

**COMMONWEALTH OF MASSACHUSETTS  
ENERGY FACILITIES SITING BOARD**

**PREFILED TESTIMONY OF ROBERT D. O'NEAL**

1 **Q. Please state your name and business address.**

2 A. My name is Robert D. O'Neal. I am one of the Managing Principal of Epsilon  
3 Associates, Inc. My business address is 3 Mill & Main Place, Suite 250, Maynard, MA  
4 01754

5 **Q Please provide an overview of Epsilon Associates, Inc.**

6 A. Epsilon is an engineering and environmental consulting firm that provides strategic  
7 regulatory planning and environmental permitting services to public sector, real estate,  
8 energy, industrial, and institutional clients.

9 **Q. On behalf of what company are you offering your testimony in this docket?**

10 A. I am testifying on behalf of Medway Grid LLC, which is requesting approval to construct  
11 a 250MW/500 MWh standalone Battery Energy Storage System and underground 1,325  
12 foot electric transmission line in Medway, Massachusetts.

13 **Q. What is your educational background and professional expertise?**

14 A. I hold a Bachelor of Arts in Engineering Science from Dartmouth College and a Master  
15 of Science in Atmospheric Science from Colorado State University. I have over 30 years  
16 of experience in the areas of community noise impact assessment, including the design  
17 and implementation of sound level measurement programs, modeling of future impacts,  
18 conceptual mitigation analyses and compliance testing.

19 **Q. What is the purpose of your testimony?**

20 A. I am offering testimony on the environmental impacts and any mitigation measures  
21 necessary with respect to sound levels, as detailed in Section 4.0 of the supporting  
22 documentation appended to the Petition

1 **Q. Please identify any regulatory proceedings in which you have previously testified.**

2 A. I have testified before the Massachusetts Energy Facilities Siting Board for nine (9)  
3 separate Petitions. In addition, I have significant experience as an expert witness in  
4 federal and state regulatory proceedings throughout the United States. A list of cases  
5 where I have appeared as an expert witness, including before the MA EFSB, is included  
6 in my resume (attached).

7 **Q. Does this conclude your testimony?**

8 A. Yes.

## Robert D. O'Neal, CCM, INCE Board Certified

### Managing Principal

#### EDUCATION

M.S., Atmospheric Science, Colorado State University

B.A., Engineering Science, Dartmouth College

#### PROFESSIONAL REGISTRATION

Certified Consulting Meteorologist, #578

Institute of Noise Control Engineering, Board Certified

#### PROFESSIONAL MEMBERSHIPS

American Meteorological Society  
Institute of Noise Control Engineers (INCE),  
Board Certified Member, Board of Directors  
(2020-2023; 2014-2016)

Acoustical Society of America

A Managing Principal of the firm, Mr. O'Neal is a Certified Consulting Meteorologist and INCE Board Certified with over 30 years of experience in the areas of community noise impact assessments, meteorological data collection and analyses, and air quality modeling. Mr. O'Neal's noise impact evaluation experience includes design and implementation of sound level measurement programs, modeling of future impacts, conceptual mitigation analyses, compliance testing, and expert witness testimony.

His expert witness testimony experience includes state and local boards, courts of law, and adjudicatory hearings. Specifically, Rob has testified before the MA Energy Facilities Siting Board, Maine Board of Environmental Protection, Vermont Superior Court, NH Site Evaluation Committee, NY DEC Administrative Law Judge, SD Public Utilities Commission, 42nd District Court of Texas, MA Land Court, Environmental Review Tribunals (Ontario, Canada), and Boards of County Commissioners.

Rob is a nationally recognized acoustics expert in the wind energy field having performed noise impact assessments in over 25 states across the U.S. and Canada. He also has extensive experience conducting noise studies for fossil fuel power generation facilities, substations and electric transmission lines, gas pipelines, hard rock quarries, aggregate handling, asphalt and concrete plants, C&D processing facilities, landfills, real estate development, and mobile sources.

Mr. O'Neal is active on siting and environmental committees associated with the wind and materials handling industries. He has presented the results of wind turbine low frequency noise and infrasound research at major conferences and peer-reviewed scientific journals. He was invited by the Commissioner of the Massachusetts Department of Environmental Protection to serve as a technical expert on the Wind Noise Technical Advisory Group (WNTAG) for the period 2013-2016. In addition, Rob has been an invited speaker at conferences on a variety of noise and meteorological topics.

## SELECTED PROFESSIONAL EXPERIENCE

- ◆ *NextEra Energy Resources – East Point Energy Center, Schoharie County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 50-megawatt (MW) solar farm. In addition to the noise study, Epsilon provided technical support and expert testimony as part of the Article 10 permitting process. An Article 10 certificate of approval was granted by the NY Siting Board in 2021.
- ◆ *EDF Renewables – Columbia Solar Energy Center, Herkimer County, NY.* Mr. O’Neal developed an extensive sound level measurement program for a proposed 350-megawatt (MW) solar farm. This work was done in support of the Article 10 permitting process.
- ◆ *Hecate Energy – Cider Solar Project, Genesee County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 500-megawatt (MW) solar farm. In addition to the noise study, Epsilon provided technical support and expert testimony as part of NY State’s Section 94-c permitting process.
- ◆ *Open Road Renewables – Clearview Solar I, Champaign County, OH.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 144-megawatt (MW) solar farm. In addition to the noise study, Epsilon provided technical support and expert testimony as part of the Ohio Power Siting Board’s permitting process.
- ◆ *NextEra Energy Resources – Garnet Energy Center, Cayuga County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 200-megawatt (MW) solar farm and battery energy storage system project. In addition to the noise study, Epsilon provided technical support and expert testimony as part of the Article 10 permitting process.
- ◆ *NextEra Energy Resources – Eight Point Wind, Steuben County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 102-megawatt (MW) wind farm in the southern tier of NY. In addition to the noise studies, Epsilon provided technical support and expert testimony as part of the Article 10 permitting process. An Article 10 certificate of approval was granted by the NY Siting Board in 2019.
- ◆ *Tradewind Energy (Enel Green Power Company) – Alta Farms Wind II, DeWitt County, IL.* Mr. O’Neal oversaw a sound level and shadow flicker modeling program for a proposed wind turbine project in central Illinois. 67 wind turbine generators were analyzed for the project. In addition to the technical studies, Mr. O’Neal provided expert testimony before the DeWitt County Zoning Board of Appeals.
- ◆ *Tradewind Energy (Enel Green Power Company) – Gratiot Farms Wind Project, Gratiot County, MI.* Mr. O’Neal oversaw a sound level and shadow flicker modeling program for a proposed wind turbine project in Michigan. 69 wind turbine generators were analyzed for the project. In addition to the technical studies, Mr. O’Neal provided expert testimony before the North Shade and New Haven Township Planning Commissions as part of Site Plan Review and Special Land Use Permit hearings.
- ◆ *Calpine – Bluestone Wind, Broome County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 124-megawatt (MW) wind farm and battery storage project in the southern tier of NY. In addition to the noise studies, Epsilon provided technical support and expert testimony as part of the Article 10 permitting process. An Article 10 certificate of approval was granted by the NY Siting Board in 2019.

- ◆ *Calpine – High Bridge Wind, Chenango County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 100-megawatt (MW) wind farm and battery storage project in the southern tier of NY. In addition to the noise studies, Epsilon provided technical support and expert testimony as part of the Article 10 permitting process.
- ◆ *Avangrid Renewables– Deer River Wind, Lewis & Jefferson County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 100-megawatt (MW) wind farm in the Tug Hill Plateau region of NY. In addition to the noise studies, Epsilon provided technical support and expert testimony as part of the Article 10 permitting process.
- ◆ *Terra-Gen – Prattsburgh Wind, Steuben County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 150-megawatt (MW) wind farm in the southern tier of NY. In addition to the technical noise studies, Epsilon provided input and response to comments for the Preliminary Scoping Statement, Stipulations, and expert testimony as part of the Article 10 permitting process.
- ◆ *Apex Clean Energy – Heritage Wind, Orleans County, NY.* Mr. O’Neal developed an extensive sound level measurement and modeling program for a proposed 185-megawatt (MW) wind farm in western NY. In addition to the technical noise studies, Epsilon provided input and response to comments for the Preliminary Scoping Statement, Stipulations, and expert testimony as part of the Article 10 permitting process.
- ◆ *Apex Clean Energy – Dakota Range I & II & III, Codrington & Grant & Roberts Counties, SD.* Mr. O’Neal oversaw a sound level and shadow flicker modeling program for a proposed wind turbine project in South Dakota. 108 wind turbine generators were analyzed and permitted. In addition to the technical studies, Mr. O’Neal provided expert testimony before the Grant County Board Adjustment, the Roberts County Board Adjustment and the South Dakota Public Utilities Commission.
- ◆ *Iberdrola Renewables – Groton Wind, Groton, NH.* Developed an extensive sound level measurement and modeling program for a proposed 48 MW wind farm near Plymouth, NH. Concurrent sound level data and meteorological data were collected and analyzed. The results were presented as expert witness testimony at community open houses and during the Site Evaluation Committee public hearings. Post-construction sound monitoring was conducted to confirm compliance with the permit conditions.
- ◆ *Massachusetts Clean Energy Center – Research Study on Wind Turbine Acoustics.* The study includes measuring sound emissions from a variety of operating wind turbines in the Commonwealth of Massachusetts. Fieldwork includes measuring both the level and quality of sound emissions from operating wind turbines under various wind regimes and topography. To better understand how wind speed and wind direction vary over the turbine height, meteorological data are collected using on-site meteorological towers and LiDAR systems. Acoustical data are measured at various distances from the wind turbines and include broadband, one-third octave band, low frequency and infrasound, and interior/exterior sound levels.
- ◆ *Confidential Client – Wind Energy Project, VT.* Reviewed materials prepared by an opposing expert in anticipation of litigation due to noise from a wind energy project. Provided expert noise testimony before the Vermont Public Service Board on behalf of wind energy’s legal counsel as part of a Technical Hearing.

- ◆ *NextEra Energy Resources – Lee-DeKalb Wind Farm, Lee & DeKalb County, IL.* Developed and executed a sound level compliance measurement program for a 218 MW wind farm in Illinois. Concurrent sound level data and meteorological data were collected and analyzed.
- ◆ *FPL Energy – Horse Hollow Wind Energy Center, Taylor County, TX.* Developed and executed an extensive sound level measurement program for a 735 MW wind farm in Taylor County, TX. Concurrent sound level data, meteorological data, and wind turbine power output data were collected and analyzed. The results were used in legal proceedings as part of expert witness testimony in the case.
- ◆ *John Deere Renewables –Michigan Thumb I Wind Farm, Huron County, MI.* Developed and executed a long-term sound level measurement program for an existing 69 MW wind farm in Michigan to determine compliance with the local noise ordinance. Concurrent sound level data and meteorological data were collected and analyzed.
- ◆ *NextEra Energy Resources (formerly FPL Energy) – Low Frequency & Infrasonic Study, TX.* Developed and executed a sound level measurement program as part of a scientific study to determine low frequency and infrasound levels from two types of wind turbines. Both interior and exterior data were compared to independent impact criteria for audibility, vibration, rattle, and annoyance. The study results were published in the peer-reviewed Noise Control Engineering Journal.
- ◆ *Gamesa Energy – Barton Chapel Wind Farm, Jack County, TX.* Developed an extensive sound level measurement and modeling program for a proposed 120 MW wind farm in Jack County, TX. Concurrent sound level data and meteorological data were collected and analyzed. The results were used in legal proceedings as part of expert witness testimony in the case.
- ◆ *State of New Hampshire, Office of the Attorney General -- Lempster Mountain Wind Power Project, Lempster, NH.* Performed an independent review of a proposed 24 MW wind turbine farm. The applicant's noise impact analysis was evaluated and comments provided to the State of NH.

## **EXPERT TESTIMONY EXPERIENCE**

Expert witness before the MA Energy Facilities Siting Board on noise issues for: 18-mile underground NSTAR electric transmission line and substation project in the Boston Metropolitan area (2004-2005); Billerica Energy Center power plant (2007); Brockton Clean Energy (2008-2009), West Medway II power plant (2015), Woburn-Wakefield electric transmission line (2016), National Grid gas pipeline—Lowell/Tewksbury (2018), Vineyard Wind Connector (2018), Eversource Mid-Cape Reliability Project electric transmission line (2020), Vineyard Wind Connector 2 (2021).

Expert witness before NY DPS & DEC Administrative Law Judges on noise issues for a 100 MW wind energy facility (2019). Case #16-F-0267.

Expert witness before NY DPS & DEC Administrative Law Judges on noise issues for a 125 MW wind energy facility (2019). Case #16-F-0559.

Expert witness before the South Dakota Public Utilities Commission, on noise and shadow flicker for Dakota Range I and Dakota Range II Energy Facility Permit, Pierre, SD (2018). Case #EL18-003.

Expert witness before the North Dakota Senate Subcommittee of Energy and Natural Resources, Draft law on Sound Levels from Wind Energy Facilities, Bismarck, ND, NextEra Energy Resources, LLC (2017).

Expert witness before the Maine Board of Environmental Protection, on noise issues for the Juniper Ridge Landfill expansion, Old Town, ME (2016). Case #S-020700-WD-BI-N and #L-19015-TG-D-N.

Expert witness before the Board of Commissioners, Chowan and Perquimans Counties, NC, on blade and ice drop for Timbermill Wind Conditional Use Permit (2016).

Expert witness before the Environmental Review Tribunal (via skype), Ontario, Canada on noise issues for wpd White Pines Wind, Prince Edward County, Ontario [Case ERT 15-071, Alliance to Protect Prince Edward Co. v. Director, Ministry of the Environment] (2015).

Expert witness before the Jackson Township Board of Supervisors, Cambria County, PA on noise issues for a 980 MW natural gas-fired combined-cycle power generation plant (2015).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for Grey Highlands Clean Energy GP Corp., Grey Highlands, Ontario [Case ERT 15-026, Fohr v. Director, Ministry of the Environment] (2015).

Expert witness in Vermont Superior Court, Environmental Division, Docket No. 179-10-10; on noise issues for an aggregate extraction and crushing operation, McCullough Crushing, Calais, VT (2015).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for Grey Highlands Zero Emission People Wind Farm, Grey Highlands, Ontario [Case ERT 15-011, Dingeldein v. Director, Ministry of the Environment] (2015).

Prepared witness statement for the Environmental Review Tribunal, Ontario, Canada on noise issues for Niagara Region Wind Corporation, Haldimand County, Ontario [Case ERT 14-096, Mothers Against Wind Turbines, Inc. v. Director, Ministry of the Environment] (2015).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for SP Armow Wind Ontario GP Inc., Kincardine, Ontario [Case ERT 13-124 to 13-125, Kroeplin v. Director, Ministry of the Environment] (2014).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for K2 Wind Ontario, Inc., Ashfield-Colbourne-Wawanosh, Ontario [Case ERT 13-097 to 13-098, Drennan v. Director, Ministry of the Environment] (2013).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for Dufferin Wind Power, Melancthon, Ontario [Case ERT 13-070 to 13-075, Bovaird v. Director, Ministry of the Environment] (2013).

Expert witness before the NH Site Evaluation Committee on noise and shadow flicker issues for the 30 MW Antrim Wind Project (2012; 2016) Docket No. 2015-02 and Docket No. 2012-01; 48 MW Groton Wind project (2010) Docket No. 2010-01.

Expert witness in Vermont Act 250 Land Use proceedings on noise issues for a proposed sand and gravel excavation site at Okemo Mountain (2007). Permit No. 2S1122.

Expert witness in the 42<sup>nd</sup> District Court of Texas on noise issues for a 735 MW wind turbine farm (2006).

Expert witness before NY DEC Administrative Law Judge on noise issues for a hard rock quarry facility (1997), two sand and gravel excavation sites (2001; 2003), and a cogeneration power plant (2003).

Expert witness for site assignment hearings on noise issues from solid waste transfer stations in Lowell, MA (1998); Marshfield, MA (1999); Holliston, MA (2004); Oxford, MA (2006).

Expert witness in Massachusetts Land Court on noise issues for a proposed sand and gravel pit (1991), a proposed cross-dock distribution center (2002), and an existing concrete batch plant (2005).

Expert witness in Vermont Act 250 Land Use process for air quality impacts at ski areas (1991; 1992; 1997).

Expert witness before MA DEP Administrative Law Judge for an asphalt plant in Boston (1996).

Expert witness before municipal boards on issues of air pollution and noise impacts from local industries (many years).

Invited specialty speaker on noise impact assessments for Boston University's Masters of Urban Planning degree program (1994; 1996).

#### **PUBLICATIONS**

O'Neal, R.D., Hellweg, Jr., R.D. and R. M. Lampeter, 2011. Low frequency sound and infrasound from wind turbines. *Noise Control Engineering Journal*, 59 (2), 135-157.

O'Neal, R.D., and R.M. Lampeter, 2007: Sound Defense for a Wind Turbine Farm. *North American Windpower*, Zackin Publications, Volume 4, Number 4, May 2007.

O'Neal, R.D., 1991: Predicting potential sound levels: A case study in an urban area. *Journal of the Air & Waste Management Association*, 41, 1355-1359.

McKee, T.B. and R.D. O'Neal, 1989: The role of valley geometry and energy budget in the formation of nocturnal valley winds. *Journal of Applied Meteorology*, 28, 445-456.

#### **CONFERENCE PRESENTATIONS**

O'Neal, R.D., 2019. Environmental Aspects of Renewables Workshop. Electric Power Research Institute, Chicago, IL.

Kaliski, K., Bastasch, M., O'Neal R.D., 2018. Regulating and predicting wind turbine sound in the U.S. Presented at INTER-NOISE 2018, Chicago, IL

O'Neal, R.D., 2017. Sound level impact studies for wind energy in NY State. Acoustical Society of America Fall Meeting, New Orleans, LA.

Kaliski, K., O'Neal, R.D., et al 2016. Massachusetts Research Study on Wind Turbine Acoustics: Overview and Conclusions. NOISE-CON 2016, Providence, RI.

O'Neal, R.D., 2014. Wind Energy Sound Monitoring Under High Wind Shear Conditions. NOISE-CON 2014, Fort Lauderdale, FL.

O'Neal, R.D. Lampeter, R.M., Emil, C.B. and B.A. Gallant, 2012. Evaluating and controlling noise from a metal shredder system. Presented at INTER-NOISE 2012, NY, NY.

O'Neal, R.D., 2011. Wind Turbine sound Levels: The Michigan I, Huron County, MI Study. Presented at Great Lakes Wind Collaborative 4<sup>th</sup> Annual Meeting, Ypsilanti, MI.

O'Neal, R.D., Hellweg, Jr., R.D. and R. M. Lampeter, 2011. Low frequency sound and infrasound from wind turbines. Presented at WINDPOWER 2011, Anaheim, CA.

O'Neal, R.D., Hellweg, Jr., R.D. and R. M. Lampeter, 2010. Low frequency sound and infrasound from wind turbines – a status update. NOISE-CON 2010, Baltimore, MD.

O'Neal, R.D., 2010. Noise control evaluation for a concrete batch plant. NOISE-CON 2010, Baltimore, MD.

O'Neal, R.D., and R.M. Lampeter, 2009: Nuisance noise and the defense of a wind farm. INTER-NOISE 2009, Ottawa, Canada, August 23-26, 2009.

O'Neal, R.D., and R.M. Lampeter, 2009: Sound from Wind Turbines: A Key Factor in Siting a Wind Farm.  
12<sup>th</sup> Annual Energy & Environment Conference – EUEC 2009, Phoenix, AZ, February 2, 2009.

**AFFIDAVIT OF ROBERT D. O'NEAL**

I, Robert D. O'Neal, attest that:

1. I am testifying on behalf of Medway Grid, LLC before the Massachusetts Energy Facilities Siting Board in docket EFSB 22-02.
2. This pre-filed testimony and the sections included in the Petition that I am sponsoring were prepared by me or under my supervision and control.
3. I hereby swear or affirm that the information contained in my pre-filed testimony and information provided in Section 4.0 as pertains to acoustics are true and accurate to the best of my knowledge.



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Robert D. O'Neal