

**Summary of the Testimony of Dr. Raymond S. Hartman
Presented to the Massachusetts Joint Committee on Public Health**

Critique of the Massachusetts Department of Environmental Planning (DEP) “*Wind Turbine Health Impact Study, Report of Independent Expert Panel,*” January 2012.

July 9, 2013

In favor of Bills H.2048, H.2089 and S.1041,
the passage of which is necessary to provide appropriate scientific research
into the health impacts of wind turbines in Massachusetts.

My name is Raymond S. Hartman. I have a Masters and PhD from MIT and a BA (with high honors) from Princeton University. All degrees are in mathematical economics. I have been a member of the faculties of MIT, Boston University and the School of Law at the University of California, Berkeley. I am currently President and Director of Greylock McKinnon Associates, an economic consulting firm in Cambridge MA, which specializes in economic analysis in support of expert testimony in litigation and regulation.

Over the last 35 years, I have submitted testimony, conducted research and/or consulted on a variety of matters of litigation and policy evaluation addressing many industries, including energy markets and environmental policy. I have appeared regularly as an expert witness on behalf of the Commonwealth of Massachusetts, including the 1995-1998 tobacco litigation (the result of which the Commonwealth received billions of dollars in settlement from “Big Tobacco”); litigation against large drug companies for defrauding the Massachusetts Medicaid Program (2008-2011); the restructuring of the electric power industry (1990s), and a variety of public utility rate cases (2000s). I have reviewed and responded to reports like the January 2012, *DEP Wind Turbine Health Impact Study* hundreds of times, as an expert witness or as a peer-reviewing academic research referee.

Having carefully reviewed the *Health Impact Study*, I find that it fails to rise to the level of reliable scientific research. It is incomplete, biased, distorted and without scientific merit. It should not be used as the basis for public policy.

Its major flaws include the following:

- The “Independent Expert Panel” convened to conduct the study ***was not independent***. This fact alone is enough to disqualify it as a source of unbiased objective scientific opinion.
- The Panel conducted ***NO primary research*** of its own, even though it identified an appropriate research methodology (a “before-and-after” dose-response model) and had many sample populations for estimating such models. The candidate sample populations

include the populations near IWTs *being erected or having been erected in Massachusetts and New England generally*. For a public policy decision of this magnitude, the fact that it conducted no primary research disqualifies it as a source of unbiased reliable scientific opinion.

- The Panel did a simple literature review, identifying many research efforts.
 - It peremptorily and arbitrarily dismissed most existing research, research which contradicts the findings of the Panel. The research that was dismissed was conducted by experts as qualified, or more qualified, than the members of the Panel.
 - The Panel cherry-picked 5 research analyses that it deemed reliable.
- Based upon this paucity of studies, the Panel came to some very strong conclusions. However, their conclusions *are contradicted* by the very research they cite as reliable.
 - The studies they cite find adverse impacts of IWT noise upon annoyance and sleep disruption for substantial percentages of nearby populations.
 - The studies find IWT noise much more annoying than most other forms of industrial noise – e.g., air traffic (think Logan Airport), railroads and highways.
 - The studies find IWT noise more annoying and insidious because it never stops. Other industrial noises cease at the end of the day; those subjected to such other noises can recover. However, IWT noise can be worse at night and can continue all night, preventing any recovery.

To make this last point more strongly, I selectively quote (and paraphrase when necessary) from the five studies that the Panel deems reliable:

- “A statistically significant dose–response relationship was found, *showing a higher proportion of people reporting perception and annoyance than expected from the present dose–response relationships for transportation noise.*”
- The percentage of the population *highly annoyed* increased much more rapidly *before the other forms of transportation noise (even aircraft at airports) even register annoyance*. “At sound category 37.5–40.0 dBA, “20% of the 40 respondents living within this exposure *were very annoyed and above 40 dBA, 36% of the 25 respondents.*”
- “*Annoyance was associated with ... lowered sleep quality and negative emotions*” ... which could “lead to hindrance of human restoration.” This, together with reduced restoration possibilities may adversely affect health.
- “[C]ommunity noise is an increasing environmental problem known to cause adverse health effects.”
- “*In contemporary medicine, annoyance exists as a precise technical term describing a mental state characterized by distress and aversion, which if maintained, can lead to a deterioration of health and well-being.* ... For respondents who were annoyed by wind turbine noise, feelings of resignation, violation, strain, and fatigue were statistically greater than for respondents not annoyed by turbine noise. ... We also observed lower sleep satisfaction in the turbine group than in the comparison group, a finding which is consistent with previous research.”