

## **Minority Concerns of the Ashfield Wind Advisory Committee**

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### **Sound**

This is the only generally recognized significant exposure to health from large wind turbines, due to sleep disturbance. With something on the order of 1-200,000 industrial scale wind turbines sited world wide and the need for as many as 1 million more (on shore) by 2050, this is an important issue.

The Committee recommendation for requirement of a truly independent, relatively sophisticated and comprehensive sound study with multiple noise thresholds (relative, absolute and low frequency), post installation verification and formal complaint resolution and enforcement is proposed to address this.

This Committee recommendation is in contrast to the current industry practice of a much simpler, potentially developer-biased study, often with only a single threshold and no formal follow-up/verification study or formal, expeditious complaint resolution process.

The proposed thresholds (5 dBA above L90 ambient, 32.5 dBA absolute) are well below standards being generally used in the NE region (40-55 dBA absolute, and some standards also include 6-10 dBA above Leq ambient). These proposed thresholds would result in setbacks 2-6 times or more greater than those in general use.

While the thresholds in general use may not be restrictive enough for a quiet rural area, the restrictiveness of these proposed thresholds seem excessive and well beyond what is required to protect against general health impacts. For example, the sound level in unoccupied bedrooms of my house does not drop below 35 dBA, while these proposed thresholds are to be measured outside. The extensive nature of the sound studies proposed also need to be reviewed to assure they are not unrealistically burdensome.

### **General Setback**

The Committee recommendation for a general fixed setback, regardless of size, sound characteristics, number or location of proposed turbine(s) is an arbitrary and seemingly prejudicial restriction. As the proposed zoning ordinance would apply to all turbines ranging in size from 100 kW to the largest (currently 3 mW or larger) and of all designs (e.g. vertical axis and horizontal axis) it would appear to be a prejudicial restriction intended to inhibit siting of any wind turbines of 100 kW or larger in town regardless of their physical size/appearance and sound characteristics.

The proposed sound and safety setbacks provide for intelligent, flexible (and relatively restrictive) siting determined by the characteristics of the proposed turbine(s) and should preclude the need for a general setback. In this still evolving technology, a fixed general setback requirement would seem short-sighted and capricious.

### **Shadow Flicker**

This is similar to the effect experienced in a car when driving along a road with a sparse line of trees close to the road (more commonly in winter) and the sun behind them early or late in the day.

A recent independent and peer reviewed study in the UK concluded that: “The frequency of the flickering caused by the wind turbine rotation is such that it should not cause a significant risk to health”. It also concluded in regard to the size of the area to consider for impact: “the 10 rotor diameter rule has been widely accepted across different European countries, and is deemed to be an appropriate assessment area”. Beyond this distance, the size of the blade relative to the sun does not result in flicker.

The most common industry standard internationally for exposure to shadow flicker is 30 hours/year or 30 minutes/day. This assumes worst case – that is that the wind is blowing above cut in speed, the sun is out and the turbine is oriented broadside to the sun at sunrise/sunset. In reality, actual shadow flicker durations will be a small percentage of this worst case calculation.

Locally, shadow flicker from the turbine at Berkshire East in Charlemont was assessed at 3 hours/year in the town, which was considered acceptable.

The proposed restriction of zero shadow flicker in an assessment area out to 1.5 miles from a turbine seems excessively restrictive.

### **Conclusion**

The line between significant health impact and perceived annoyance is fuzzy and difficult to judge. Any activity that measurably changes the environment (noise, smell, appearance) in a neighborhood will be judged annoying and/or unacceptable to somebody, and when fixated on, can escalate into health issues for the individual. The nature and value of the activity has to be factored into these judgments.

The degree of restrictions being recommended for wind turbine siting seems to go well beyond protecting general health, intending to eliminate any significant impact to anybody. If a similar standard were applied to agriculture, there would be none possible in town.

The need for harvesting renewable energy is an equally compelling need. Solar and wind energy are diffuse, requiring harvesting over large areas where they are available in sufficient concentrations, and they are intermittent, requiring harvest over broad geographic areas in order to be useful. I believe that this is a paradigm shift in thinking that is critical to the long term survival of our environment and civilization, and therefore a highly compelling activity.

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