## RenewableUK publishes new research on wind energy acoustics

**Organisation:**RenewableUK

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**The wind industry trade association RenewableUK has published detailed new scientific research on wind energy acoustics.**

The study was carried out to investigate the causes of, and solutions to, the occurrence of an acoustic characteristic known as "Other Amplitude Modulation" (OAM).

 The report explains the differences between "Normal Amplitude Modulation" (NAM), which is the common swishing sound made by turbine blades as they pass through the air, and OAM, which is an infrequent and uncommon sound which typically lasts only for a few minutes. As a result of the research, acoustics professionals and the wind industry have a clear understanding of the characteristics of OAM, as well as how to address it if it should occur.

**RenewableUK's Deputy Chief Executive Maf Smith said:** "It's right that the wind industry should take the lead in investigating issues like this when they arise. As a result of the in-depth research we've commissioned, we've identified the causes of OAM, and, most importantly, the industry has identified a way to deal with it effectively.

"On the limited and infrequent occasions when OAM occurs, we can address it by using software to adjust the way turbines operate, changing the angle of the blades.

"Beyond that, the industry has worked with members of the UK's leading acoustics institute to develop a planning condition for local authorities to use, which we're publishing today alongside this work. This states that if OAM occurs, it's up to the wind industry to resolve it."

"We're proud to have commissioned this ground-breaking research as it pushes the boundaries of our knowledge of wind turbine acoustics considerably further forward. It's a tangible example of the wind industry acting in a responsible manner, demonstrating that we're continuing to be good neighbours to the communities who host wind farms in the UK".

OAM is caused by sudden variations in the direction and speed of the wind. These variations mean that the wind hits different parts of the turbine blade at different speeds, causing it to stall momentarily. This stalling action produces a "whooshing" sound.

OAM is not louder than NAM; it is relatively quiet, typically no louder than 35 to 40 decibels at a distance of about 1 kilometre, but it is deeper in pitch. OAM is comparable to the sound of traffic noise heard at around 1 km from a single carriage A-road.

The wind industry has identified solutions to the issue - software adjustments which change the angle of the turbine blades at certain times when OAM could occur. The industry has also worked with members of the Institute of Acoustics on the development of a planning condition which can be used by local authorities. This means that when wind farm developers apply to build projects, they will be required to resolve any instances of OAM in accordance with the planning permission.

Notes:

RenewableUK is the trade and professional body for the UK wind and marine renewables industries. Formed in 1978, and with nearly 600 corporate members, RenewableUK is the leading renewable energy trade association in the UK.

The research on Other Amplitude Modulation (OAM) "Wind Turbine Amplitude Modulation - Research to Improve Understanding as to its Cause & Effect" can be found here: <http://www.renewableuk.com/en/publications/index.cfm/wind-turbine-amplitude-modulation>

OAM is not louder than NAM; it is relatively quiet, typically no louder than 35 to 40 decibels at a distance of about 1 kilometre, but it is deeper in pitch. OAM is comparable to the sound of traffic noise heard at around 1 km from a single carriage A-road. By way of comparison, the normal swish of wind turbine blades (NAM) is around 55-60 decibels when the listener is standing right underneath the turbine - the listener would be able to hold a normal conversation without raising their voice.

A planning condition is a condition attached to the planning consent given by a local authority. Such conditions permit development to go ahead only when certain conditions are met. Conditions include undertakings on environmental and acoustics issues, and limits on the size and external appearance of any proposed development.