

Professional Qualifications

Michael Hankard



Education:

B.S. Electrical Engineering
Acoustics Specialization
University of Maine, 1990

Professional Affiliations:

Institute of Noise Control Engineering
Acoustical Society of America

Agency Experience:

Public Service/Utility Commissions
(NY, WI, MN, WV, SD, RI)
World Bank
Federal Highway Administration
Dozens of cities/counties in 20 states

Summary:

Mr. Hankard has been practicing in the fields of acoustics and noise control engineering for the past 30 years. In 1996 he started Hankard Environmental. The firm consults in environmental noise and has successfully completed over 500 projects relating to wind energy, solar facilities, gas-fired power generation facilities, oil and gas extraction operations, highways, mines, gravel pits, entertainment venues, lawsuits, and land development projects.

Mr. Hankard has experience in all aspects of environmental noise, including field measurements, predictions, impact assessments, mitigation design, and expert testimony at local and state proceedings. He has conducted ambient and compliance noise surveys lasting from days to years, used a variety of models to predict noise from facilities, designed a variety of mitigation measures such as walls, enclosures, baffles, and silencers.

Vibration experience includes the measurement and prediction of ground-borne and structure-borne levels from sources such as railroads, blasting, and roadways; and the assessment of impact according to internationally-accepted methods and standards.

Noise Level Compliance Measurements

Mr. Hankard has conducted some of the most extensive utility-scale wind turbine noise compliance surveys in the U.S. Wind turbine measurements present unique challenges due to the need to measure for long periods of time, in windy environments, in lower frequencies than is otherwise typical, and to separate turbine from non-turbine noise. Built on 30 years of measurement experience he has developed effective noise monitoring systems that maintain accuracy over weeks and even years of continuous outdoor monitoring. Mr. Hankard has developed detailed data analysis methods within the framework of applicable standards of separating turbine and non-turbine noise using time- and frequency-based techniques and turbine on/off analyses. He has personally spent over 100 hours in the field at operating wind farms.

Ambient Noise Measurements

Mr. Hankard has conducted more than 100 ambient sound surveys for the power generation, land development, mining, and other industries. His experience includes the design, execution, data analysis, and reporting of these studies. Ambient surveys for wind turbine projects are particularly challenging due to the need to measure in a wide variety of windy conditions. A successful study begins with a careful consideration of the project environs, the relative location of turbines and residences, applicable regulations, turbine type, and potential seasonal fluctuations. The selection of the measurement locations is paramount as is the need to possibly measure for weeks to months to ensure collection of sufficient data. Finally, the analysis of the data is complex, requiring the separation of ambient sounds from those made by the wind, those resulting from microphone-wind interaction, and transient events.

Expert Testimony

A recognized expert in the field of acoustics, Mr. Hankard has testified at dozens of local (county) commission meetings and public hearings, testified before state public service commissions in six states, presented at public information sessions, and has provided measurement reports and other acoustical support for cases in local, state, and federal courts.

Modeling

Mr. Hankard has an in-depth understanding of the modeling (prediction) of noise from wind turbine farms. The size of the source, as well as its distributed nature and other attributes, make it a non-traditional source to model. He understands the differences between modeling methods (ISO 9613-2:1996, Nord2000, CONCAWE, etc.), the different settings to be used within these methods (ground type, propagation rate, directivity, low frequency considerations), variation in sound power levels determined using IEC 61400-11, and the different results these various factors can produce.

Representative Projects

Mr. Hankard was lead consultant for the acoustical aspects of the following projects:
Multiple NY Article 10 Projects: Canisteo, Alle-Catt, Bull Run Wind (all ongoing)
Western NY Wind and Health Forum: Presentation (2019)
Crazy Mountain Wind, MT: Court testimony (2019)
Lake Winds Energy Park, MI: Compliance measurements (2016-2018)
Prairie Breeze Wind Energy Center, NE: Compliance measurements (2016)
California Ridge Wind Energy Center, IL: IPCB Compliance measurements (2013)
Willow Creek Energy Center, OR: Long-term compliance monitoring (2009-2016)
Highland Wind, WI: Ambient survey, Public Service Commission testimony (2013)
Shirley Wind, WI: Ambient survey and compliance testing (2010-2012)