	-1.2	6.4	7.6	9.3	10.6
	L90	-5.2	-5.9	2.2	4.0	5.9	7.6		L90	-2.4	-3.8	3.8	5.0	6.7	8.0
	Lmin	-8.9	-9.6	-1.6	0.3	2.1	3.8		Lmin	-5.7	-7.1	0.5	1.7	3.4	4.7
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	8.3	8.4	10.8	11.0	12.1	12.8	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.9	8.9	10.6	10.9	11.8	12.4
	L01	8.5	8.6	11.0	11.2	12.3	13.0		L01	9.5	9.6	11.3	11.5	12.4	13.0
	Leq	4.7	4.8	7.2	7.5	8.5	9.2		Leq	6.0	6.1	7.8	8.0	8.9	9.5
	L50	4.6	4.6	7.1	7.3	8.3	9.1		L50	5.9	6.0	7.7	7.9	8.8	9.4
	L90	0.9	1.0	3.4	3.6	4.7	5.4		L90	2.3	2.4	4.1	4.3	5.2	5.8
	Lmin	-1.0	-0.9	1.5	1.8	2.8	3.5		Lmin	0.8	0.8	2.5	2.7	3.7	4.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	0.3	-0.4	7.6	9.5	11.4	13.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.4	1.0	8.6	9.8	11.5	12.8
	L01	0.5	-0.2	7.8	9.7	11.6	13.2		L01	3.0	1.7	9.3	10.4	12.1	13.5
	Leq	-3.3	-3.9	4.1	5.9	7.8	9.5		Leq	-0.5	-1.8	5.8	6.9	8.6	10.0
	L50	-3.4	-4.1	3.9	5.8	7.7	9.3		L50	-0.6	-1.9	5.7	6.8	8.5	9.9
	L90	-7.1	-7.8	0.2	2.1	4.0	5.6		L90	-4.2	-5.6	2.0	3.2	4.9	6.2
	Lmin	-8.9	-9.6	-1.6	0.3	2.1	3.8		Lmin	-5.7	-7.1	0.5	1.7	3.4	4.7

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-194: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/2/2014 between 2:20 AM and 3:05 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	4.8	1.1	10.6	12.1	13.7	15.9	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.5	2.5	5.2	5.4	5.8	6.2
	L01	4.7	1.0	10.5	12.0	13.5	15.8		L01	-1.4	0.6	3.3	3.4	3.9	4.3
	Leq	1.6	-2.1	7.4	8.9	10.4	12.7		Leq	-3.9	-1.8	0.8	1.0	1.5	1.8
	L50	1.5	-2.2	7.3	8.8	10.3	12.6		L50	-4.8	-2.8	-0.1	0.1	0.5	0.9
	L90	-1.1	-4.8	4.7	6.2	7.7	9.9		L90	-4.8	-2.8	-0.2	0.0	0.5	0.8
	Lmin	-4.8	-8.5	1.0	2.5	4.1	6.3		Lmin	-5.6	-3.6	-0.9	-0.7	-0.3	0.1
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	10.3	10.3	11.8	11.9	12.8	13.3	KWI Turbine OPERATING (no traffic)	Avg Lmax	2.6	2.6	3.4	3.4	3.8	4.0
	L01	11.2	11.2	12.7	12.8	13.8	14.2		L01	2.7	2.7	3.5	3.5	3.8	4.1
	Leq	7.2	7.2	8.7	8.8	9.8	10.2		Leq	0.3	0.3	1.1	1.1	1.5	1.7
	L50	7.1	7.1	8.5	8.6	9.6	10.0		L50	0.2	0.2	1.0	1.0	1.4	1.6
	L90	3.3	3.3	4.8	4.9	5.8	6.3		L90	-0.6	-0.6	0.2	0.2	0.6	0.8
	Lmin	1.4	1.4	2.8	2.9	3.9	4.3		Lmin	-1.1	-1.2	-0.4	-0.4	0.0	0.2
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	4.2	0.5	10.0	11.5	13.0	15.2	KWI Turbine OPERATING (no traffic)	Avg Lmax	-1.6	0.4	3.1	3.3	3.7	4.1
	L01	5.1	1.4	10.9	12.4	13.9	16.2		L01	-1.5	0.5	3.2	3.3	3.8	4.2
	Leq	1.1	-2.6	6.9	8.4	9.9	12.2		Leq	-3.9	-1.9	0.8	1.0	1.4	1.8
	L50	0.9	-2.8	6.7	8.2	9.8	12.0		L50	-4.0	-2.0	0.7	0.9	1.3	1.7
	L90	-2.8	-6.5	3.0	4.5	6.0	8.2		L90	-4.8	-2.8	-0.1	0.1	0.5	0.9
	Lmin	-4.8	-8.5	1.0	2.5	4.1	6.3		Lmin	-5.4	-3.4	-0.7	-0.5	0.0	0.3

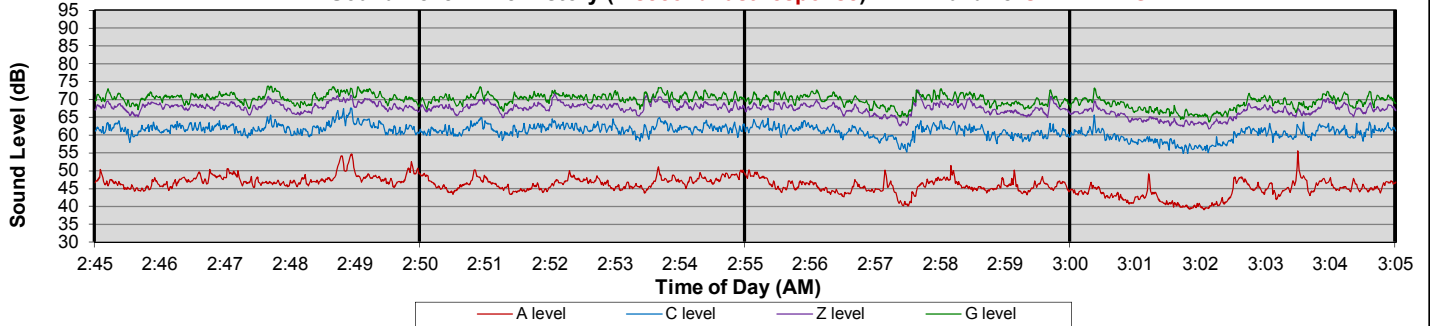


**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-195: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/2/2014 from 2:45 to 3:05 AM with KWI Turbine OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 1410 ft	Time: 2:40 to 2:50 AM	Calibrated Wind Speed: 8.9 m/s	Wind Direction: 200°	Avg Power Level: 949 kW	Air Temperature: 33 °F
Wind Speed Range: 0-2 m/s	Time: 2:50 to 3:00 AM	Calibrated Wind Speed: 8.4 m/s	Wind Direction: 201°	Avg Power Level: 1026 kW	Air Temperature: 33 °F
	Time: 3:00 to 3:10 AM	Calibrated Wind Speed: 7.7 m/s	Wind Direction: 205°	Avg Power Level: 831 kW	Air Temperature: 33 °F

**Sound Level Time History (1-second fast response) - KWI Turbine OPERATING**



**Event Log**

Traffic on Route 3 **throughout**

Loud leaves blowing across driveway noise from **3:04:08 to 3:04:14 (EXCLUDE)**

HMMH consultant makes noise from **2:47:32 to 2:47:36, 2:48:14 to 2:48:19, and 2:57:28 to 2:57:33 (EXCLUDE)**

Loud cord tapping on flagpole noise from **2:46:09 to 2:46:12, 2:46:14 to 2:46:18, 2:47:23 to 2:47:32, 2:58:10 to 2:58:16, and 3:00:09 to 3:00:11 (EXCLUDE)**

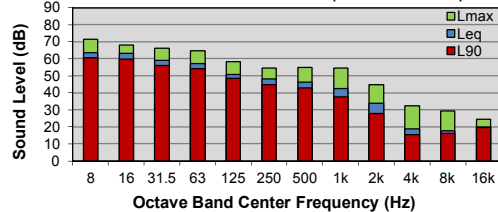
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (91% included)						2:50 to 2:55 AM (100% included)						2:55 to 3:00 AM (96% included)						3:00 to 3:05 AM (97% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.6	67.6	71.1	73.8	5.3	Lmax	51.1	65.0	71.7	73.5	5.0	Lmax	50.2	64.7	72.6	73.0	8.1	Lmax	55.6	65.6	70.3	73.2	7.3
L01	54.1	67.0	70.9	73.6	4.4	L01	50.3	64.8	70.9	73.2	4.3	L01	50.1	64.1	71.2	72.6	4.3	L01	49.2	63.4	69.6	72.2	4.9
Leq	48.0	62.4	68.3	70.8	2.3	Leq	46.9	62.0	68.2	70.6	2.1	Leq	46.0	61.2	67.5	69.9	2.0	Leq	44.8	60.1	66.3	68.8	2.0
L50	47.2	62.0	68.1	70.6	2.2	L50	46.7	61.8	68.0	70.6	2.0	L50	45.5	61.1	67.4	69.8	1.9	L50	44.2	59.8	66.2	68.6	1.8
L90	45.6	60.3	66.6	68.9	1.3	L90	44.6	60.2	66.7	69.0	1.1	L90	43.8	58.8	65.3	67.7	1.0	L90	40.2	56.9	63.3	65.8	1.0
Lmin	44.3	57.9	65.1	67.1	0.5	Lmin	43.4	58.2	64.9	66.7	0.3	Lmin	40.1	55.3	62.5	65.1	0.4	Lmin	39.1	54.9	61.6	63.7	0.3

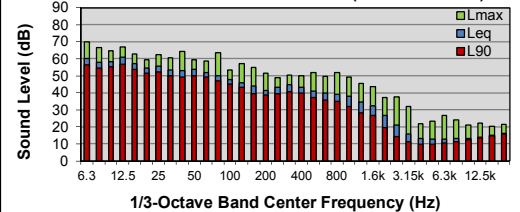
**2:45 to 3:05 AM (96% included)**

Avg	A	C	Z	G	MD
Lmax	52.9	65.7	71.4	73.4	6.4
L01	51.7	65.1	70.8	73.2	4.5
Leq	46.6	61.5	67.7	70.1	2.1
L50	46.1	61.3	67.6	70.0	1.1
L90	42.9	58.6	65.0	67.4	1.1
Lmin	39.1	54.9	61.6	63.7	0.3

**Octave Band Sound Levels (2:45 to 3:05 AM)**



**1/3-Octave Band Sound Levels (2:45 to 3:05 AM)**



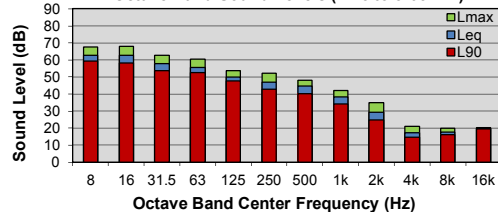
**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

2:45 to 2:50 AM (9% included)						2:50 to 2:55 AM (5% included)						2:55 to 3:00 AM (29% included)						3:00 to 3:05 AM (34% included)					
8.8 m/s	A	C	Z	G	MD	8.7 m/s	A	C	Z	G	MD	8.5 m/s	A	C	Z	G	MD	7.8 m/s	A	C	Z	G	MD
Lmax	47.3	65.5	70.8	73.8	4.4	Lmax	45.0	63.3	68.8	72.1	3.3	Lmax	47.2	64.0	70.4	72.7	5.0	Lmax	45.7	63.6	69.0	72.2	4.7
L01	47.2	65.4	70.8	73.8	4.4	L01	44.9	63.2	68.7	72.0	3.3	L01	47.1	64.0	70.1	72.3	4.3	L01	45.5	62.7	68.6	72.1	4.2
Leq	46.0	62.2	68.2	71.1	2.6	Leq	44.2	61.3	67.6	70.5	2.0	Leq	45.0	61.4	67.8	70.5	2.2	Leq	42.2	58.8	65.2	68.0	1.7
L50	46.4	62.0	68.3	70.3	2.5	L50	44.3	61.0	67.6	70.5	1.9	L50	45.0	61.3	67.8	70.5	2.1	L50	41.1	58.5	64.3	67.6	1.6
L90	44.4	59.7	65.5	68.1	1.8	L90	43.5	60.0	67.0	69.5	1.5	L90	43.4	58.8	66.0	68.3	1.3	L90	39.7	56.1	62.8	65.2	0.9
Lmin	44.4	57.9	65.1	67.1	1.3	Lmin	43.4	59.4	66.8	68.8	1.1	Lmin	40.1	55.3	62.8	65.2	0.6	Lmin	39.1	54.9	61.6	63.7	0.6

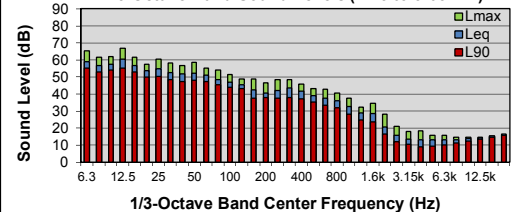
**2:45 to 3:05 AM (19% included)**

Avg	A	C	Z	G	MD
Lmax	46.3	64.1	69.8	72.7	4.4
L01	47.1	64.3	70.4	73.6	4.4
Leq	44.1	60.6	66.9	69.6	2.0
L50	44.1	60.4	66.8	69.4	1.9
L90	40.1	56.7	63.2	65.7	1.1
Lmin	39.1	54.9	61.6	63.7	0.6

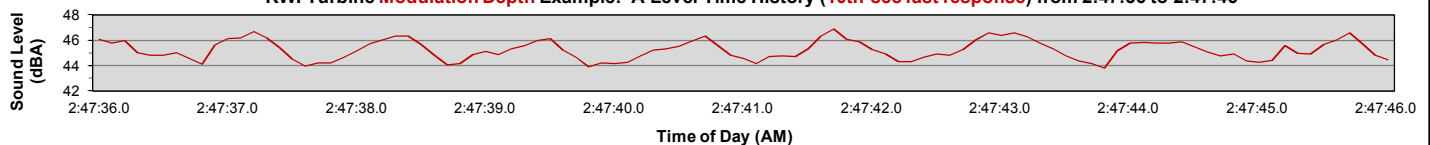
**Octave Band Sound Levels (2:45 to 3:05 AM)**



**1/3-Octave Band Sound Levels (2:45 to 3:05 AM)**



**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:47:36 to 2:47:46**

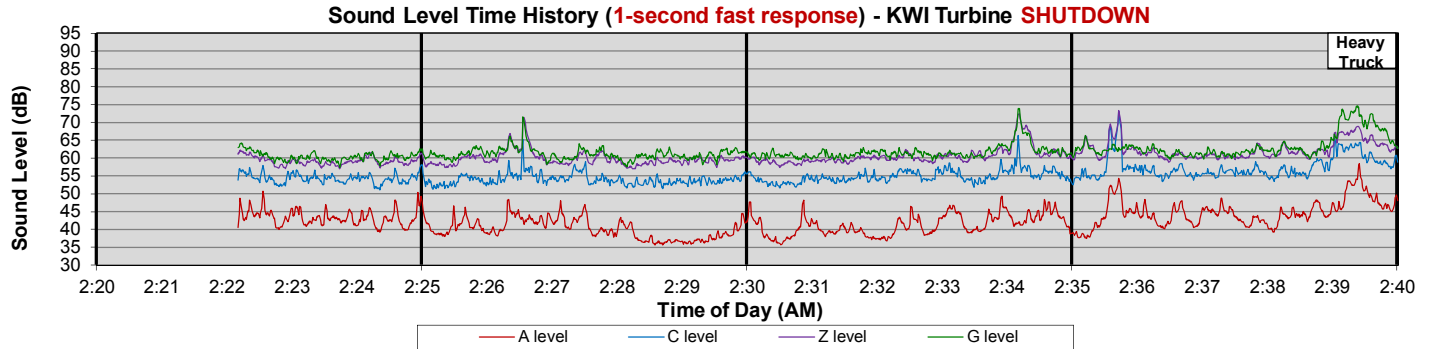




**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-196: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/2/2014 from 2:20 to 2:40 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>2:20 to 2:30 AM</b>	Calibrated Wind Speed: <b>7.8 m/s</b>	Wind Direction: <b>197°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>
Wind Speed Range: <b>0-2 m/s</b>	Time: <b>2:30 to 2:40 AM</b>	Calibrated Wind Speed: <b>8.7 m/s</b>	Wind Direction: <b>199°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>33 °F</b>



**Event Log**

Monitoring initiated at **2:22:10**

Traffic on Route 3 **throughout**

Local vehicle from **2:38:50 to 2:39:11 (EXCLUDE)**

Loud cord tapping on flagpole noise from **2:26:20 to 2:26:29, 2:28:37 to 2:28:42, 2:31:53 to 2:31:56, 2:38:03 to 2:38:08, and 2:38:28 to 2:38:34 (EXCLUDE)**

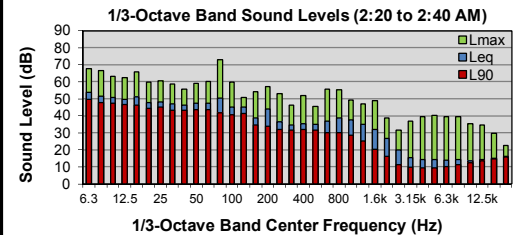
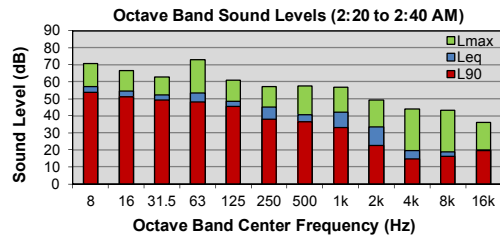
HMMH consultant makes noise from **2:24:53 to 2:24:56, 2:25:27 to 2:25:32, 2:29:18 to 2:29:22, 2:33:52 to 2:33:56, 2:34:02 to 2:34:30, 2:34:58 to 2:35:03, and 2:35:11 to 2:35:15 (EXCLUDE)**

**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

2:20 to 2:25 AM (56% included)						2:25 to 2:30 AM (92% included)						2:30 to 2:35 AM (88% included)						2:35 to 2:40 AM (87% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	50.7	58.2	62.2	64.2	7.1	Lmax	48.2	65.3	71.3	71.6	5.9	Lmax	48.3	58.7	62.7	63.6	5.6	Lmax	58.5	73.2	73.4	74.6	5.1
L01	49.7	57.5	61.8	63.9	5.5	L01	47.1	58.5	68.5	66.5	3.1	L01	47.8	57.9	62.4	63.4	4.0	L01	54.4	69.2	69.8	73.6	3.7
Leq	44.0	54.5	59.3	60.6	1.4	Leq	40.9	54.4	60.3	61.5	1.2	Leq	42.1	54.8	60.1	61.2	1.2	Leq	47.2	59.4	63.2	65.3	1.2
L50	43.0	54.2	59.0	60.2	1.1	L50	39.7	53.7	59.3	60.9	1.1	L50	40.6	54.4	59.8	61.1	1.0	L50	44.4	56.5	61.4	62.3	1.1
L90	40.6	52.6	57.7	59.0	0.6	L90	36.6	52.4	58.0	59.5	0.6	L90	37.5	52.9	58.7	60.0	0.6	L90	40.8	54.6	60.0	60.6	0.6
Lmin	39.2	51.1	56.9	57.5	0.3	Lmin	35.8	51.3	57.0	57.6	0.3	Lmin	35.7	51.6	57.4	59.0	0.3	Lmin	37.6	53.5	58.8	59.7	0.2

**2:20 to 2:40 AM (81% included)**

Avg	A	C	Z	G	MD
Lmax	51.4	63.8	67.4	68.5	5.9
L01	53.3	64.5	68.7	72.2	3.9
Leq	44.2	56.5	61.1	62.7	1.2
L50	42.1	54.6	60.0	61.2	1.1
L90	37.7	52.7	58.3	59.7	0.6
Lmin	35.7	51.1	56.9	57.5	0.2

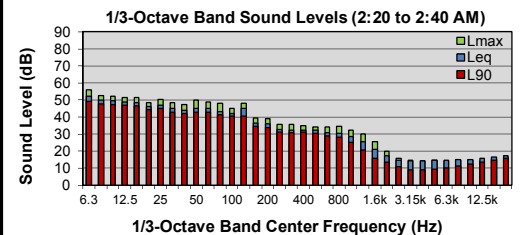
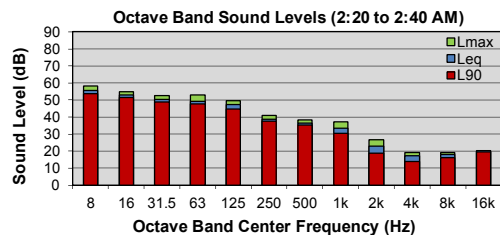


**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

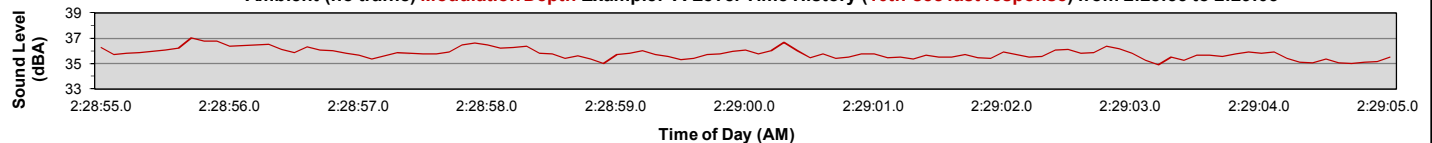
2:20 to 2:25 AM (0% included)						2:25 to 2:30 AM (18% included)						2:30 to 2:35 AM (9% included)						2:35 to 2:40 AM (0% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	-	-	-	-	-	Lmax	39.5	54.9	61.0	62.4	1.6	Lmax	38.1	56.8	60.8	62.4	1.8	Lmax	-	-	-	-	-
L01	-	-	-	-	-	L01	39.3	54.8	60.7	62.2	1.6	L01	38.1	56.5	60.8	62.4	1.8	L01	-	-	-	-	-
Leq	-	-	-	-	-	Leq	37.5	53.0	58.8	60.7	0.9	Leq	37.3	53.9	59.7	61.3	1.0	Leq	-	-	-	-	-
L50	-	-	-	-	-	L50	36.8	52.9	58.6	60.6	0.9	L50	37.5	53.6	59.9	61.2	1.0	L50	-	-	-	-	-
L90	-	-	-	-	-	L90	36.0	51.9	58.0	59.7	0.6	L90	36.1	52.4	58.0	60.2	0.6	L90	-	-	-	-	-
Lmin	-	-	-	-	-	Lmin	35.8	51.3	57.4	59.4	0.4	Lmin	35.7	51.6	57.4	59.5	0.4	Lmin	-	-	-	-	-

**2:20 to 2:40 AM (7% included)**

Avg	A	C	Z	G	MD
Lmax	38.8	55.8	60.9	62.4	1.7
L01	39.2	55.8	60.8	62.4	1.7
Leq	37.5	53.3	59.1	60.9	0.9
L50	37.1	53.1	58.9	60.8	0.9
L90	36.0	52.1	58.0	59.9	0.6
Lmin	35.7	51.3	57.4	59.4	0.4



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 2:28:55 to 2:29:05**



**Detailed Acoustical Monitoring Data**  
**38 Prospect Street**  
**March 15, 2014**

Slow-response data: Pages D-198 to D-203

Fast-response data: Pages D-204 to D-209

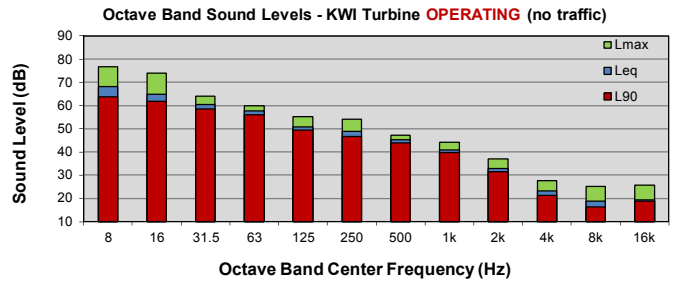
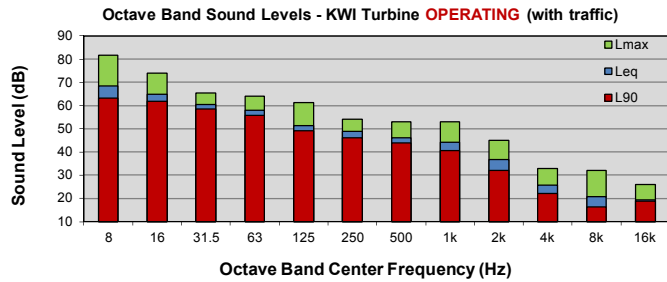
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-198: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 4: 38 Prospect St. on 3/15/2014 between 3:40 AM and 4:25 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 4:00 to 4:10 AM	Calibrated Wind Speed: 10.1 m/s	Wind Direction: 181°	Average Power Level: 1422 kW	Air Temperature: 41 °F
Time: 4:10 to 4:20 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 180°	Average Power Level: 1826 kW	Air Temperature: 41 °F
Time: 4:20 to 4:30 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 179°	Average Power Level: 1880 kW	Air Temperature: 41 °F

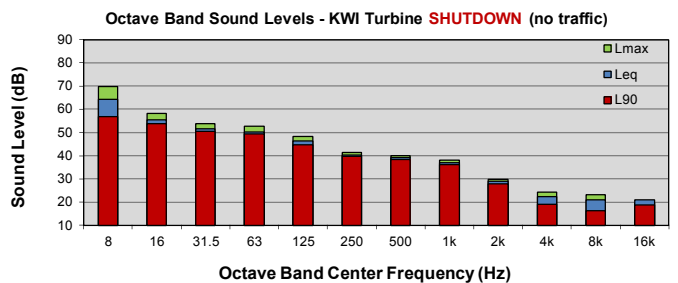
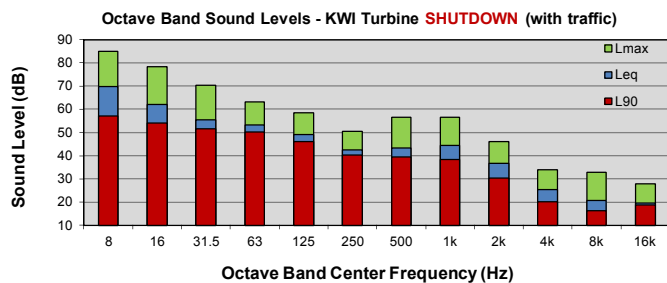
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
4:05 to 4:25 AM (96% included)						4:05 to 4:25 AM (20% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.7	66.3	79.2	79.1	6.4	Avg Lmax	48.3	64.6	74.9	76.4	5.2
L01	53.0	65.8	78.9	78.7	5.1	L01	48.6	64.6	77.4	76.7	5.5
Leq	48.3	62.4	70.8	72.3	1.9	Leq	46.7	62.1	70.6	72.3	2.2
L50	47.6	62.1	69.2	71.6	1.1	L50	46.6	61.9	69.3	71.7	2.1
L90	46.1	60.4	67.3	69.6	1.0	L90	45.5	60.6	67.4	69.6	1.2
Lmin	43.8	58.9	65.3	67.1	0.2	Lmin	43.8	59.5	66.2	67.3	0.6

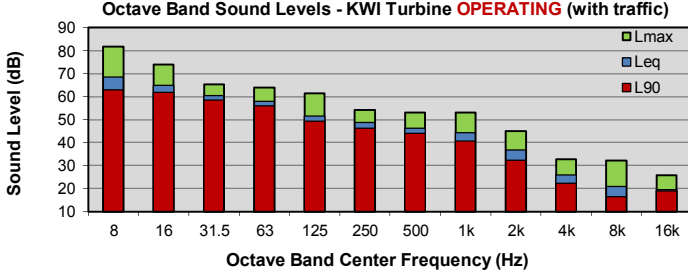
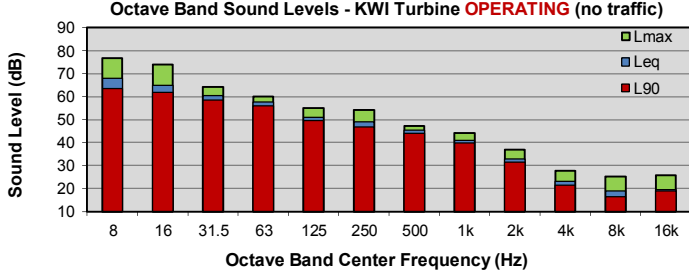
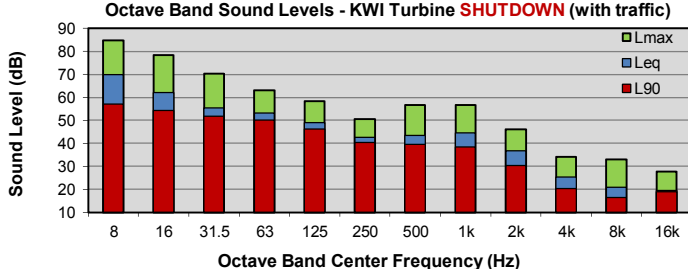
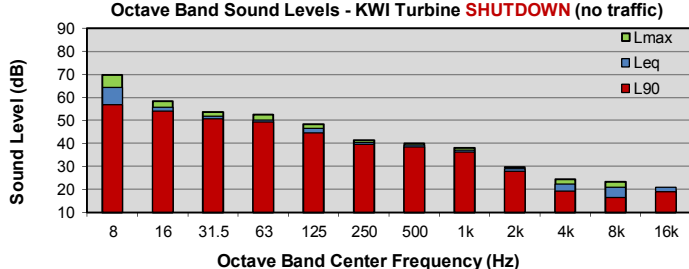


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 3:40 to 3:50 AM	Calibrated Wind Speed: 10.7 m/s	Wind Direction: 182°	Average Power Level: 000 kW	Air Temperature: 41 °F
Time: 3:50 to 4:00 AM	Calibrated Wind Speed: 11.0 m/s	Wind Direction: 182°	Average Power Level: 000 kW	Air Temperature: 41 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
3:40 to 4:00 AM (100% included)						3:40 to 4:00 AM (2% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	54.7	69.6	83.6	84.3	10.6	Avg Lmax	41.2	55.3	67.3	66.3	2.1
L01	54.8	66.8	82.0	81.7	6.0	L01	41.3	55.9	70.2	68.0	3.2
Leq	47.0	58.7	70.8	70.4	1.5	Leq	41.0	54.5	65.3	64.5	1.0
L50	45.3	56.7	64.0	64.9	1.2	L50	41.0	54.4	62.5	63.5	0.9
L90	42.1	54.9	61.0	62.6	0.6	L90	40.8	54.0	60.3	62.1	0.6
Lmin	40.7	52.7	58.9	60.4	0.2	Lmin	40.7	53.8	59.8	61.4	0.4



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-199: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/15/2014 between 3:40 AM and 4:25 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-1.9	-2.1	5.7	7.5	10.6	12.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.1	7.0	7.3	7.3	7.5	7.6
	L01	-1.7	-1.9	6.0	7.7	10.8	12.3		L01	7.4	7.3	7.6	7.6	7.8	7.9
	Leq	-6.4	-6.5	1.3	3.1	6.2	7.6		Leq	5.5	5.4	5.7	5.7	5.9	6.0
	L50	-7.0	-7.2	0.6	2.4	5.5	6.9		L50	5.5	5.4	5.6	5.6	5.9	5.9
	L90	-8.6	-8.8	-0.9	0.8	3.9	5.4		L90	4.3	4.2	4.5	4.5	4.7	4.8
	Lmin	-10.9	-11.0	-3.2	-1.5	1.7	3.1		Lmin	2.6	2.5	2.8	2.8	3.0	3.1
															
															
Operating - Shutdown Differences: Overall Comparison															
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-6.4	-6.5	1.3	3.0	6.2	7.6								
	L01	-6.1	-6.2	1.6	3.4	6.5	7.9								
	Leq	-8.0	-8.1	-0.3	1.4	4.6	6.0								
	L50	-8.0	-8.2	-0.4	1.4	4.5	5.9								
	L90	-9.2	-9.4	-1.5	0.2	3.4	4.8								
	Lmin	-10.9	-11.0	-3.2	-1.5	1.7	3.1								
Octave Band Sound Level Comparison: Pure-tone Check															
Including traffic on Route 3:															
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
Excluding traffic on Route 3:															
Leq Octave Band Check: KWI Turbine ONLY				NO KWI PURE TONE		Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?		NO				Leq Pure-tone?		NO							
L90 Octave Band Check KWI Turbine ONLY				NO KWI PURE TONE		L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-200: Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/15/2014 between 3:40 AM and 4:25 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-3.4	-0.5	7.6	9.6	11.4	13.5	KWI Turbine OPERATING (with traffic)	Avg Lmax	-4.4	-2.9	8.4	15.1	18.2	20.2
	L01	-3.9	-1.0	7.1	9.1	10.9	13.0		L01	-4.7	-3.2	8.1	14.8	17.9	20.0
	Leq	-7.3	-4.4	3.7	5.7	7.5	9.6		Leq	-12.8	-11.2	0.0	6.8	9.8	11.9
	L50	-7.5	-4.7	3.4	5.4	7.2	9.4		L50	-14.4	-12.9	-1.6	5.1	8.2	10.3
	L90	-9.2	-6.4	1.7	3.7	5.5	7.7		L90	-16.3	-14.8	-3.5	3.3	6.3	8.4
	Lmin	-10.8	-7.9	0.2	2.2	4.0	6.1		Lmin	-18.3	-16.8	-5.5	1.2	4.3	6.3
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (no traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	9.3	8.8	10.1	10.2	10.6	10.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.6	4.7	9.6	12.4	14.6	15.1
	L01	9.3	8.8	10.1	10.2	10.6	10.9		L01	10.1	7.3	12.2	14.9	17.1	17.6
	Leq	6.8	6.2	7.6	7.7	8.1	8.4		Leq	3.3	0.4	5.3	8.1	10.3	10.7
	L50	6.6	6.0	7.4	7.5	7.9	8.1		L50	2.0	-0.9	4.0	6.8	9.0	9.5
	L90	5.3	4.7	6.0	6.1	6.6	6.8		L90	0.1	-2.7	2.2	4.9	7.1	7.6
	Lmin	4.2	3.6	4.9	5.0	5.5	5.7		Lmin	-1.1	-4.0	0.9	3.7	5.9	6.4
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response C-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.0	-2.2	5.9	8.0	9.7	11.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.7	-7.1	4.2	10.9	13.9	16.0
	L01	-5.0	-2.2	6.0	8.0	9.7	11.9		L01	-6.1	-4.6	6.7	13.4	16.4	18.5
	Leq	-7.5	-4.7	3.4	5.5	7.2	9.4		Leq	-13.0	-11.5	-0.2	6.5	9.6	11.7
	L50	-7.7	-4.9	3.2	5.2	7.0	9.2		L50	-14.3	-12.7	-1.4	5.3	8.3	10.4
	L90	-9.1	-6.2	1.9	3.9	5.7	7.8		L90	-16.1	-14.6	-3.3	3.4	6.4	8.5
	Lmin	-10.2	-7.3	0.8	2.8	4.6	6.7		Lmin	-17.4	-15.8	-4.6	2.2	5.2	7.3

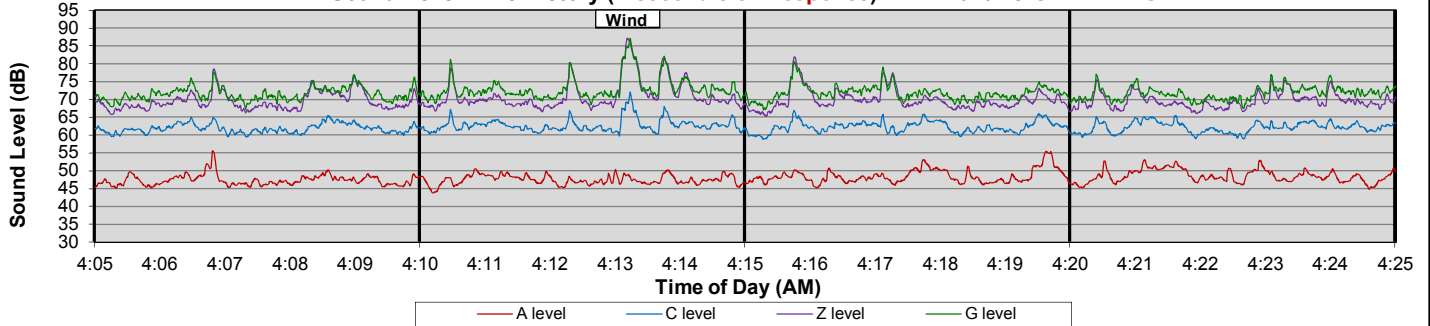
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-201: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/15/2014 between 3:40 AM and 4:25 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-5.2	-2.6	8.7	14.2	16.5	18.7	KWI Turbine OPERATING (with traffic)	Avg Lmax	-4.2	0.5	4.9	5.3	5.8	6.2
	L01	-5.6	-3.0	8.3	13.8	16.1	18.3		L01	-5.5	-0.9	3.5	3.9	4.4	4.9
	Leq	-11.9	-9.3	1.9	7.5	9.7	12.0		Leq	-8.7	-4.0	0.4	0.8	1.3	1.7
	L50	-12.7	-10.1	1.2	6.7	9.0	11.2		L50	-9.6	-4.9	-0.5	-0.1	0.4	0.8
	L90	-14.7	-12.1	-0.9	4.7	7.0	9.2		L90	-9.6	-5.0	-0.5	-0.2	0.3	0.8
	Lmin	-17.2	-14.6	-3.4	2.2	4.4	6.7		Lmin	-10.4	-5.7	-1.3	-0.9	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	10.1	8.4	11.8	12.9	14.3	15.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.1	1.9	4.1	4.3	4.6	4.7
	L01	10.4	8.7	12.2	13.2	14.6	15.3		L01	3.5	2.3	4.5	4.6	4.9	5.1
	Leq	6.0	4.3	7.8	8.8	10.2	10.9		Leq	0.1	-1.0	1.2	1.3	1.6	1.8
	L50	5.4	3.7	7.1	8.2	9.5	10.3		L50	0.0	-1.2	1.0	1.2	1.5	1.7
	L90	3.3	1.6	5.0	6.0	7.4	8.2		L90	-0.9	-2.0	0.2	0.3	0.6	0.8
	Lmin	1.0	-0.7	2.7	3.8	5.2	5.9		Lmin	-1.5	-2.7	-0.5	-0.3	0.0	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-7.9	-5.3	6.0	11.5	13.8	16.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.4	-0.8	3.6	4.0	4.5	4.9
	L01	-7.6	-5.0	6.3	11.8	14.1	16.4		L01	-5.1	-0.4	4.0	4.4	4.9	5.3
	Leq	-12.0	-9.4	1.9	7.4	9.7	12.0		Leq	-8.4	-3.7	0.7	1.1	1.6	2.0
	L50	-12.6	-10.0	1.2	6.8	9.1	11.3		L50	-8.5	-3.9	0.5	0.9	1.4	1.8
	L90	-14.7	-12.1	-0.9	4.7	7.0	9.2		L90	-9.4	-4.7	-0.3	0.0	0.6	1.0
	Lmin	-17.0	-14.4	-3.1	2.4	4.7	6.9		Lmin	-10.0	-5.4	-1.0	-0.6	-0.1	0.3

Acoustical Monitoring Study of Kingston Wind Independence Turbine  
Page D-202: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating  
HMMH Project # 305270.001

Measurement at Site 4: 38 Prospect St. on 3/15/2014 from 4:05 to 4:25 AM with KWI Turbine OPERATING

Site data	Supervisory Control and Data Acquisition (SCADA) data				
Distance from KWI: 1410 ft	Time: 4:00 to 4:10 AM	Calibrated Wind Speed: 10.1 m/s	Wind Direction: 181°	Avg Power Level: 1422 kW	Air Temperature: 41 °F
Wind Speed Range: 1-5 m/s	Time: 4:10 to 4:20 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 180°	Avg Power Level: 1826 kW	Air Temperature: 41 °F
	Time: 4:20 to 4:30 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 179°	Avg Power Level: 1880 kW	Air Temperature: 41 °F

Sound Level Time History (1-second slow response) - KWI Turbine OPERATING



Event Log

Traffic on Route 3 throughout

Intermittent wind-generated noise throughout

Loud cord tapping on flagpole noise removed

Loud bird in leaves noise from 4:13:26 to 4:13:28 (EXCLUDE)

HMMH consultant makes noise from 4:06:48 to 4:06:53, 4:10:25 to 4:10:28, 4:12:16 to 4:12:23, 4:12:57 to 4:13:17, 4:13:42 to 4:13:47, 4:27:17 to 4:27:20, and 4:29:26 to 4:29:30 (EXCLUDE)

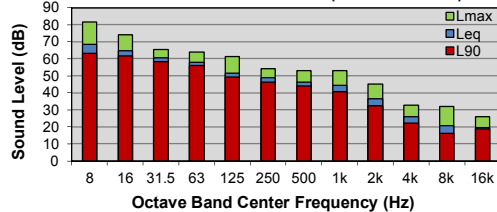
Slow Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine OPERATING

4:05 to 4:10 AM (98% included)						4:10 to 4:15 AM (87% included)						4:15 to 4:20 AM (100% included)						4:20 to 4:25 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	52.0	65.5	76.7	76.9	6.1	Lmax	50.5	67.3	82.4	81.8	6.1	Lmax	55.4	66.9	81.9	80.6	6.8	Lmax	53.1	65.4	75.7	77.1	6.7
L01	50.9	64.9	75.3	76.2	5.0	L01	50.3	66.6	81.1	81.1	5.3	L01	55.1	66.0	80.0	79.0	5.2	L01	52.7	65.1	75.2	76.4	4.7
Leq	47.4	62.0	70.0	71.8	2.1	Leq	47.6	62.6	71.7	73.1	2.1	Leq	49.0	62.6	71.2	72.4	1.9	Leq	48.9	62.4	70.1	72.0	1.8
L50	47.1	61.7	68.6	71.2	1.9	L50	47.2	62.3	69.5	71.9	1.9	L50	48.0	62.3	69.2	71.7	1.7	L50	48.3	62.1	69.1	71.6	1.6
L90	45.8	60.3	67.0	69.4	1.1	L90	45.9	61.1	68.0	70.4	1.1	L90	46.5	60.3	67.3	69.5	1.0	L90	46.4	60.3	67.1	69.4	0.9
Lmin	45.2	59.5	65.8	67.3	0.2	Lmin	43.8	60.2	66.6	68.6	0.5	Lmin	45.3	58.9	65.3	67.1	0.3	Lmin	44.9	59.0	66.0	67.5	0.4

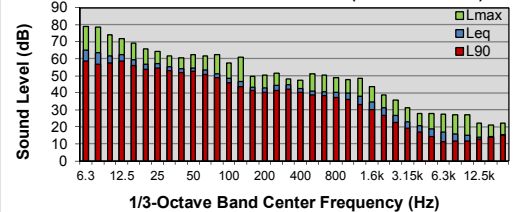
4:05 to 4:25 AM (96% included)

Avg	A	C	Z	G	MD
Lmax	52.7	66.3	79.2	79.1	6.4
L01	53.0	65.8	78.9	78.7	5.1
Leq	48.3	62.4	70.8	72.3	1.9
L50	47.6	62.1	69.2	71.6	1.1
L90	46.1	60.4	67.3	69.6	1.0
Lmin	43.8	58.9	65.3	67.1	0.2

Octave Band Sound Levels (4:05 to 4:25 AM)



1/3-Octave Band Sound Levels (4:05 to 4:25 AM)



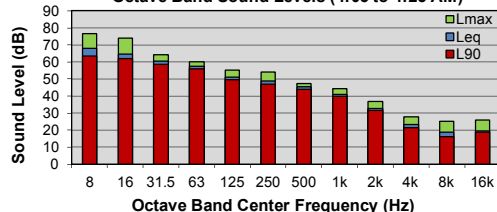
Slow Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine OPERATING

4:05 to 4:10 AM (20% included)						4:10 to 4:15 AM (34% included)						4:15 to 4:20 AM (15% included)						4:20 to 4:25 AM (10% included)					
10.2 m/s	A	C	Z	G	MD	10.3 m/s	A	C	Z	G	MD	10.4 m/s	A	C	Z	G	MD	10.4 m/s	A	C	Z	G	MD
Lmax	47.8	63.5	73.1	74.2	4.9	Lmax	48.8	67.3	78.8	81.1	5.7	Lmax	48.8	64.1	72.4	74.0	6.8	Lmax	47.8	63.7	75.3	76.2	3.2
L01	47.7	63.5	71.9	74.0	4.4	L01	48.3	65.9	78.2	79.6	5.4	L01	48.7	64.0	72.1	73.8	6.7	L01	47.8	63.6	75.2	76.1	3.2
Leq	46.4	61.3	68.7	70.7	2.2	Leq	46.7	62.5	71.6	73.1	2.2	Leq	47.3	62.5	69.8	72.0	2.5	Leq	46.3	61.5	70.7	72.5	1.7
L50	46.3	61.0	68.3	70.1	2.2	L50	46.7	62.3	69.8	72.1	2.0	L50	47.1	62.7	69.6	71.8	2.3	L50	46.3	61.3	69.1	71.7	1.6
L90	45.5	60.3	67.1	69.0	1.3	L90	45.4	61.2	68.2	70.5	1.2	L90	46.5	61.5	68.1	70.7	1.4	L90	45.3	60.5	67.2	69.8	0.9
Lmin	45.3	59.5	66.2	67.3	0.6	Lmin	43.8	60.6	66.7	68.6	0.7	Lmin	46.4	60.7	67.8	70.6	0.9	Lmin	44.9	59.9	66.6	69.2	0.6

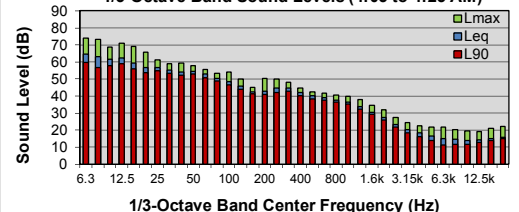
4:05 to 4:25 AM (20% included)

Avg	A	C	Z	G	MD
Lmax	48.3	64.6	74.9	76.4	5.2
L01	48.6	64.6	77.4	76.7	5.5
Leq	46.7	62.1	70.6	72.3	2.2
L50	46.6	61.9	69.3	71.7	2.1
L90	45.5	60.6	67.4	69.6	1.2
Lmin	43.8	59.5	66.2	67.3	0.6

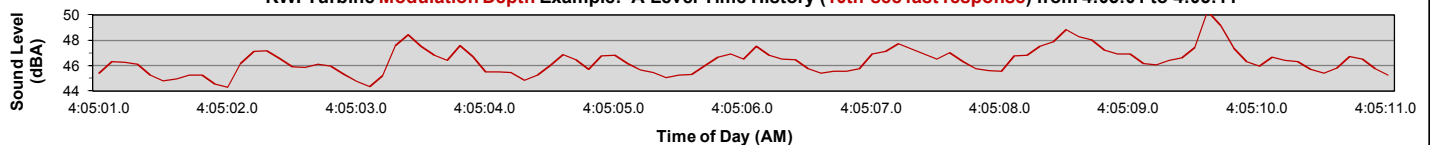
Octave Band Sound Levels (4:05 to 4:25 AM)



1/3-Octave Band Sound Levels (4:05 to 4:25 AM)



KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 4:05:01 to 4:05:11

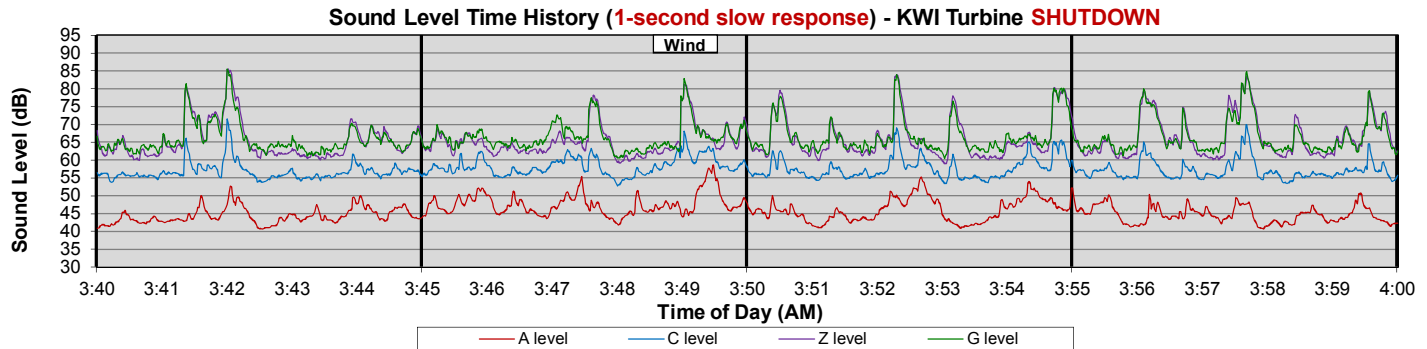




**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-203: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/15/2014 from 3:40 to 4:00 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>3:40 to 3:50 AM</b>	Calibrated Wind Speed: <b>10.7 m/s</b>	Wind Direction: <b>182°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>41 °F</b>
Wind Speed Range: <b>1-5 m/s</b>	Time: <b>3:50 to 4:00 AM</b>	Calibrated Wind Speed: <b>11.0 m/s</b>	Wind Direction: <b>182°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>41 °F</b>

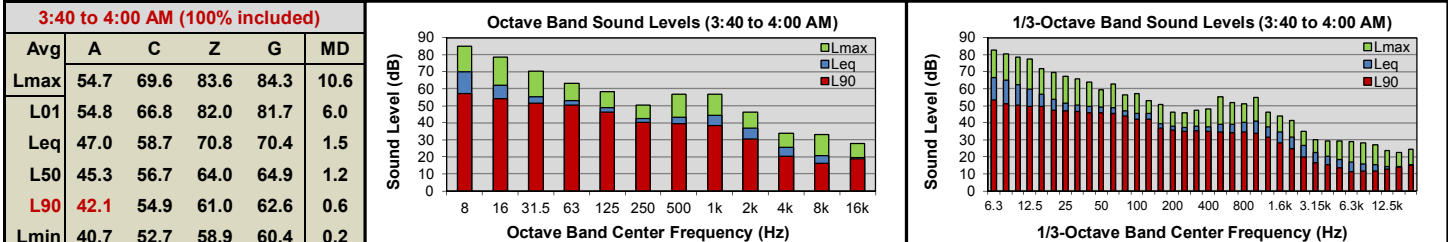


**Event Log**

Traffic on Route 3 **throughout**  
Intermittent wind-generated noise **throughout**  
Loud cord tapping on flagpole noise **removed**  
HMMH consultant makes noise from **3:40:13 to 3:40:15 (EXCLUDE)**  
HMMH consultant makes noise from **3:59:41 to 3:59:43 (EXCLUDE)**

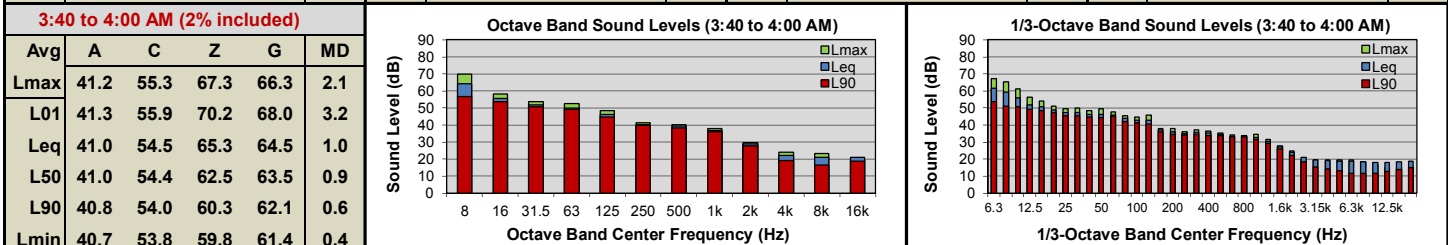
**Slow Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN**

3:40 to 3:45 AM (99% included)						3:45 to 3:50 AM (100% included)						3:50 to 3:55 AM (100% included)						3:55 to 4:00 AM (99% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	52.7	71.5	85.6	85.6	7.9	Lmax	58.6	68.1	81.2	82.8	11.2	Lmax	55.2	69.0	84.0	83.8	8.6	Lmax	52.2	69.9	83.5	84.9	14.6
L01	50.5	68.3	84.5	83.6	5.5	L01	57.7	64.0	78.9	78.0	6.2	L01	54.0	67.2	83.2	82.3	4.9	L01	50.6	66.8	81.7	81.6	7.8
Leq	45.1	58.1	71.1	70.4	1.4	Leq	49.0	59.1	68.6	69.0	1.6	Leq	47.3	59.0	71.5	70.9	1.5	Leq	45.4	58.5	71.3	71.1	1.7
L50	43.7	56.1	63.4	64.4	1.1	L50	47.0	57.8	64.2	65.6	1.2	L50	45.8	56.7	64.0	64.9	1.2	L50	44.4	56.4	64.3	64.7	1.2
L90	41.8	54.9	61.0	62.5	0.6	L90	44.3	55.5	61.3	62.8	0.7	L90	42.0	54.8	60.9	62.8	0.7	L90	41.9	54.8	61.0	62.6	0.6
Lmin	40.7	53.8	59.9	61.1	0.3	Lmin	41.8	52.7	59.2	60.6	0.2	Lmin	40.9	53.4	58.9	60.4	0.3	Lmin	40.7	53.4	60.1	61.1	0.2

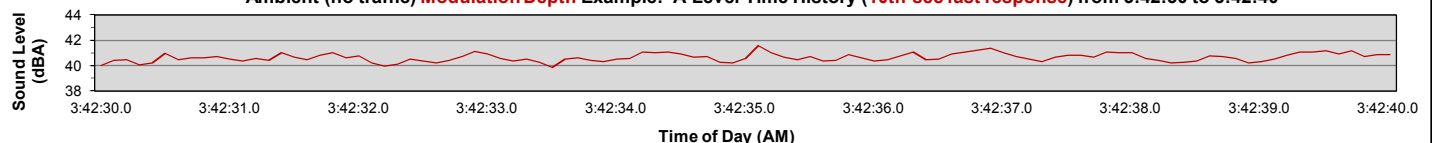


**Slow Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN**

3:40 to 3:45 AM (4% included)						3:45 to 3:50 AM (0% included)						3:50 to 3:55 AM (3% included)						3:55 to 4:00 AM (2% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	41.1	54.6	62.8	63.9	1.4	Lmax	-	-	-	-	-	Lmax	41.3	55.3	70.2	68.1	1.5	Lmax	41.1	56.1	68.9	66.9	3.4
L01	41.1	54.6	62.8	63.9	1.4	L01	-	-	-	-	-	L01	41.3	55.2	70.2	68.1	1.5	L01	41.1	56.1	68.9	66.8	3.3
Leq	40.9	54.2	61.9	62.9	1.0	Leq	-	-	-	-	-	Leq	41.1	54.6	66.9	65.5	0.9	Leq	41.0	55.1	66.3	65.1	1.5
L50	40.9	54.1	62.0	62.9	0.9	L50	-	-	-	-	-	L50	41.2	54.5	64.7	65.2	0.8	L50	40.9	54.8	65.4	65.1	1.0
L90	40.8	53.9	60.7	62.1	0.7	L90	-	-	-	-	-	L90	41.0	54.3	60.0	62.1	0.6	L90	40.8	54.6	63.9	63.5	0.6
Lmin	40.7	53.8	60.4	61.4	0.5	Lmin	-	-	-	-	-	Lmin	40.9	54.3	59.8	61.8	0.4	Lmin	40.7	54.6	63.6	63.2	0.4



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:42:30 to 3:42:40**



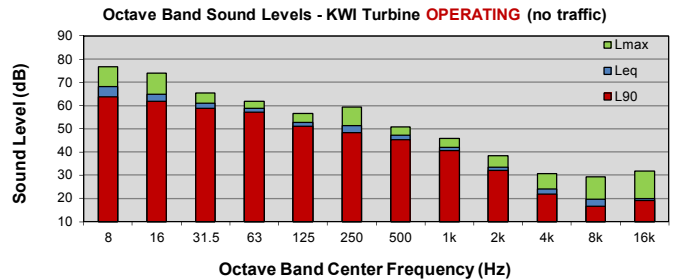
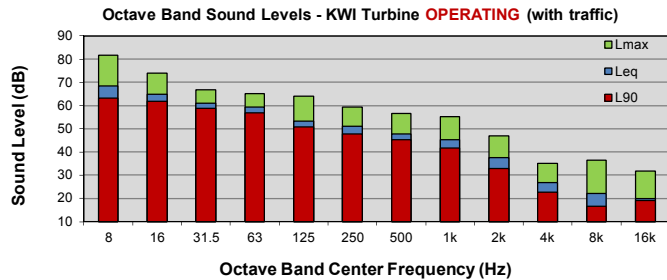
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-204: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 4: 38 Prospect St. on 3/15/2014 between 3:40 AM and 4:25 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 4:00 to 4:10 AM	Calibrated Wind Speed: 10.1 m/s	Wind Direction: 181°	Average Power Level: 1422 kW	Air Temperature: 41 °F
Time: 4:10 to 4:20 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 180°	Average Power Level: 1826 kW	Air Temperature: 41 °F
Time: 4:20 to 4:30 AM	Calibrated Wind Speed: 10.4 m/s	Wind Direction: 179°	Average Power Level: 1880 kW	Air Temperature: 41 °F

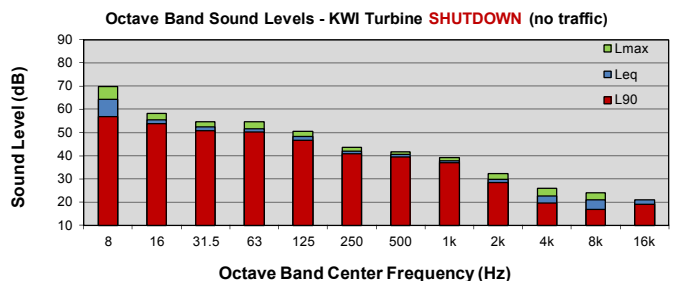
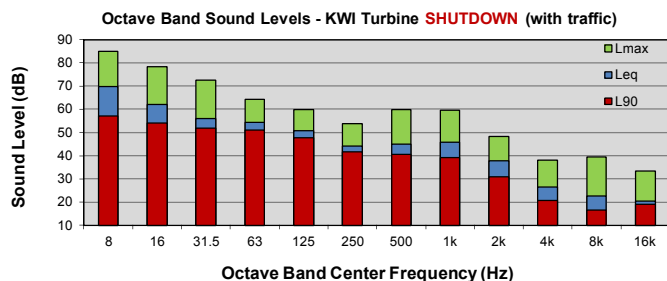
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
4:05 to 4:25 AM (96% included)						4:05 to 4:25 AM (20% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.1	67.2	79.2	79.1	6.4	Avg Lmax	51.2	65.6	75.0	76.4	5.2
L01	55.1	66.7	78.9	78.8	5.1	L01	51.5	65.6	77.5	76.7	5.5
Leq	49.8	63.3	71.0	72.4	1.9	Leq	48.3	63.0	70.7	72.4	2.2
L50	49.1	62.9	69.4	71.6	1.1	L50	48.1	62.8	69.6	71.7	2.1
L90	47.3	61.2	67.5	69.6	1.0	L90	46.7	61.4	67.8	69.7	1.2
Lmin	44.7	59.3	65.6	67.1	0.2	Lmin	44.7	60.1	66.3	67.3	0.6

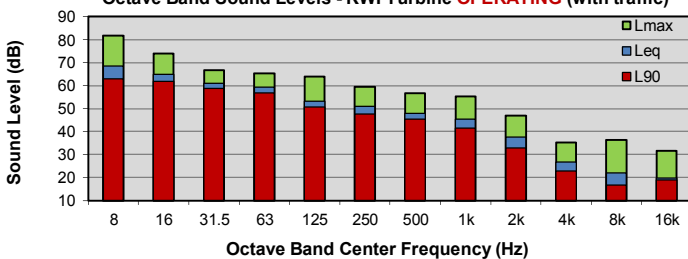
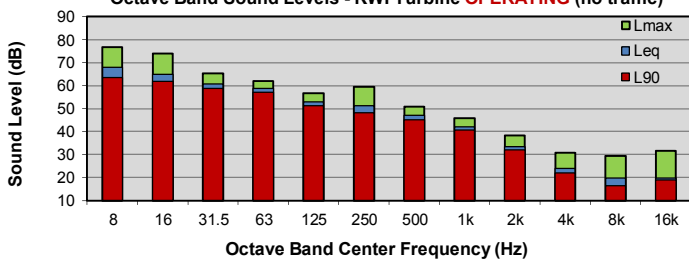
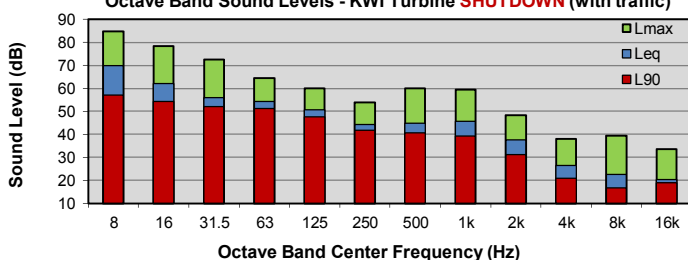
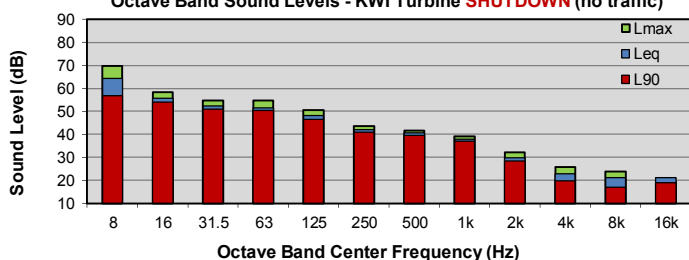


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 3:40 to 3:50 AM	Calibrated Wind Speed: 10.7 m/s	Wind Direction: 182°	Average Power Level: 000 kW	Air Temperature: 41 °F
Time: 3:50 to 4:00 AM	Calibrated Wind Speed: 11.0 m/s	Wind Direction: 182°	Average Power Level: 000 kW	Air Temperature: 41 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
3:40 to 4:00 AM (100% included)						3:40 to 4:00 AM (2% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	58.2	70.2	83.6	84.3	10.6	Avg Lmax	42.5	56.6	67.4	66.3	2.1
L01	56.5	67.2	82.1	81.7	6.0	L01	42.6	57.3	70.2	68.0	3.2
Leq	48.3	59.4	70.8	70.5	1.5	Leq	42.2	55.6	65.4	64.6	1.0
L50	46.2	57.6	64.3	64.9	1.2	L50	42.2	55.5	62.7	63.6	0.9
L90	43.2	55.7	61.3	62.7	0.6	L90	41.8	55.0	60.6	62.2	0.6
Lmin	41.7	53.6	59.1	60.4	0.2	Lmin	41.7	54.6	60.2	61.5	0.4



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-205: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/15/2014 between 3:40 AM and 4:25 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-3.1	-1.4	6.8	8.9	11.9	13.4	KWI Turbine OPERATING (no traffic)	Avg Lmax	8.7	8.6	9.0	9.0	9.3	9.5
	L01	-3.2	-1.5	6.8	8.8	11.9	13.4		L01	9.0	8.9	9.3	9.3	9.6	9.8
	Leq	-8.4	-6.8	1.5	3.6	6.6	8.1		Leq	5.9	5.8	6.2	6.2	6.5	6.7
	L50	-9.2	-7.5	0.8	2.8	5.9	7.4		L50	5.7	5.6	6.0	6.0	6.3	6.5
	L90	-10.9	-9.3	-1.0	1.0	4.1	5.6		L90	4.2	4.1	4.5	4.5	4.8	5.0
	Lmin	-13.5	-11.8	-3.5	-1.5	1.6	3.1		Lmin	2.3	2.2	2.6	2.6	2.9	3.1
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax	-7.0	-5.3	2.9	5.0	8.0	9.5								
	L01	-6.7	-5.1	3.2	5.2	8.3	9.8								
	Leq	-9.9	-8.2	0.1	2.1	5.2	6.7								
	L50	-10.1	-8.4	-0.1	1.9	4.9	6.5								
	L90	-11.5	-9.9	-1.6	0.5	3.5	5.0								
	Lmin	-13.5	-11.8	-3.5	-1.5	1.6	3.1								
								Including traffic on Route 3:							
								L90 Octave Band Check: KWI Turbine OPERATING		NO KWI PURE TONE	L90 Octave Band Check KWI Turbine SHUTDOWN				
								L90 Pure-tone?	NO		L90 Pure-tone?	NO			
								Excluding traffic on Route 3:							
								Leq Octave Band Check: KWI Turbine ONLY		NO KWI PURE TONE	Leq Octave Band Check Ambient (no traffic)				
								Leq Pure-tone?	NO		Leq Pure-tone?	NO			
								L90 Octave Band Check KWI Turbine ONLY		NO KWI PURE TONE	L90 Octave Band Check Ambient (no traffic)				
								L90 Pure-tone?	NO		L90 Pure-tone?	NO			

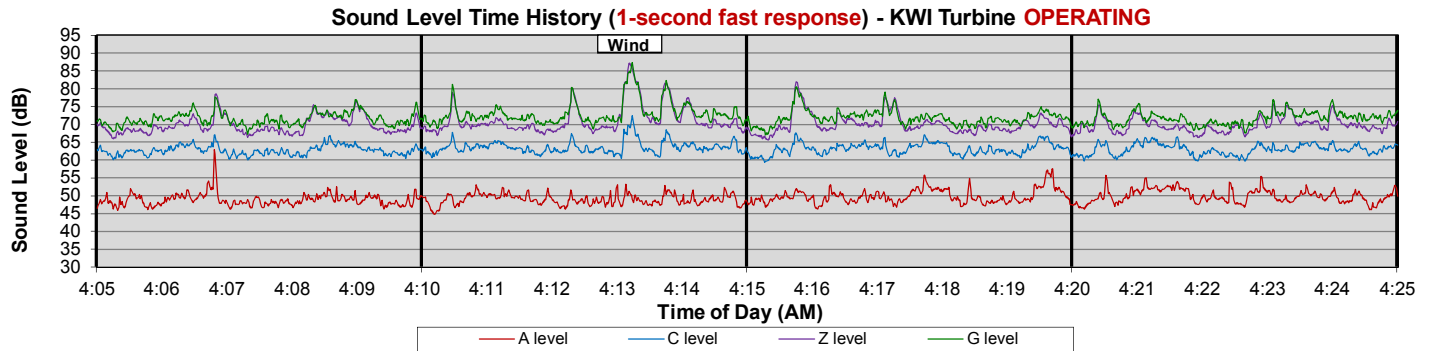
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-206: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/15/2014 between 3:40 AM and 4:25 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-3.0	0.0	7.8	9.6	11.5	13.7	KWI Turbine OPERATING (with traffic)	Avg Lmax	-4.4	-2.9	8.4	14.9	17.9	20.1
	L01	-3.5	-0.5	7.3	9.1	11.0	13.2		L01	-4.7	-3.2	8.1	14.6	17.6	19.8
	Leq	-6.9	-3.9	3.8	5.7	7.5	9.7		Leq	-12.6	-11.1	0.2	6.7	9.6	11.9
	L50	-7.3	-4.2	3.5	5.4	7.2	9.4		L50	-14.2	-12.7	-1.4	5.2	8.1	10.4
	L90	-9.0	-5.9	1.8	3.7	5.5	7.7		L90	-16.1	-14.5	-3.3	3.3	6.2	8.5
	Lmin	-10.9	-7.8	-0.1	1.8	3.6	5.8		Lmin	-18.0	-16.5	-5.2	1.3	4.3	6.5
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	9.0	8.3	10.0	10.1	10.6	10.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	7.6	4.8	9.6	12.3	14.4	14.8
	L01	9.1	8.4	10.1	10.2	10.7	11.0		L01	10.1	7.3	12.1	14.8	16.8	17.3
	Leq	6.4	5.7	7.4	7.5	8.0	8.4		Leq	3.4	0.5	5.4	8.1	10.1	10.6
	L50	6.2	5.5	7.2	7.3	7.8	8.1		L50	2.2	-0.6	4.2	6.9	8.9	9.4
	L90	4.9	4.2	5.9	5.9	6.5	6.8		L90	0.4	-2.4	2.4	5.1	7.2	7.6
	Lmin	3.5	2.8	4.5	4.6	5.1	5.4		Lmin	-1.1	-3.9	0.9	3.6	5.7	6.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-4.6	-1.6	6.2	8.0	9.9	12.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-8.6	-7.1	4.2	10.7	13.7	15.9
	L01	-4.6	-1.5	6.2	8.1	9.9	12.1		L01	-6.1	-4.6	6.7	13.2	16.1	18.4
	Leq	-7.2	-4.2	3.6	5.4	7.3	9.4		Leq	-12.9	-11.3	-0.1	6.5	9.4	11.7
	L50	-7.4	-4.4	3.4	5.2	7.1	9.2		L50	-14.0	-12.5	-1.3	5.3	8.2	10.5
	L90	-8.8	-5.8	2.0	3.8	5.7	7.9		L90	-15.8	-14.3	-3.0	3.6	6.5	8.7
	Lmin	-10.1	-7.1	0.6	2.5	4.3	6.5		Lmin	-17.3	-15.8	-4.5	2.1	5.0	7.3

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-207: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 4: 38 Prospect St. on 3/15/2014 between 3:40 AM and 4:25 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	-5.2	-2.6	8.6	14.2	16.4	18.7	KWI Turbine OPERATING (with traffic)	Avg Lmax	-4.2	0.5	4.9	5.3	5.8	6.2
	L01	-5.6	-2.9	8.3	13.8	16.1	18.3		L01	-5.5	-0.9	3.5	3.9	4.4	4.9
	Leq	-11.9	-9.3	1.9	7.4	9.7	12.0		Leq	-8.7	-4.0	0.4	0.8	1.3	1.7
	L50	-12.7	-10.0	1.2	6.7	9.0	11.2		L50	-9.6	-4.9	-0.5	-0.1	0.4	0.8
	L90	-14.8	-12.1	-0.9	4.6	6.9	9.1		L90	-9.6	-5.0	-0.5	-0.2	0.3	0.8
	Lmin	-17.2	-14.5	-3.3	2.2	4.5	6.7		Lmin	-10.4	-5.7	-1.3	-0.9	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	10.1	8.4	11.8	12.8	14.2	14.9	KWI Turbine OPERATING (no traffic)	Avg Lmax	3.1	1.9	4.1	4.3	4.6	4.7
	L01	10.4	8.7	12.2	13.1	14.5	15.2		L01	3.5	2.3	4.5	4.6	4.9	5.1
	Leq	6.0	4.4	7.8	8.8	10.2	10.9		Leq	0.1	-1.0	1.2	1.3	1.6	1.8
	L50	5.4	3.7	7.2	8.1	9.5	10.2		L50	0.0	-1.2	1.0	1.2	1.5	1.7
	L90	3.3	1.7	5.1	6.1	7.5	8.2		L90	-0.9	-2.0	0.2	0.3	0.6	0.8
	Lmin	1.0	-0.7	2.7	3.7	5.1	5.8		Lmin	-1.5	-2.7	-0.5	-0.3	0.0	0.1
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax	-7.9	-5.3	6.0	11.5	13.7	16.0	KWI Turbine OPERATING (no traffic)	Avg Lmax	-5.4	-0.8	3.6	4.0	4.5	4.9
	L01	-7.6	-5.0	6.3	11.8	14.1	16.3		L01	-5.1	-0.4	4.0	4.4	4.9	5.3
	Leq	-12.0	-9.3	1.9	7.4	9.7	11.9		Leq	-8.4	-3.7	0.7	1.1	1.6	2.0
	L50	-12.6	-10.0	1.3	6.8	9.1	11.3		L50	-8.5	-3.9	0.5	0.9	1.4	1.8
	L90	-14.7	-12.0	-0.8	4.7	7.0	9.2		L90	-9.4	-4.7	-0.3	0.0	0.6	1.0
	Lmin	-17.0	-14.4	-3.2	2.4	4.6	6.9		Lmin	-10.0	-5.4	-1.0	-0.6	-0.1	0.3

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-208: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St.** on **3/15/2014** from **4:05 to 4:25 AM** with KWI Turbine **OPERATING**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>4:00 to 4:10 AM</b>	Calibrated Wind Speed: <b>10.1 m/s</b>	Wind Direction: <b>181°</b>	Avg Power Level: <b>1422 kW</b>	Air Temperature: <b>41 °F</b>
Wind Speed Range: <b>1-5 m/s</b>	Time: <b>4:10 to 4:20 AM</b>	Calibrated Wind Speed: <b>10.4 m/s</b>	Wind Direction: <b>180°</b>	Avg Power Level: <b>1826 kW</b>	Air Temperature: <b>41 °F</b>
	Time: <b>4:20 to 4:30 AM</b>	Calibrated Wind Speed: <b>10.4 m/s</b>	Wind Direction: <b>179°</b>	Avg Power Level: <b>1880 kW</b>	Air Temperature: <b>41 °F</b>



**Event Log**

Traffic on Route 3 **throughout**

Intermittent wind-generated noise **throughout**

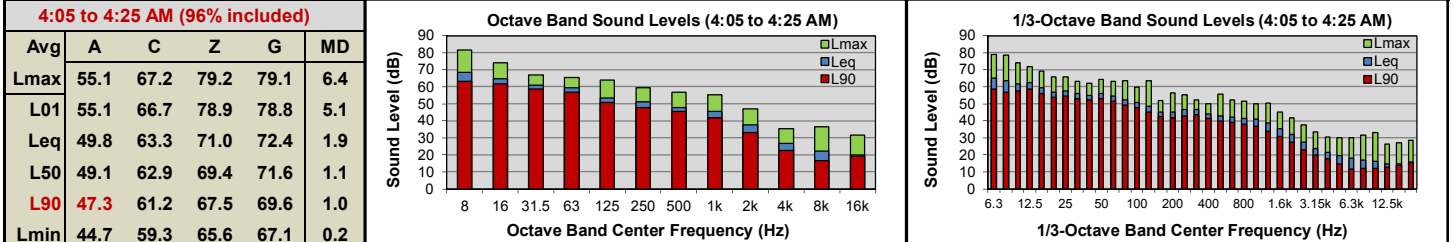
Loud cord tapping on flagpole noise **removed**

Loud bird in leaves noise from **4:13:26 to 4:13:28 (EXCLUDE)**

HMMH consultant makes noise from **4:06:48 to 4:06:53, 4:10:25 to 4:10:28, 4:12:16 to 4:12:23, 4:12:57 to 4:13:17, 4:13:42 to 4:13:47, 4:27:17 to 4:27:20, and 4:29:26 to 4:29:30 (EXCLUDE)**

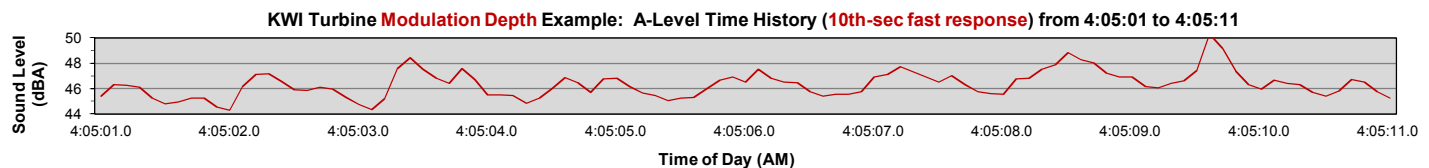
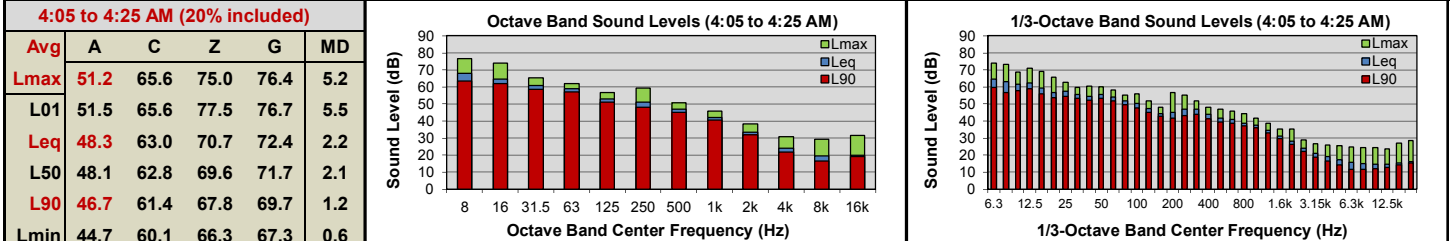
**Fast Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

4:05 to 4:10 AM (98% included)						4:10 to 4:15 AM (87% included)						4:15 to 4:20 AM (100% included)						4:20 to 4:25 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.1	67.0	76.7	77.0	6.1	Lmax	53.0	67.8	82.4	81.8	6.1	Lmax	57.5	67.6	81.9	80.6	6.8	Lmax	55.7	66.5	75.8	77.1	6.7
L01	52.5	65.9	75.4	76.2	5.0	L01	52.2	67.0	81.2	81.2	5.3	L01	56.7	67.0	80.0	79.0	5.2	L01	55.1	66.3	75.3	76.5	4.7
Leq	49.0	62.9	70.2	71.8	2.1	Leq	49.1	63.5	71.9	73.2	2.1	Leq	50.4	63.4	71.4	72.5	1.9	Leq	50.3	63.3	70.3	72.1	1.8
L50	48.6	62.6	68.9	71.2	1.9	L50	48.7	63.2	69.7	72.0	1.9	L50	49.4	63.1	69.5	71.7	1.7	L50	49.6	63.0	69.4	71.6	1.6
L90	47.0	61.2	67.3	69.4	1.1	L90	47.1	61.9	68.2	70.4	1.1	L90	47.8	61.0	67.5	69.5	1.0	L90	47.7	61.1	67.5	69.5	0.9
Lmin	45.9	60.1	66.0	67.3	0.2	Lmin	44.7	60.6	66.9	68.7	0.5	Lmin	46.3	59.3	65.6	67.1	0.3	Lmin	46.1	59.7	66.3	67.6	0.4



**Fast Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine OPERATING**

4:05 to 4:10 AM (20% included)						4:10 to 4:15 AM (34% included)						4:15 to 4:20 AM (15% included)						4:20 to 4:25 AM (10% included)					
10.2 m/s	A	C	Z	G	MD	10.3 m/s	A	C	Z	G	MD	10.4 m/s	A	C	Z	G	MD	10.4 m/s	A	C	Z	G	MD
Lmax	50.9	64.6	73.2	74.2	4.9	Lmax	51.6	67.8	78.9	81.2	5.7	Lmax	52.1	65.7	72.6	74.0	6.8	Lmax	50.1	64.2	75.3	76.2	3.2
L01	50.3	64.4	72.0	74.0	4.4	L01	51.6	66.1	78.2	79.6	5.4	L01	51.7	65.6	72.3	73.8	6.7	L01	49.8	64.2	75.2	76.1	3.2
Leq	48.1	62.3	68.9	70.8	2.2	Leq	48.3	63.4	71.7	73.2	2.2	Leq	49.1	63.5	70.1	72.1	2.5	Leq	47.7	62.2	70.9	72.5	1.7
L50	47.9	61.9	68.5	70.1	2.2	L50	48.2	63.1	70.1	72.1	2.0	L50	48.7	63.4	69.9	71.9	2.3	L50	47.6	61.9	69.3	71.8	1.6
L90	46.9	61.1	67.3	69.1	1.3	L90	46.6	62.1	68.5	70.6	1.2	L90	47.9	62.2	68.4	70.6	1.4	L90	46.5	61.2	67.3	69.8	0.9
Lmin	46.3	60.1	66.3	67.3	0.6	Lmin	44.7	61.0	66.9	68.7	0.7	Lmin	47.4	61.2	68.0	70.6	0.9	Lmin	46.1	60.5	66.9	69.3	0.6

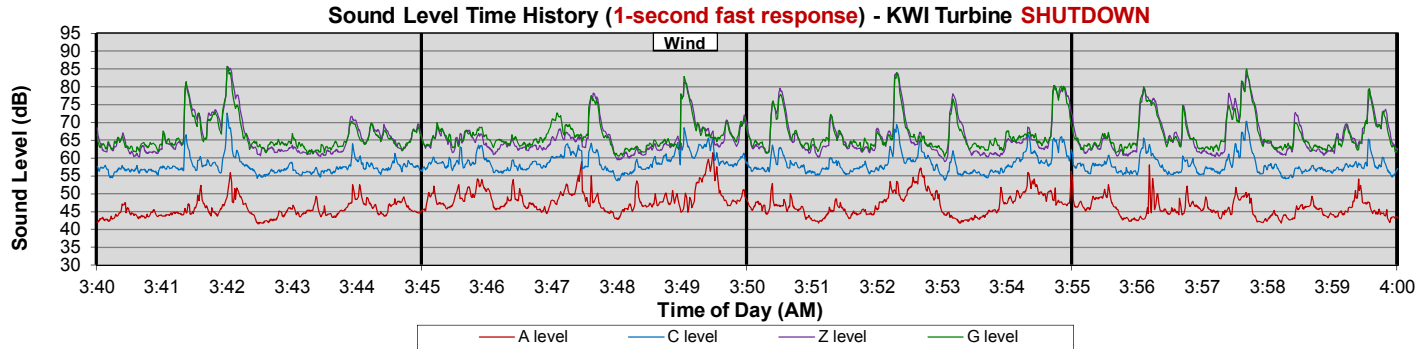




**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-209: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 4: **38 Prospect St. on 3/15/2014 from 3:40 to 4:00 AM with KWI Turbine SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: <b>1410 ft</b>	Time: <b>3:40 to 3:50 AM</b>	Calibrated Wind Speed: <b>10.7 m/s</b>	Wind Direction: <b>182°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>41 °F</b>
Wind Speed Range: <b>1-5 m/s</b>	Time: <b>3:50 to 4:00 AM</b>	Calibrated Wind Speed: <b>11.0 m/s</b>	Wind Direction: <b>182°</b>	Avg Power Level: <b>000 kW</b>	Air Temperature: <b>41 °F</b>



**Event Log**

Traffic on Route 3 **throughout**  
Intermittent wind-generated noise **throughout**  
Loud cord tapping on flagpole noise **removed**  
HMMH consultant makes noise from **3:40:13 to 3:40:15 (EXCLUDE)**  
HMMH consultant makes noise from **3:59:41 to 3:59:43 (EXCLUDE)**

**Fast Response Acoustical Metrics (including traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN**

3:40 to 3:45 AM (99% included)						3:45 to 3:50 AM (100% included)						3:50 to 3:55 AM (100% included)						3:55 to 4:00 AM (99% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	56.0	72.5	85.6	85.7	7.9	Lmax	61.5	68.5	81.3	82.8	11.2	Lmax	57.3	69.4	84.0	83.8	8.6	Lmax	58.1	70.3	83.6	84.9	14.6
L01	52.6	68.3	84.5	83.6	5.5	L01	59.0	65.5	78.9	78.0	6.2	L01	56.0	67.3	83.2	82.3	4.9	L01	53.0	67.2	81.7	81.6	7.8
Leq	46.2	58.8	71.2	70.4	1.4	Leq	50.3	60.0	68.7	69.0	1.6	Leq	48.6	59.7	71.5	71.0	1.5	Leq	46.7	59.1	71.3	71.2	1.7
L50	44.9	57.1	63.6	64.4	1.1	L50	47.9	58.7	64.4	65.7	1.2	L50	46.7	57.7	64.3	65.0	1.2	L50	45.4	57.3	64.6	64.7	1.2
L90	43.0	55.8	61.3	62.5	0.6	L90	45.5	56.3	61.7	62.8	0.7	L90	43.0	55.6	61.2	62.9	0.7	L90	42.9	55.6	61.3	62.6	0.6
Lmin	41.7	54.4	60.2	61.1	0.3	Lmin	42.8	53.6	59.5	60.7	0.2	Lmin	41.8	53.8	59.1	60.4	0.3	Lmin	41.7	54.1	60.5	61.1	0.2

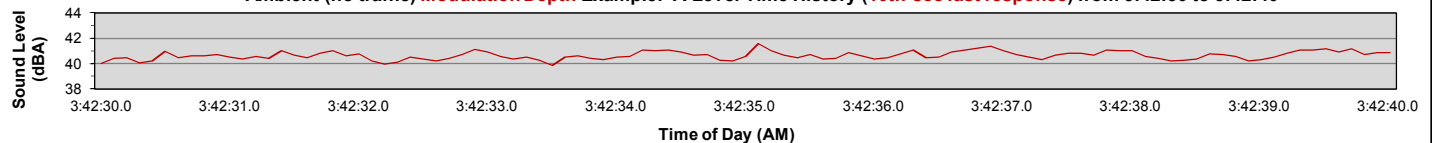
3:40 to 4:00 AM (100% included)						Octave Band Sound Levels (3:40 to 4:00 AM)												1/3-Octave Band Sound Levels (3:40 to 4:00 AM)											
Avg	A	C	Z	G	MD																								
Lmax	58.2	70.2	83.6	84.3	10.6																								
L01	56.5	67.2	82.1	81.7	6.0																								
Leq	48.3	59.4	70.8	70.5	1.5																								
L50	46.2	57.6	64.3	64.9	1.2																								
L90	43.2	55.7	61.3	62.7	0.6																								
Lmin	41.7	53.6	59.1	60.4	0.2																								

**Fast Response Acoustical Metrics (excluding traffic on Route 3 and wind noise) - KWI Turbine SHUTDOWN**

3:40 to 3:45 AM (4% included)						3:45 to 3:50 AM (0% included)						3:50 to 3:55 AM (3% included)						3:55 to 4:00 AM (2% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	42.6	55.8	62.9	63.9	1.4	Lmax	-	-	-	-	-	Lmax	42.6	56.3	70.3	68.1	1.5	Lmax	42.3	57.6	69.0	67.0	3.4
L01	42.5	55.8	62.9	63.9	1.4	L01	-	-	-	-	-	L01	42.6	56.2	70.2	68.1	1.5	L01	42.3	57.5	68.9	66.9	3.3
Leq	42.1	55.2	62.1	63.0	1.0	Leq	-	-	-	-	-	Leq	42.2	55.6	66.9	65.6	0.9	Leq	42.1	56.1	66.4	65.2	1.5
L50	42.0	55.3	62.1	62.9	0.9	L50	-	-	-	-	-	L50	42.3	55.6	64.9	65.2	0.8	L50	42.1	55.7	65.5	65.1	1.0
L90	41.8	54.6	61.0	62.1	0.7	L90	-	-	-	-	-	L90	41.9	55.2	60.4	62.3	0.6	L90	41.9	55.5	64.2	63.6	0.6
Lmin	41.7	54.6	60.7	61.5	0.5	Lmin	-	-	-	-	-	Lmin	41.8	55.1	60.2	61.8	0.4	Lmin	41.9	55.5	63.8	63.3	0.4

3:40 to 4:00 AM (2% included)						Octave Band Sound Levels (3:40 to 4:00 AM)												1/3-Octave Band Sound Levels (3:40 to 4:00 AM)											
Avg	A	C	Z	G	MD																								
Lmax	42.5	56.6	67.4	66.3	2.1																								
L01	42.6	57.3	70.2	68.0	3.2																								
Leq	42.2	55.6	65.4	64.6	1.0																								
L50	42.2	55.5	62.7	63.6	0.9																								
L90	41.8	55.0	60.6	62.2	0.6																								
Lmin	41.7	54.6	60.2	61.5	0.4																								

**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 3:42:30 to 3:42:40**





# **Detailed Acoustical Monitoring Data**

## **Kingston Intermediate School**

### **February 18, 2014**

Slow-response data: Pages D-211 to D-216

Fast-response data: Pages D-217 to D-222

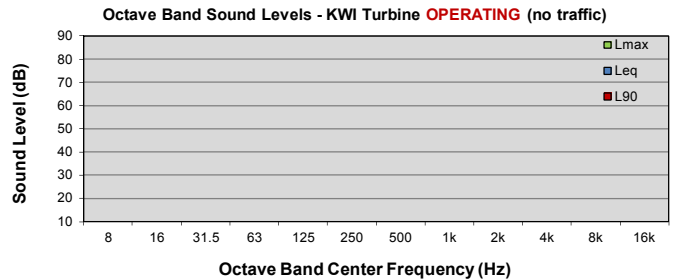
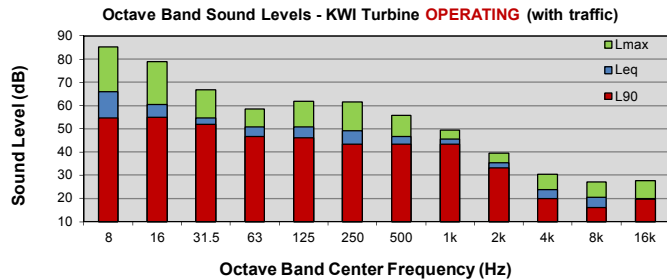
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-211: Wind Turbine Acoustical Monitoring Summary (slow response)**  
HMMH Project # 305270.001

**Measurement at Site 7: Intermediate School on 2/18/2014 between 10:30 AM and 11:15 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 10:50 to 11:00 AM	Calibrated Wind Speed: 6.8 m/s	Wind Direction: 094°	Average Power Level: 484 kW	Air Temperature: 31 °F
Time: 11:00 to 11:10 AM	Calibrated Wind Speed: 6.7 m/s	Wind Direction: 094°	Average Power Level: 690 kW	Air Temperature: 32 °F
Time: 11:10 to 11:20 AM	Calibrated Wind Speed: 7.5 m/s	Wind Direction: 094°	Average Power Level: 428 kW	Air Temperature: 32 °F

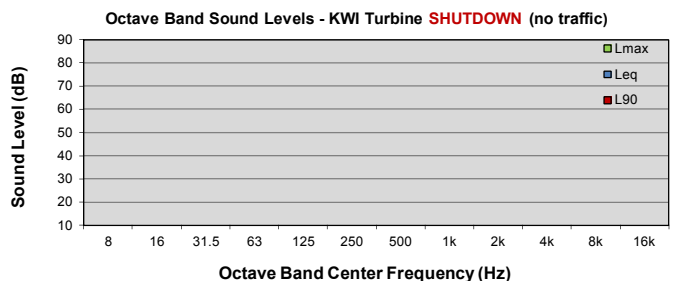
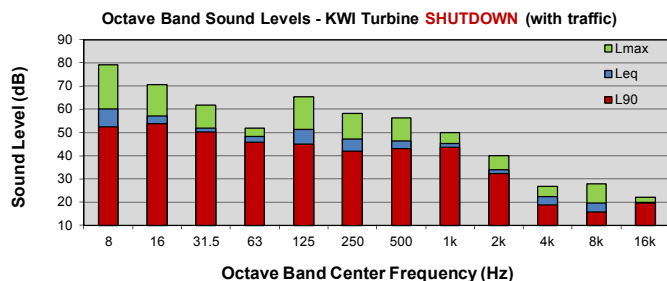
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
10:55 to 11:15 AM (100% included)						10:55 to 11:15 AM (0% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	53.5	64.9	74.8	75.3	6.0	Avg Lmax					
L01	54.1	64.8	78.9	78.3	5.0	L01					
Leq	48.9	58.4	67.7	68.5	1.3	Leq					
L50	48.4	57.2	62.8	65.8	0.6	L50					
L90	46.4	55.3	60.8	63.2	0.6	L90					
Lmin	44.8	53.5	59.1	61.3	0.2	Lmin					

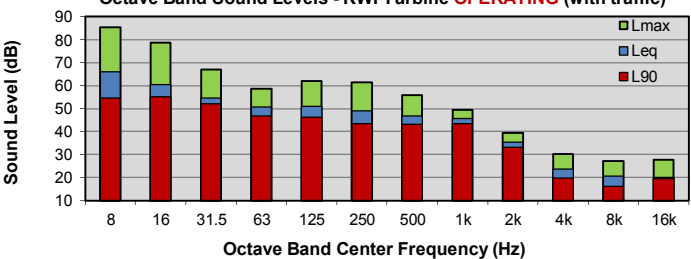
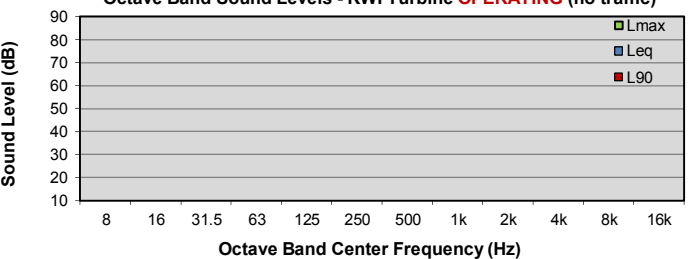
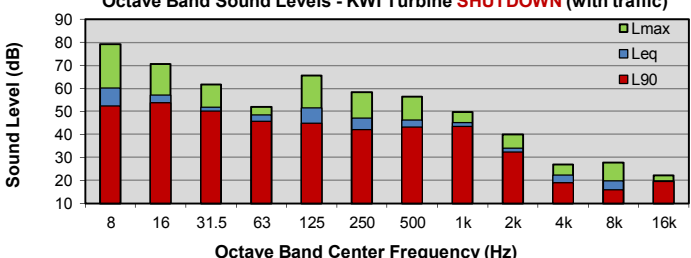
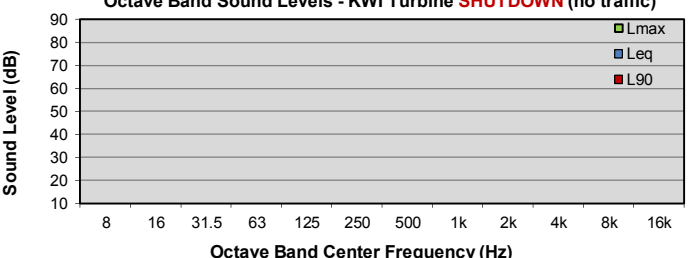


**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 10:30 to 10:40 AM	Calibrated Wind Speed: 6.4 m/s	Wind Direction: 099°	Average Power Level: 000 kW	Air Temperature: 31 °F
Time: 10:40 to 10:50 AM	Calibrated Wind Speed: 6.2 m/s	Wind Direction: 090°	Average Power Level: 000 kW	Air Temperature: 31 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
10:30 to 10:50 AM (100% included)						10:30 to 10:50 AM (0% included)					
SLOW Response	A	C	Z	G	Modulation Depth (fast)	SLOW Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	52.7	62.8	72.9	71.8	5.8	Avg Lmax					
L01	54.8	64.9	73.4	73.4	5.1	L01					
Leq	48.2	56.7	63.1	65.0	1.2	Leq					
L50	47.1	55.4	60.4	63.5	1.0	L50					
L90	46.0	53.8	59.0	61.7	0.6	L90					
Lmin	44.6	52.2	57.3	59.9	0.3	Lmin					



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-212: Summary of A-weighted and Octave Band Sound Level Comparisons (slow response)															
HMMH Project # 305270.001															
Measurement at Site 7: Intermediate School on 2/18/2014 between 10:30 AM and 11:15 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)						SLOW Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.8	-1.4	5.3	6.4	7.5	8.9	KWI Turbine OPERATING (no traffic)	Avg Lmax						
	L01	1.4	-0.7	5.9	7.0	8.1	9.5		L01						
	Leq	-3.8	-5.9	0.7	1.8	2.9	4.3		Leq						
	L50	-4.4	-6.5	0.2	1.2	2.4	3.7		L50						
	L90	-6.4	-8.5	-1.8	-0.8	0.4	1.7		L90						
	Lmin	-7.9	-10.0	-3.3	-2.3	-1.2	0.2		Lmin						
<p>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</p> 							
<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</p> 								<p>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</p> 							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
SLOW Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax														
	L01														
	Leq														
	L50														
	L90														
	Lmin														
Including traffic on Route 3:															
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
Excluding traffic on Route 3:															
Leq Octave Band Check: KWI Turbine ONLY						Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?						Leq Pure-tone?									
L90 Octave Band Check KWI Turbine ONLY						L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?						L90 Pure-tone?									

Acoustical Monitoring Study of Kingston Wind Independence Turbine Page D-213: <b>Summary of C-weighted and Z-weighted Sound Level Comparisons (slow response)</b> HMMH Project # 305270.001															
Measurement at Site 7: <b>Intermediate School</b> on <b>2/18/2014</b> between <b>10:30 AM</b> and <b>11:15 AM</b> with KWI Turbine <b>OPERATING</b> and <b>SHUTDOWN</b>															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine <b>OPERATING</b> (wind turbine plus traffic) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)								Vertical: KWI Turbine <b>OPERATING</b> (wind turbine plus traffic) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - with traffic)							
<b>SLOW Response C-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>SLOW Response Z-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	2.1	0.0	8.3	9.5	11.1	12.7	KWI Turbine <b>OPERATING</b> (with traffic)	Avg Lmax	2.0	1.4	11.8	14.5	15.9	17.6
	L01	2.0	-0.1	8.1	9.4	10.9	12.6		L01	6.0	5.5	15.8	18.5	19.9	21.6
	Leq	-4.5	-6.5	1.7	3.0	4.5	6.1		Leq	-5.2	-5.8	4.6	7.3	8.7	10.4
	L50	-5.6	-7.7	0.5	1.8	3.3	5.0		L50	-10.0	-10.6	-0.2	2.4	3.9	5.6
	L90	-7.5	-9.6	-1.4	-0.1	1.5	3.1		L90	-12.1	-12.6	-2.3	0.4	1.8	3.5
	Lmin	-9.3	-11.4	-3.1	-1.9	-0.3	1.3		Lmin	-13.8	-14.3	-4.0	-1.3	0.2	1.8
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine <b>OPERATING</b> (wind turbine only) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)								Vertical: KWI Turbine <b>OPERATING</b> (wind turbine only) Horizontal: KWI Turbine <b>SHUTDOWN</b> (ambient - no traffic)							
<b>SLOW Response C-levels</b>		KWI Turbine <b>SHUTDOWN</b> (no traffic)						<b>SLOW Response Z-levels</b>		KWI Turbine <b>SHUTDOWN</b> (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax							KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax						
	L01								L01						
	Leq								Leq						
	L50								L50						
	L90								L90						
	Lmin								Lmin						
Operating - Shutdown Differences: <b>Overall Comparison</b>								Operating - Shutdown Differences: <b>Overall Comparison</b>							
Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)								Vertical: <b>KWI Turbine ONLY</b> (excluding traffic on Route 3) Horizontal: <b>Ambient Sound Levels</b> (including traffic on Route 3)							
<b>SLOW Response C-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)						<b>SLOW Response Z-levels</b>		KWI Turbine <b>SHUTDOWN</b> (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax							KWI Turbine <b>OPERATING</b> (no traffic)	Avg Lmax						
	L01								L01						
	Leq								Leq						
	L50								L50						
	L90								L90						
	Lmin								Lmin						

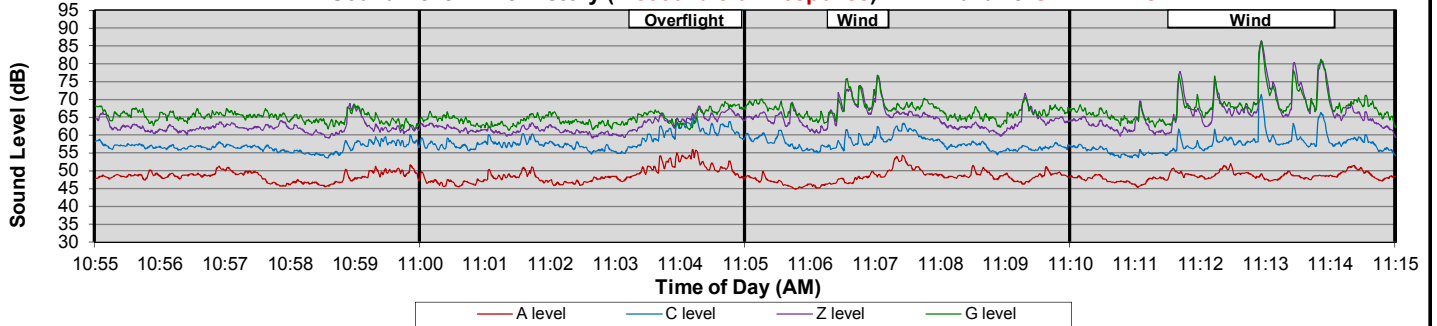
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-214: Summary of G-weighted Sound Level (slow response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 7: Intermediate School on 2/18/2014 between 10:30 AM and 11:15 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	3.5	1.8	10.2	11.8	13.6	15.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.2	0.8	4.8	5.0	5.4	5.7
	L01	6.5	4.8	13.2	14.8	16.5	18.4		L01	-0.8	-0.2	3.7	4.0	4.4	4.7
	Leq	-3.3	-5.0	3.4	5.0	6.7	8.6		Leq	-4.5	-3.9	0.1	0.3	0.7	1.0
	L50	-6.0	-7.6	0.8	2.4	4.1	5.9		L50	-5.1	-4.5	-0.6	-0.3	0.1	0.4
	L90	-8.6	-10.3	-1.9	-0.3	1.5	3.3		L90	-5.2	-4.5	-0.6	-0.4	0.0	0.4
	Lmin	-10.5	-12.2	-3.8	-2.2	-0.4	1.4		Lmin	-5.6	-4.9	-1.0	-0.8	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax							KWI Turbine OPERATING (no traffic)	Avg Lmax						
	L01								L01						
	Leq								Leq						
	L50								L50						
	L90								L90						
	Lmin								Lmin						
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
SLOW Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax							KWI Turbine OPERATING (no traffic)	Avg Lmax						
	L01								L01						
	Leq								Leq						
	L50								L50						
	L90								L90						
	Lmin								Lmin						

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-215: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 7: **Intermediate School** on 2/18/2014 from 10:55 to 11:15 AM with KWI Turbine **OPERATING**

Site data	Supervisory Control and Data Acquisition (SCADA) data				
Distance from KWI: 2170 ft	Time: 10:50 to 11:00 AM	Calibrated Wind Speed: 6.8 m/s	Wind Direction: 094°	Avg Power Level: 484 kW	Air Temperature: 31 °F
Wind Speed Range: 0-3 m/s	Time: 11:00 to 11:10 AM	Calibrated Wind Speed: 6.7 m/s	Wind Direction: 094°	Avg Power Level: 690 kW	Air Temperature: 32 °F
	Time: 11:10 to 11:20 AM	Calibrated Wind Speed: 7.5 m/s	Wind Direction: 094°	Avg Power Level: 428 kW	Air Temperature: 32 °F

**Sound Level Time History (1-second slow response) - KWI Turbine OPERATING**

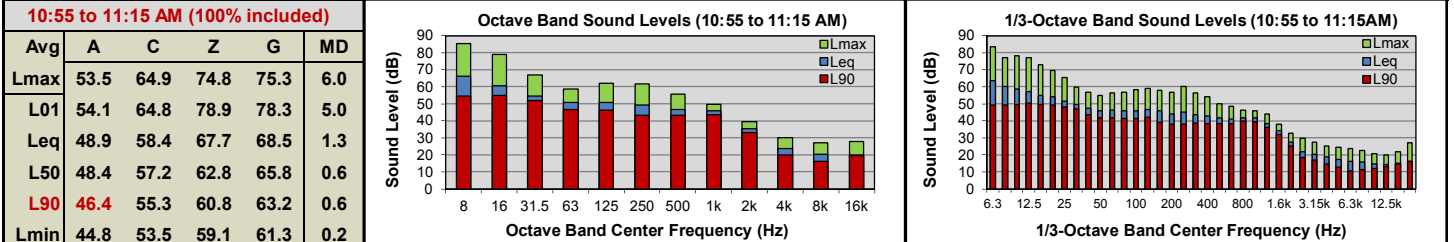


**Event Log**

Traffic on Route 3 **throughout**  
Aircraft overflights **intermittent**  
Wind-generated noise **intermittent**  
Heating system exhaust noise **removed**

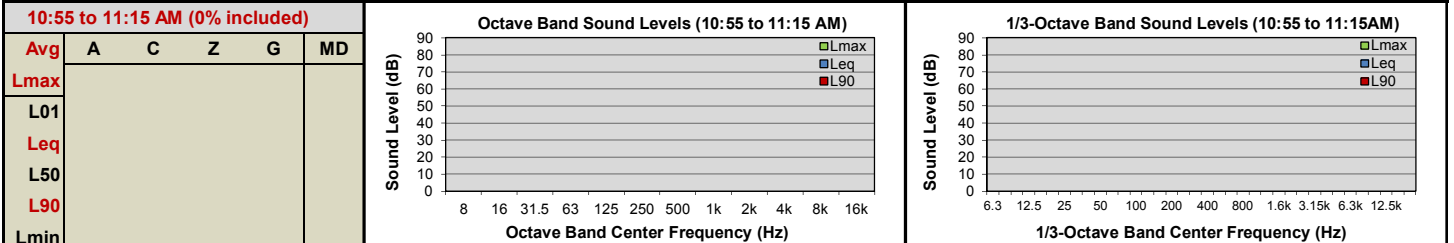
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

10:55 to 11:00 AM (100% included)						11:00 to 11:05 AM (100% included)						11:05 to 11:10 AM (100% included)						11:10 to 11:15 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	51.6	60.0	68.8	68.6	5.3	Lmax	56.0	65.1	68.1	69.5	10.1	Lmax	54.3	63.2	76.3	76.7	4.4	Lmax	52.0	71.4	86.2	86.4	4.1
L01	51.2	59.5	68.0	68.1	3.9	L01	55.6	64.6	67.4	68.7	7.4	L01	53.6	62.6	74.6	75.6	3.7	L01	51.4	68.6	84.2	83.1	2.6
Leq	48.6	56.8	62.6	65.4	1.2	Leq	49.6	59.1	63.0	64.9	1.7	Leq	48.7	58.2	66.5	68.0	1.2	Leq	48.6	58.9	71.8	71.8	1.0
L50	48.6	56.8	61.9	65.2	1.0	L50	48.2	57.7	61.9	64.2	1.2	L50	48.3	57.4	64.7	67.0	1.0	L50	48.3	57.2	65.6	67.5	0.9
L90	46.4	55.0	60.6	63.2	0.6	L90	46.3	55.8	60.3	62.5	0.7	L90	46.0	55.7	61.5	64.3	0.6	L90	47.0	54.7	61.3	64.2	0.6
Lmin	45.5	53.6	59.1	61.5	0.3	Lmin	45.5	54.6	59.2	61.3	0.3	Lmin	44.8	54.5	59.8	62.2	0.4	Lmin	45.4	53.5	59.7	62.2	0.2

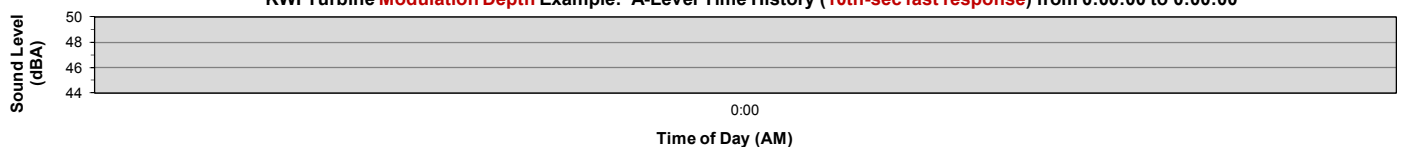


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

10:55 to 11:00 AM (0% included)						11:00 to 11:05 AM (0% included)						11:05 to 11:10 AM (0% included)						11:10 to 11:15 AM (0% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax						Lmax						Lmax						Lmax					
L01						L01						L01						L01					
Leq						Leq						Leq						Leq					
L50						L50						L50						L50					
L90						L90						L90						L90					
Lmin						Lmin						Lmin						Lmin					



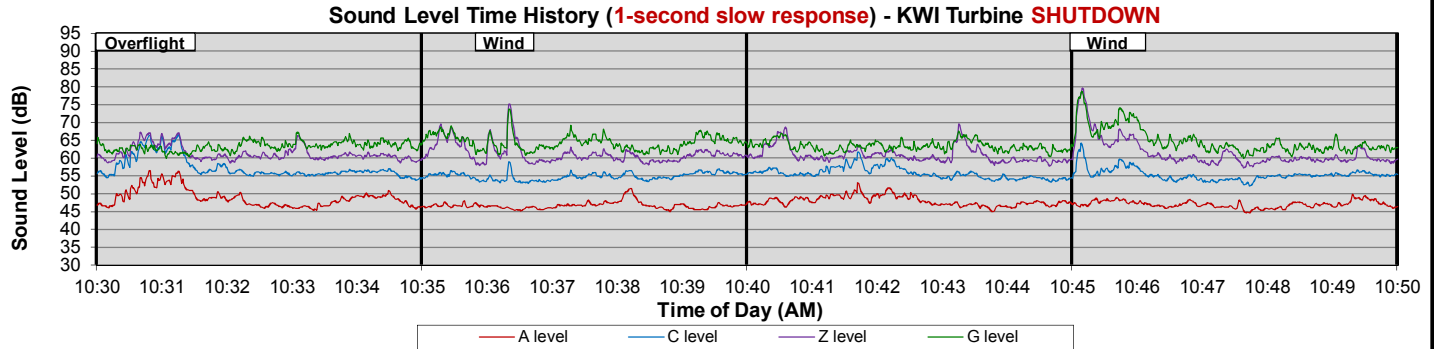
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 0:00:00 to 0:00:00**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-216: Detailed Acoustical Monitoring Report (slow response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 7: **Intermediate School** on 2/18/2014 from 10:30 to 10:50 AM with KWI Turbine **SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 2170 ft	Time: 10:30 to 10:40 AM	Calibrated Wind Speed: 6.4 m/s	Wind Direction: 099°	Avg Power Level: 000 kW	Air Temperature: 31 °F
Wind Speed Range: 0-3 m/s	Time: 10:40 to 10:50 AM	Calibrated Wind Speed: 6.2 m/s	Wind Direction: 090°	Avg Power Level: 000 kW	Air Temperature: 31 °F

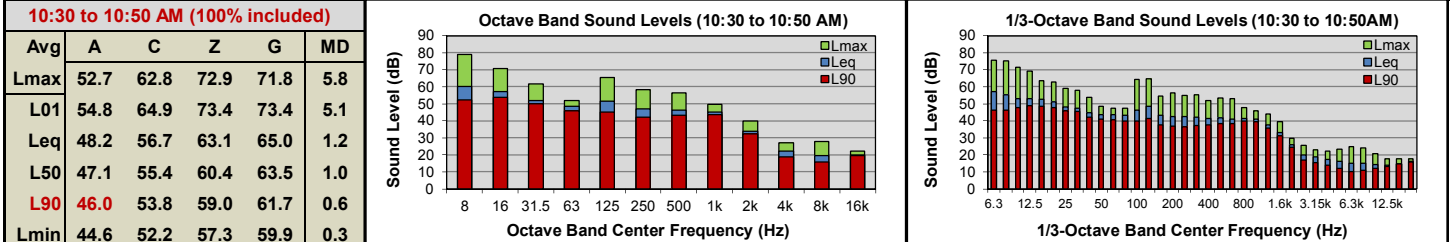


**Event Log**

Traffic on Route 3 **throughout**  
Aircraft overflights **intermittent**  
Wind-generated noise **intermittent**  
Heating system exhaust noise **removed**

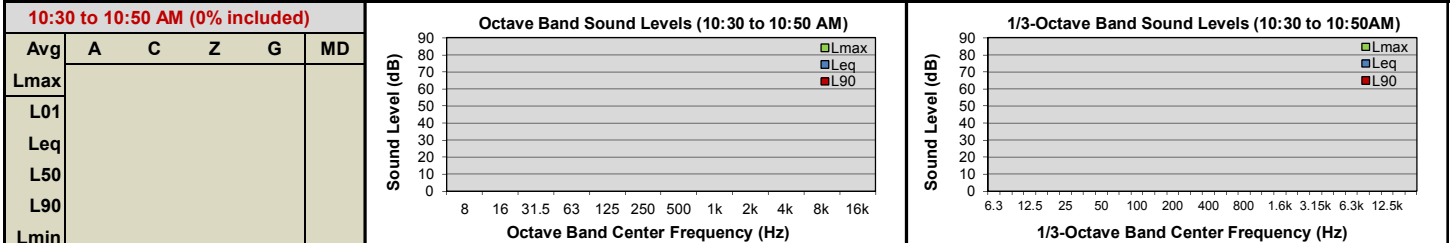
**Slow Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

10:30 to 10:35 AM (100% included)						10:35 to 10:40 AM (100% included)						10:40 to 10:45 AM (100% included)						10:45 to 10:50 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	56.5	66.5	67.2	67.2	9.0	Lmax	51.5	58.9	75.1	73.7	3.6	Lmax	53.1	61.7	69.5	67.6	6.7	Lmax	49.9	64.2	79.7	78.7	3.8
L01	56.3	66.3	67.0	66.8	6.8	L01	50.8	57.1	71.3	69.2	2.5	L01	51.6	60.1	68.2	66.9	4.0	L01	49.4	62.2	77.4	77.1	2.6
Leq	49.8	58.7	61.9	63.5	1.7	Leq	46.8	55.0	62.8	65.0	1.0	Leq	48.2	56.1	61.6	63.6	1.2	Leq	47.1	55.8	65.1	67.1	1.0
L50	48.4	56.1	60.6	63.3	1.1	L50	46.6	54.9	60.6	64.2	0.9	L50	47.7	55.5	60.2	63.2	1.1	L50	47.0	55.1	59.9	63.5	0.9
L90	46.2	55.1	59.5	61.6	0.6	L90	45.6	53.5	58.9	61.8	0.6	L90	46.4	54.1	58.9	61.8	0.6	L90	45.9	53.7	58.7	61.7	0.6
Lmin	45.3	53.7	58.5	59.9	0.3	Lmin	45.0	52.9	58.0	60.7	0.3	Lmin	45.1	53.2	57.7	60.4	0.3	Lmin	44.6	52.2	57.3	60.0	0.3

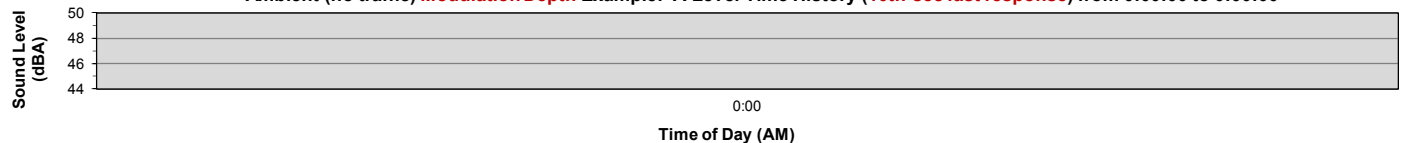


**Slow Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

10:30 to 10:35 AM (0% included)						10:35 to 10:40 AM (0% included)						10:40 to 10:45 AM (0% included)						10:45 to 10:50 AM (0% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax						Lmax						Lmax						Lmax					
L01						L01						L01						L01					
Leq						Leq						Leq						Leq					
L50						L50						L50						L50					
L90						L90						L90						L90					
Lmin						Lmin						Lmin						Lmin					



**Ambient (no traffic) Modulation Depth Example: A-Level Time History (10th-sec fast response) from 0:00:00 to 0:00:00**





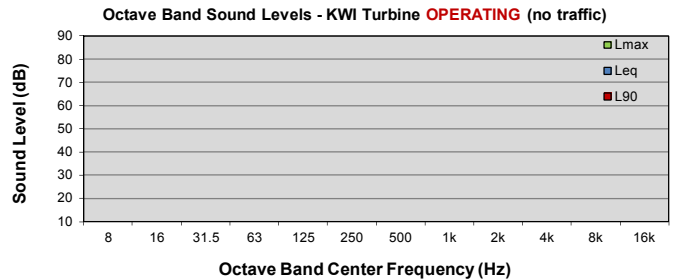
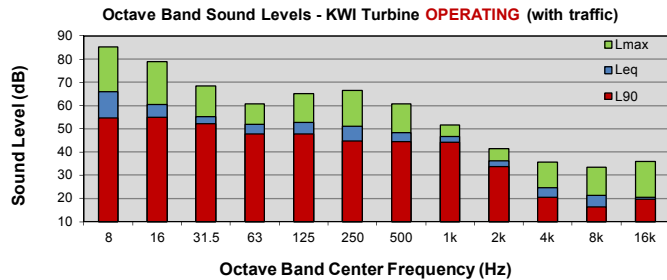
**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-217: Wind Turbine Acoustical Monitoring Summary (fast response)**  
HMMH Project # 305270.001

**Measurement at Site 7: Intermediate School on 2/18/2014 between 10:30 AM and 11:15 AM with KWI Turbine OPERATING and SHUTDOWN**

**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine OPERATING**

Time: 10:50 to 11:00 AM	Calibrated Wind Speed: 6.8 m/s	Wind Direction: 094°	Average Power Level: 484 kW	Air Temperature: 31 °F
Time: 11:00 to 11:10 AM	Calibrated Wind Speed: 6.7 m/s	Wind Direction: 094°	Average Power Level: 690 kW	Air Temperature: 32 °F
Time: 11:10 to 11:20 AM	Calibrated Wind Speed: 7.5 m/s	Wind Direction: 094°	Average Power Level: 428 kW	Air Temperature: 32 °F

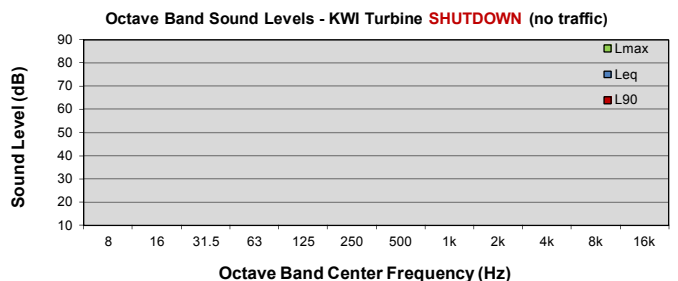
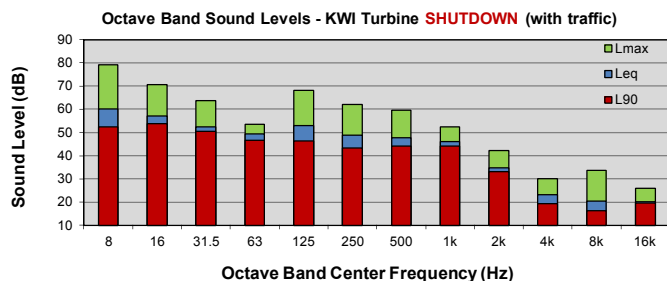
20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine OPERATING (wind turbine plus traffic)						KWI Turbine OPERATING (wind turbine only)					
10:55 to 11:15 AM (100% included)						10:55 to 11:15 AM (0% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	56.3	67.0	75.2	75.3	6.0	Avg Lmax					
L01	56.6	66.2	78.9	78.3	5.0	L01					
Leq	50.2	59.4	67.8	68.5	1.3	Leq					
L50	49.4	58.1	63.3	65.9	0.6	L50					
L90	47.4	56.1	61.2	63.2	0.6	L90					
Lmin	45.6	54.2	59.5	61.4	0.2	Lmin					



**Supervisory Control and Data Acquisition (SCADA) data - KWI Wind Turbine SHUTDOWN**

Time: 10:30 to 10:40 AM	Calibrated Wind Speed: 6.4 m/s	Wind Direction: 099°	Average Power Level: 000 kW	Air Temperature: 31 °F
Time: 10:40 to 10:50 AM	Calibrated Wind Speed: 6.2 m/s	Wind Direction: 090°	Average Power Level: 000 kW	Air Temperature: 31 °F

20-minute Acoustical Metrics (including traffic on Route 3)						20-minute Acoustical Metrics (excluding traffic on Route 3)					
KWI Turbine SHUTDOWN (ambient - with traffic)						KWI Turbine SHUTDOWN (ambient - no traffic)					
10:30 to 10:50 AM (100% included)						10:30 to 10:50 AM (0% included)					
FAST Response	A	C	Z	G	Modulation Depth (fast)	FAST Response	A	C	Z	G	Modulation Depth (fast)
Avg Lmax	55.5	64.6	73.5	71.8	5.8	Avg Lmax					
L01	57.4	66.6	73.4	73.5	5.1	L01					
Leq	49.4	57.8	63.4	65.1	1.2	Leq					
L50	48.1	56.3	60.8	63.5	1.0	L50					
L90	46.9	54.7	59.3	61.8	0.6	L90					
Lmin	45.4	52.8	57.6	59.9	0.3	Lmin					



Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-218: Summary of A-weighted and Octave Band Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 7: Intermediate School on 2/18/2014 between 10:30 AM and 11:15 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response A-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	0.7	-1.1	6.8	8.1	9.4	10.8	KWI Turbine OPERATING (no traffic)	Avg Lmax						
	L01	1.1	-0.8	7.2	8.5	9.7	11.1		L01						
	Leq	-5.3	-7.2	0.7	2.0	3.3	4.7		Leq						
	L50	-6.1	-8.0	0.0	1.3	2.5	3.9		L50						
	L90	-8.2	-10.0	-2.1	-0.8	0.4	1.9		L90						
	Lmin	-9.9	-11.8	-3.8	-2.5	-1.3	0.2		Lmin						
<div>Octave Band Sound Levels - KWI Turbine OPERATING (with traffic)</div>								<div>Octave Band Sound Levels - KWI Turbine OPERATING (no traffic)</div>							
<div>Octave Band Sound Levels - KWI Turbine SHUTDOWN (with traffic)</div>								<div>Octave Band Sound Levels - KWI Turbine SHUTDOWN (no traffic)</div>							
Operating - Shutdown Differences: Overall Comparison								Octave Band Sound Level Comparison: Pure-tone Check							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)															
FAST Response A-levels		KWI Turbine SHUTDOWN (with traffic)													
		Avg Lmax	L01	Leq	L50	L90	Lmin								
KWI Turbine OPERATING (no traffic)	Avg Lmax														
	L01														
	Leq														
	L50														
	L90														
	Lmin														
Including traffic on Route 3:															
L90 Octave Band Check: KWI Turbine OPERATING				NO KWI PURE TONE		L90 Octave Band Check KWI Turbine SHUTDOWN									
L90 Pure-tone?		NO				L90 Pure-tone?		NO							
Excluding traffic on Route 3:															
Leq Octave Band Check: KWI Turbine ONLY						Leq Octave Band Check Ambient (no traffic)									
Leq Pure-tone?						Leq Pure-tone?									
L90 Octave Band Check KWI Turbine ONLY						L90 Octave Band Check Ambient (no traffic)									
L90 Pure-tone?						L90 Pure-tone?									

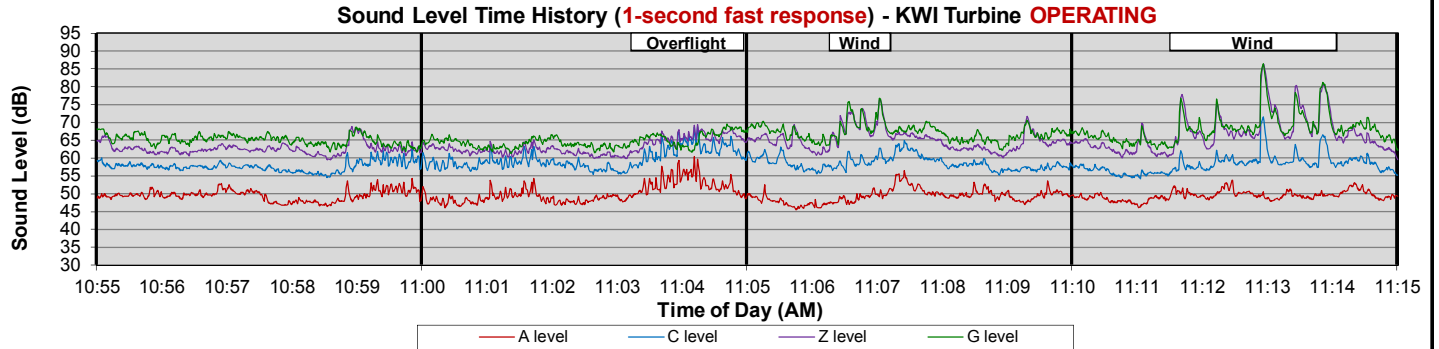
Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-219: Summary of C-weighted and Z-weighted Sound Level Comparisons (fast response)															
HMMH Project # 305270.001															
Measurement at Site 7: Intermediate School on 2/18/2014 between 10:30 AM and 11:15 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	2.4	0.4	9.3	10.7	12.4	14.2	KWI Turbine OPERATING (with traffic)	Avg Lmax	1.7	1.8	11.8	14.4	15.8	17.6
	L01	1.6	-0.4	8.4	9.9	11.5	13.4		L01	5.4	5.5	15.5	18.1	19.6	21.3
	Leq	-5.2	-7.2	1.6	3.1	4.7	6.6		Leq	-5.7	-5.6	4.4	7.0	8.5	10.2
	L50	-6.5	-8.6	0.3	1.8	3.4	5.3		L50	-10.2	-10.1	-0.1	2.5	3.9	5.7
	L90	-8.5	-10.5	-1.7	-0.2	1.4	3.3		L90	-12.3	-12.3	-2.2	0.4	1.8	3.6
	Lmin	-10.4	-12.5	-3.6	-2.1	-0.5	1.3		Lmin	-14.0	-13.9	-3.9	-1.3	0.1	1.9
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response C-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax							KWI Turbine OPERATING (no traffic)	Avg Lmax						
	L01								L01						
	Leq								Leq						
	L50								L50						
	L90								L90						
	Lmin								Lmin						
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response C-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Z-levels		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax							KWI Turbine OPERATING (no traffic)	Avg Lmax						
	L01								L01						
	Leq								Leq						
	L50								L50						
	L90								L90						
	Lmin								Lmin						

Acoustical Monitoring Study of Kingston Wind Independence Turbine															
Page D-220: Summary of G-weighted Sound Level (fast response) and Modulation Depth (fast response) Comparisons															
HMMH Project # 305270.001															
Measurement at Site 7: Intermediate School on 2/18/2014 between 10:30 AM and 11:15 AM with KWI Turbine OPERATING and SHUTDOWN															
Operating - Shutdown Differences (including traffic on Route 3)								Operating - Shutdown Differences (including traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)								Vertical: KWI Turbine OPERATING (wind turbine plus traffic) Horizontal: KWI Turbine SHUTDOWN (ambient - with traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (with traffic)	Avg Lmax	3.5	1.9	10.3	11.8	13.6	15.4	KWI Turbine OPERATING (with traffic)	Avg Lmax	0.2	0.8	4.8	5.0	5.4	5.7
	L01	6.5	4.8	13.2	14.8	16.5	18.4		L01	-0.8	-0.2	3.7	4.0	4.4	4.7
	Leq	-3.3	-5.0	3.4	5.0	6.7	8.5		Leq	-4.5	-3.9	0.1	0.3	0.7	1.0
	L50	-5.9	-7.6	0.8	2.4	4.1	5.9		L50	-5.1	-4.5	-0.6	-0.3	0.1	0.4
	L90	-8.6	-10.2	-1.8	-0.3	1.5	3.3		L90	-5.2	-4.5	-0.6	-0.4	0.0	0.4
	Lmin	-10.5	-12.1	-3.7	-2.1	-0.4	1.4		Lmin	-5.6	-4.9	-1.0	-0.8	-0.4	0.0
Operating - Shutdown Differences (excluding traffic on Route 3)								Operating - Shutdown Differences (excluding traffic on Route 3)							
Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)								Vertical: KWI Turbine OPERATING (wind turbine only) Horizontal: KWI Turbine SHUTDOWN (ambient - no traffic)							
FAST Response G-levels		KWI Turbine SHUTDOWN (no traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (no traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax							KWI Turbine OPERATING (no traffic)	Avg Lmax						
	L01								L01						
	Leq								Leq						
	L50								L50						
	L90								L90						
	Lmin								Lmin						
Operating - Shutdown Differences: Overall Comparison								Operating - Shutdown Differences: Overall Comparison							
Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)								Vertical: KWI Turbine ONLY (excluding traffic on Route 3) Horizontal: Ambient Sound Levels (including traffic on Route 3)							
FAST Response G-levels		KWI Turbine SHUTDOWN (with traffic)						FAST Response Mod Depth		KWI Turbine SHUTDOWN (with traffic)					
		Avg Lmax	L01	Leq	L50	L90	Lmin			Avg Lmax	L01	Leq	L50	L90	Lmin
KWI Turbine OPERATING (no traffic)	Avg Lmax							KWI Turbine OPERATING (no traffic)	Avg Lmax						
	L01								L01						
	Leq								Leq						
	L50								L50						
	L90								L90						
	Lmin								Lmin						

**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-221: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Operating**  
HMMH Project # 305270.001

Measurement at Site 7: **Intermediate School** on 2/18/2014 from 10:55 to 11:15 AM with KWI Turbine **OPERATING**

Site data	Supervisory Control and Data Acquisition (SCADA) data				
Distance from KWI: 2170 ft	Time: 10:50 to 11:00 AM	Calibrated Wind Speed: 6.8 m/s	Wind Direction: 094°	Avg Power Level: 484 kW	Air Temperature: 31 °F
Wind Speed Range: 0-3 m/s	Time: 11:00 to 11:10 AM	Calibrated Wind Speed: 6.7 m/s	Wind Direction: 094°	Avg Power Level: 690 kW	Air Temperature: 32 °F
	Time: 11:10 to 11:20 AM	Calibrated Wind Speed: 7.5 m/s	Wind Direction: 094°	Avg Power Level: 428 kW	Air Temperature: 32 °F



**Event Log**

Traffic on Route 3 **throughout**  
Aircraft overflights **intermittent**  
Wind-generated noise **intermittent**  
Heating system exhaust noise **removed**

**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine OPERATING**

10:55 to 11:00 AM (100% included)						11:00 to 11:05 AM (100% included)						11:05 to 11:10 AM (100% included)						11:10 to 11:15 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	54.3	62.9	68.8	68.6	5.3	Lmax	60.5	68.8	69.4	69.6	10.1	Lmax	56.5	64.9	76.3	76.7	4.4	Lmax	53.9	71.5	86.2	86.4	4.1
L01	53.2	61.8	68.2	68.2	3.9	L01	58.4	66.7	68.1	68.7	7.4	L01	55.4	63.8	74.6	75.6	3.7	L01	53.0	69.3	84.2	83.1	2.6
Leq	49.8	57.9	63.0	65.4	1.2	Leq	51.2	60.7	63.7	65.0	1.7	Leq	49.8	59.1	66.6	68.0	1.2	Leq	49.7	59.5	71.8	71.8	1.0
L50	49.6	57.6	62.3	65.2	1.0	L50	49.3	58.9	62.4	64.3	1.2	L50	49.3	58.2	65.0	67.1	1.0	L50	49.4	58.0	65.8	67.5	0.9
L90	47.3	55.9	61.0	63.3	0.6	L90	47.3	56.7	60.7	62.6	0.7	L90	47.0	56.6	61.9	64.3	0.6	L90	48.0	55.4	61.5	64.2	0.6
Lmin	46.4	54.4	59.5	61.7	0.3	Lmin	46.2	55.5	59.8	61.4	0.3	Lmin	45.6	55.3	60.1	62.2	0.4	Lmin	46.1	54.2	60.1	62.4	0.2

10:55 to 11:15 AM (100% included)					
Avg	A	C	Z	G	MD
Lmax	56.3	67.0	75.2	75.3	6.0
L01	56.6	66.2	78.9	78.3	5.0
Leq	50.2	59.4	67.8	68.5	1.3
L50	49.4	58.1	63.3	65.9	0.6
L90	47.4	56.1	61.2	63.2	0.6
Lmin	45.6	54.2	59.5	61.4	0.2

Octave Band Sound Levels (10:55 to 11:15 AM)

1/3-Octave Band Sound Levels (10:55 to 11:15 AM)

**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine OPERATING**

10:55 to 11:00 AM (0% included)						11:00 to 11:05 AM (0% included)						11:05 to 11:10 AM (0% included)						11:10 to 11:15 AM (0% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax						Lmax						Lmax						Lmax					
L01						L01						L01						L01					
Leq						Leq						Leq						Leq					
L50						L50						L50						L50					
L90						L90						L90						L90					
Lmin						Lmin						Lmin						Lmin					

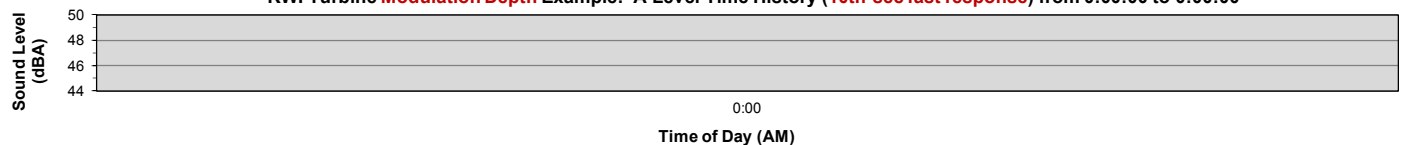
  

10:55 to 11:15 AM (0% included)					
Avg	A	C	Z	G	MD
Lmax					
L01					
Leq					
L50					
L90					
Lmin					

Octave Band Sound Levels (10:55 to 11:15 AM)

1/3-Octave Band Sound Levels (10:55 to 11:15 AM)

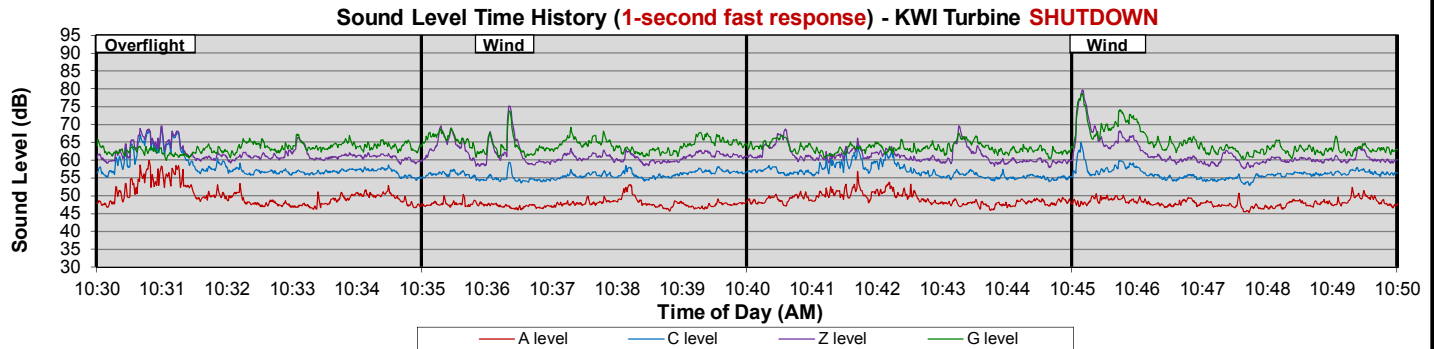
**KWI Turbine Modulation Depth Example: A-Level Time History (10th-sec fast response) from 0:00:00 to 0:00:00**



**Acoustical Monitoring Study of Kingston Wind Independence Turbine**  
**Page D-222: Detailed Acoustical Monitoring Report (fast response) - Wind Turbine Shutdown**  
HMMH Project # 305270.001

Measurement at Site 7: **Intermediate School** on 2/18/2014 from 10:30 to 10:50 AM with KWI Turbine **SHUTDOWN**

Site data		Supervisory Control and Data Acquisition (SCADA) data			
Distance from KWI: 2170 ft	Time: 10:30 to 10:40 AM	Calibrated Wind Speed: 6.4 m/s	Wind Direction: 099°	Avg Power Level: 000 kW	Air Temperature: 31 °F
Wind Speed Range: 0-3 m/s	Time: 10:40 to 10:50 AM	Calibrated Wind Speed: 6.2 m/s	Wind Direction: 090°	Avg Power Level: 000 kW	Air Temperature: 31 °F

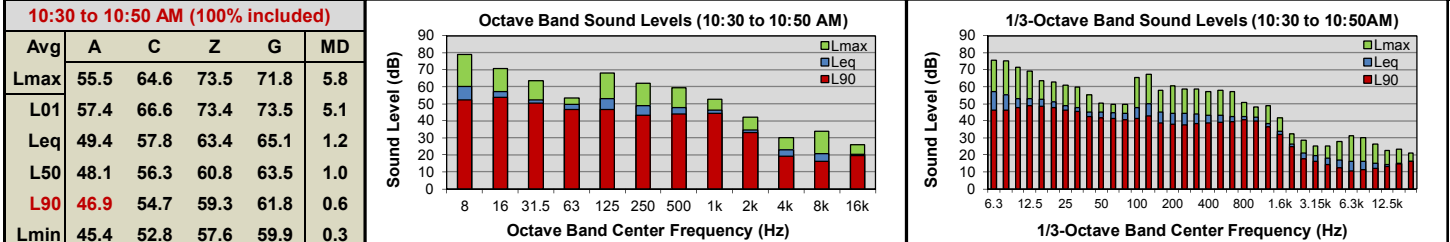


**Event Log**

Traffic on Route 3 **throughout**  
Aircraft overflights **intermittent**  
Wind-generated noise **intermittent**  
Heating system exhaust noise **removed**

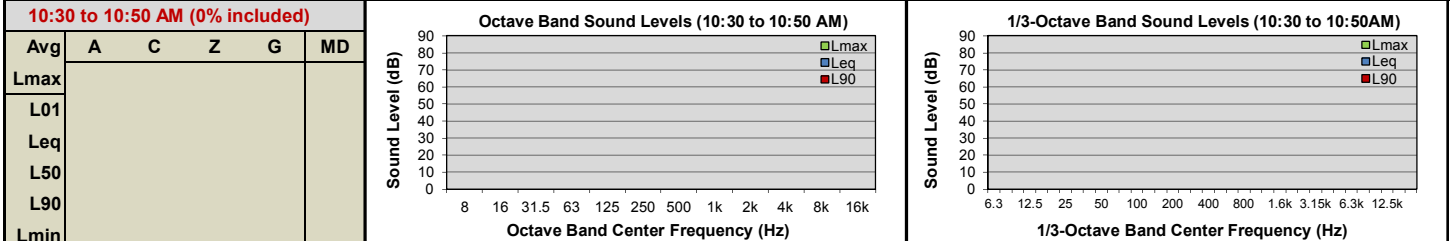
**Fast Response Acoustical Metrics (including traffic on Route 3) - KWI Turbine SHUTDOWN**

10:30 to 10:35 AM (100% included)						10:35 to 10:40 AM (100% included)						10:40 to 10:45 AM (100% included)						10:45 to 10:50 AM (100% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax	59.8	69.1	69.6	67.3	9.0	Lmax	53.1	59.3	75.2	73.7	3.6	Lmax	56.9	65.1	69.5	67.6	6.7	Lmax	52.3	64.9	79.7	78.7	3.8
L01	58.5	67.7	68.7	66.8	6.8	L01	52.4	58.1	71.3	69.3	2.5	L01	53.3	62.4	68.2	66.8	4.0	L01	50.7	62.3	77.3	77.1	2.6
Leq	51.3	60.1	62.6	63.5	1.7	Leq	47.9	55.8	63.0	65.0	1.0	Leq	49.5	57.3	62.0	63.7	1.2	Leq	48.2	56.5	65.3	67.1	1.0
L50	49.4	57.1	61.1	63.3	1.1	L50	47.6	55.7	61.0	64.3	0.9	L50	48.8	56.4	60.7	63.2	1.1	L50	47.9	56.0	60.3	63.5	0.9
L90	47.2	55.9	59.9	61.6	0.6	L90	46.6	54.4	59.2	61.8	0.6	L90	47.4	54.9	59.3	61.8	0.6	L90	46.8	54.5	59.2	61.8	0.6
Lmin	46.2	54.4	58.8	59.9	0.3	Lmin	45.7	53.7	58.3	60.8	0.3	Lmin	45.9	53.9	58.0	60.4	0.3	Lmin	45.4	52.8	57.6	60.0	0.3



**Fast Response Acoustical Metrics (excluding traffic on Route 3) - KWI Turbine SHUTDOWN**

10:30 to 10:35 AM (0% included)						10:35 to 10:40 AM (0% included)						10:40 to 10:45 AM (0% included)						10:45 to 10:50 AM (0% included)					
	A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD		A	C	Z	G	MD
Lmax						Lmax						Lmax						Lmax					
L01						L01						L01						L01					
Leq						Leq						Leq						Leq					
L50						L50						L50						L50					
L90						L90						L90						L90					
Lmin						Lmin						Lmin						Lmin					



Ambient (no traffic) **Modulation Depth Example: A-Level Time History (10th-sec fast response) from 0:00:00 to 0:00:00**

