

Original Questions:

1. What are Duke Energy's setbacks based on (scientific data, etc.)? **Project specific.**
2. What are GE's setback recommendations for a wind turbine not to be heard in a rural area? **See response below.**
3. Setbacks—who determines the appropriate setback for the placement of a turbine, by a lake, house, etc.? Township officials or Duke Energy? Should those setbacks be uniform across the counties? **See response below.**
4. Can AES or MAP look into other countries for their turbine setbacks? Denmark, Germany, Australia, Canada and UK? **See response below.**
5. I would like to see in one document a listing of the setbacks that have been used by other government entities for wind farms as large (both turbines and number of turbines) as the proposed one, including those countries in Europe and elsewhere where wind energy is more advanced and where longer term results could be helpful. I would also like to see a document which includes the above and addresses how setbacks may have changed over time, as a result perhaps of larger turbines, larger installations, or resident considerations/complaints. **See response below.**
6. If sound levels are limited by ordinance, what is the purpose of physical distance setbacks for wind turbines, and what setback would be protective for a wind turbine? **See response below.**
7. I would like to understand how often and where a wind farm of this size (both turbines and size of farm) fits into communities which look like Benzie and surrounding counties in their land size, surrounding towns and homes. If setbacks were increased to a certain level, would this project go away because the economy of scale could not be reached? What is that break even setback? Do we need to be mindful of profit motive which may lay behind Duke's proposed setbacks? **Project specific.**
8. What is the average setback from residences for industrial wind turbines of 500 feet, 400 feet, and 300 feet? **See response below to F5 and F6.**
9. What are the average setbacks globally? **See response to question F4.**
10. Will the developers abide by the 1-2 mile setback recommended in all of the recent literature on setbacks from people's homes? **Project specific.**
11. GE, a manufacturer of turbines, says that in a rural area, for a turbine not to be heard, they must be placed one mile away. Can a township require that setback? **See response below.**
12. What are the recommended and required setbacks for Duke's proposed wind turbines from Lake Michigan, its shore, and other sensitive or protected lands, including conservancy-protected land? **Project specific.**
13. Re: Setbacks – Considering the World Health Organization recommendation of a 6600 ft. setback, the French National Academy of Medicine recommended setback of 1500 m, approximately 1 mile, the U.S. National Research Council recommended setback of 2500 feet, Vesta manufacturer's manual recommendation that workers wear a hard hat if within 1300 ft. of a turbine, and many, many other recommended setback distances in order to protect people from noise, ice and blade throw, etc. How does the wind industry consider a 1000 ft. minimal setback defensible? Where does this 1000 ft. setback come from? How does a community determine exactly what is a reasonable and responsible setback? **Value judgment. Project specific, but see responses below to related questions**

Questions and Responses:

These questions may have been recategorized and reorganized. Some may have been sent to another "theme" area (this will have been explained in red under the "Original Questions" section). In other cases two or more questions will be answered with one response.

- F2. What are GE's setback recommendations for a wind turbine not to be heard in a rural area?

Response: We did not locate a published set of specific recommendations for GE turbine setbacks for sound; instead, they state that setbacks are the responsibility of the developer themselves. They did publish a 2009 document called “Setback Considerations for Wind Turbine Siting”, in which they make recommendations for structural distance, but they do not mention noise considerations as a reason for their setbacks. This document is accessible at <http://documents.dps.state.ny.us/public/Common/ViewDoc.aspx?DocRefId=%7bF6A567D4-3F56-4125-968F-28CBF62BD6F6%7d>.

One GE report cites that for the “ stillest, most rural areas background noise is 30 decibels. At that level, a turbine located about a mile away wouldn’t be heard”. That report is available at <http://www.gereports.com/how-loud-is-a-wind-turbine/>

- F3. Setbacks—who determines the appropriate setback for the placement of a turbine, by a lake, house, etc.? Township officials or Duke Energy? Should those setbacks be uniform across the counties?

Response: The state of Michigan does not have official guidelines for the distance between all utility-scale wind turbines and adjacent private property. Townships can create their own setbacks. See responses in section D on ordinance creation.

- F4. Can AES or MAP look into other countries for their turbine setbacks? Denmark, Germany, Australia, Canada and UK?

Response: Turbine setbacks vary greatly across the nations mentioned above, and are usually decided on a case by case basis at the provincial, county or township level. Setbacks can also refer to visual impacts, noise impacts or structural safety. The National Wind Watch website, an organization generally opposed to large scale wind development, provides a list of European setbacks. See <http://www.wind-watch.org/documents/european-setbacks-minimum-distance-between-wind-turbines-and-habitations/> to read more. This research team has not been verified this list because it is beyond the scope of this project.

- F5. I would like to see in one document a listing of the setbacks that have been used by other government entities for wind farms as large (both turbines and number of turbines) as the proposed one, including those countries in Europe and elsewhere where wind energy is more advanced and where longer term results could be helpful. I would also like to see a document which includes the above and addresses how setbacks may have changed over time, as a result perhaps of larger turbines, larger installations, or resident considerations/complaints.

Response: While this question is beyond the scope of this project, the National Regulatory Research Institute is completing a large research project to collect and examine the wind energy siting (with a focus on setbacks) practices in all 50 states. The draft will be issued by Jan 1, and the final report will be published by March 1, 2012.

- F6. If sound levels are limited by ordinance, what is the purpose of physical distance setbacks for wind turbines, and what setback would be protective for a wind turbine?

Response: Setbacks are most often put in place as a protective measure against potential structural risks, such as fire or tower collapse. Setbacks are established to eliminate the possibility that someone would be injured in such an event. For more information on the need for such setbacks, see the New York State Energy Research and Development Authority’s 2005 “Public Health and Safety” report. This is accessible at <http://www.iberdrolarenewables.us/hardscrabble/FEIS/3-Appendices/Appendix-Q-Global-Energy-Concepts/2005-Public-Health-and-Safety-NYSERDA-Global-Energy-Concepts.pdf>

- F11. GE, a manufacturer of turbines, says that in a rural area, for a turbine not to be heard, they must be placed one mile away. Can a township require that setback?

Response: Townships throughout the nation have established restrictive setbacks, including a mile away. Some of these have been challenged in court as exclusionary zoning. In one recent case in Minnesota, a

township's ½ mile setback from non-participating landowners was rejected by the Public Utilities Commission. See the website of A Better Plan, an organization critical of wind energy development, for a list of ordinances with ½ to 1 mile setbacks. This can be accessed at <http://betterplan.squarespace.com/wind-siting-ordinances/>. Also see responses to questions in Theme D and Theme R about ordinances and potential exclusionary zoning.