

Noise

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The Technical Committee on Noise (TCN) focuses on increasing and diffusing knowledge of noise generation and propagation, passive and active noise control, perception and the effects of noise, and the management of exposure to noise. The activities of the TCN embrace both the practical and theoretical aspects of noise in all areas of acoustics. Unwanted noise is pervasive in our society, and as a result, the myriad applications of interest lead to significant overlap with other technical committees within the Acoustical Society of America. Many TCN members participate in and collaborate with the technical committees on Architectural Acoustics (TCAA) and Structural Acoustics and Vibration (TCSA). Although there are numerous topics of current interest to members of the TCN, several of those are highlighted here to provide an overview of the types of problems that are being pursued.

Renewable energy sources are a topic of great interest in the United States and around the world. One of those sources being developed is the generation of electricity from wind turbines. To spur this development, production tax credits are currently given for producing sustainable energy. The effects of this policy can be seen because there are now utility-scale projects in all 50 states of the United States. As of 2014, the cumulative wind-generating capacity in the United States was 66 gigawatts, with 5,055 megawatts of capacity being installed during 2014. Although this rapid growth in capacity is striving to address the need for renewable energy, it has also led to an awareness of potential health concerns for those in the vicinity of these wind turbines.

A significant contribution to the noise radiated from wind turbines is in the range of infrasound. The blade passage frequency (BPF) of the turbine and its harmonics are significant components of the radiated sound. People in the vicinity of wind turbines have reported a number of concerns including headaches, sleeplessness, nausea, vertigo, anxiety, panic attacks, and symptoms resembling motion sickness. These reports have led to a debate as to whether these effects are real and, if they are real, just what the mechanisms are that result in these symptoms. Current efforts are looking at what acoustical measurements are appropriate for properly analyzing wind turbine noise as well as studying blade design to prevent structural problems and reduce radiated noise. When a wind farm exists, as is very common, there are also issues of interaction between adjacent wind turbines that need to be considered.

In response to the issues associated with wind turbines, the ASA issued a policy statement in May 2014: “Wind turbine acoustic emissions and their potential effects should be investigated and fully addressed in an interdisciplinary manner. The Acoustical Society of America urges that guidelines for relating wind turbine sound descriptors to probabilities of adverse effects be developed, to aid in wise wind energy planning. Methods for measuring and quantifying wind turbine acoustic emissions, particularly at very low frequencies, should be developed that support the interdisciplinary findings” (<http://goo.gl/19yfDI>).

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