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Vestas Policy on Noise from Wind Turbines

Vestas[®]



Wind power plays an increasingly significant role in global efforts to address climate change and ensure security of energy supplies. Many issues arise as countries deploy wind power to ever greater degrees, among them the desire to develop noise regulations that are well-designed for large-scale wind power integration.

As the world-leading turbine manufacturer, Vestas has made significant strides in recent years to reduce turbine noise levels relative to the megawatts they produce. As Vestas – and the industry as a whole – continues developing new, modern turbines, this trend is expected to continue. Re-powering programs in which many smaller and older turbines are replaced with fewer larger ones will reduce noise emissions for the same installed wind power capacity (MW) and will also likely reduce the number of neighbours exposed to noise emissions.

Technical developments, however, could be supplemented by regulatory developments, particularly in the many countries that are significantly increasing wind power's integration into their energy mixes.

Governments traditionally regulate the amount of noise that can be emitted from a wide range of industrial and other human activity. The goal of noise regulation is to limit noise emissions to acceptable levels, as defined by relevant (national, regional, or local) government authorities. With specific regard to wind turbines, there are typically four different approaches that governments take:

- **Absolute noise limit (type 1):** maximum allowed noise level *at the wind speed creating the highest noise emission* must not be exceeded as measured at the nearest neighbour to the turbines;
- **Absolute noise limit (type 2):** maximum allowed noise level *at pre-defined wind speeds* must not be exceeded as measured at the nearest neighbour to the turbines;
- **Relative noise limits:** turbine noise emission must not exceed the level of background noise (both turbine and background noise are measured as a function of wind speed); such limits are often supplemented with a low absolute maximum noise limit to cover those situations in which turbines are located in areas of very low background noise;
- **No noise limits.**

Vestas recommends **relative noise limits** that take into account local background noise levels (where new wind turbines are sited near existing ones, already present turbine noise should not be calculated as part of the background noise). Vestas believes this type of regulation is the most effective and flexible, in that it ensures minimal noise disturbance for wind turbine neighbours while allowing turbines to be located in relatively noisy areas (areas with industry or roads, for example) that are rich in wind resources. Such areas are also often close to existing electrical grids, which can minimize the cost of connecting wind turbines to the grid.

Vestas also recommends that governments supplement relative noise limits with a low absolute maximum limit in areas of very low background noise (e.g. quiet countryside), which ensures minimal noise disturbance for turbine neighbours also in these places.