

# ARENA Update

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## Alliance for Responsible Energy of Northern Arizona

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*This issue of ARENA Update focuses on the question "How close can wind turbines safely be to homes?" This is a critical question to ask as Navajo County begins to process a Special Use Permit for a wind farm close to the Snowflake city limits.*

*We hope this helps you decide for yourself, and that you choose to attend the upcoming public meetings.*

*ARENA is an Action Team of the Little Colorado River Plateau RC&D. Our mission is to help keep rural communities safe, healthy, and sustainable as the area addresses the possibility of renewable energy facilities locating here.*

## The Wind Farm Buffer Zone

By Kathy Hemenway

Last winter wind turbines started popping up in Navajo County just east of Highway 377. The 400-foot towers are visible for many miles, especially at night when their blinking red lights span the western horizon. But after the surprise wore off, most of us would probably agree that the remote area seems like a reasonable location for a wind farm.

Still never far out of sight or mind, Dry Lake I brought to the area a renewed focus on land-use planning, as well as an interest in renewable energy, climate change, and government subsidies.

Now planning is underway for Dry Lake II. It's close to the Snowflake city limits and Highway 77, and only about 2.5 miles away from homes. The wind turbines will be approximately 500 feet inside the project boundary. So it's time to start thinking about what they are like up close.

Wind turbines are giant machines with rotating parts as long as a football field, and they are exposed to severe weather and storm damage. Turbines are subject to mechanical, structural, and electrical failures even when they are well maintained. At distances of 1,500 feet or more, accidents are a concern although they aren't common. Blades breaking, hub fires, and towers collapsing are reported to be the most common causes of accidents.

As a public safety precaution, some places require "no go" zones around wind turbines. And a leading turbine manufacturer says in its safety manual for operators and technicians (available on the Internet):

*Do not stay within a radius of 400m (1300ft) from the turbine unless it is necessary...Make sure that children do not stay by or play nearby the turbine...In case of a fire during an uncontrolled operation, do under no circumstances approach the turbine. Evacuate and rope off the turbine in a radius of minimum 400m (1300ft).*

At distances of up to about 3,000 feet or so, the flicker of the sun passing through the rotating blades can be annoying and disorienting. It may cause some people to

## Don't Miss...

*Public meeting for Dry Lake II hosted by the developer, Iberdrola Renewables, on Tuesday, February 23, 5-7 pm, NPC Theater, Snowflake.*

*ARENA's public meeting on Monday, March 1, 6-8 pm, in Room 101, Learning Center, NPC, Snowflake.*

*Navajo County Planning & Zoning Commission's public hearing on Thursday, March 18, 6 pm, at the Governmental Center, Holbrook.*

*Thanks to our contributors for their generous donations!*

*This chart shows how far wind turbines should be from residences.*

*Note that the distances vary from 3,000 feet to about three miles, but most are between a mile and a mile and a quarter.*

have seizures. The flicker may also distract drivers on nearby roads, which is dangerous.

At even greater distances, noise can be a problem. Wind turbines "swish" about once a second, and the sound can be distracting like a dripping faucet. It can keep people awake at night and lead to health problems, especially in children.

Noise may be a much bigger problem here than it is in many places. The Snowflake area is unusually quiet. Sounds that would barely be noticed in most places stand out here.

So what distance would be safe, healthy, and comfortable? To answer that question, the ARENA Working Group scoured the Internet looking for recommendations. We found several that were made by medical doctors, noise engineers, and citizen's groups. Remarkably, there is considerable agreement among them. By and large, the recommended minimum distance from a wind turbine to a residence is between a mile and a mile and a quarter. Several of the recommendations also note that depending on terrain, vegetation, natural background sound level, or the heightened sensitivity of a particular individual, even 1.25 miles (two kilometers) might not be enough.

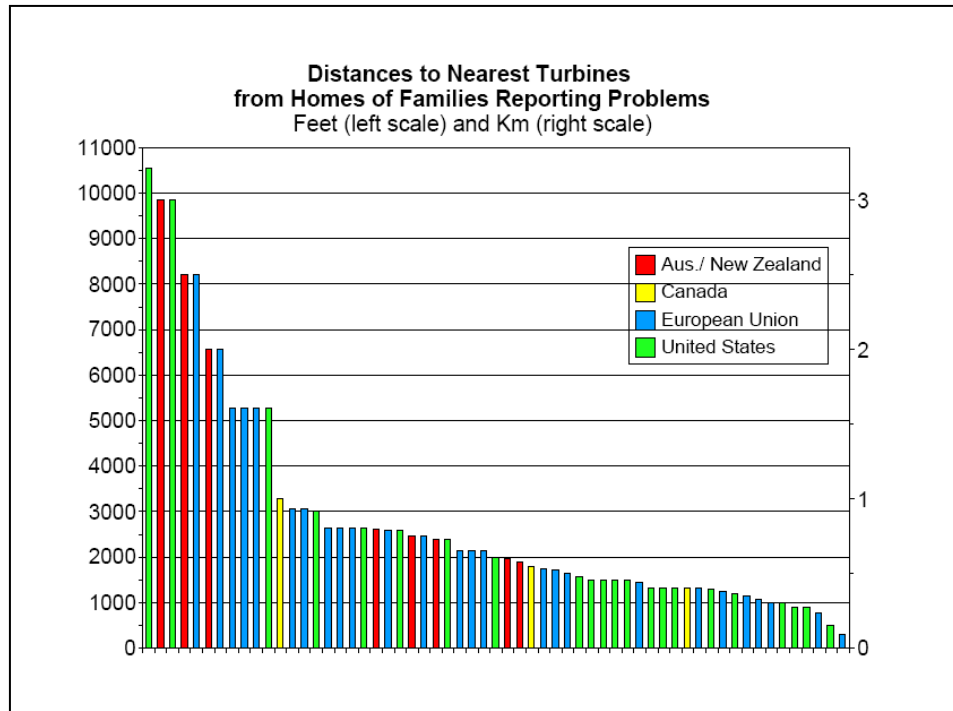
To check into it further, we looked through news articles and reports about families that have complained of annoyance and health problems. We looked at how far their homes are from the nearest wind turbines. Half of the homes are more than 2,000 feet from the nearest wind turbine. Eighty percent are under a mile, and 90 percent are under a mile and a quarter. Although there are reports that noise can be heard sometimes for several miles, two miles was the greatest distance at which people in the reports complained of problems.

So based on our survey, we can make an educated guess that most, but not all, of the problems are handled by keeping wind turbines a mile or more from people's houses, just like the experts say.



This chart includes one bar for each family's home. The height of the bars shows how far the homes are from the nearest turbines. The homes that are furthest are on the left.

You can see that most of the people live a mile or less from the nearest turbine, and that most live more than 1,000 feet. It's likely that there aren't very many families living closer than 1,000 feet, and that's why there aren't many problem reports from those distances.



So how can Dry Lake I put wind turbines only 500 feet from the property boundary? Remember that the turbine manual says there is a safety concern up to 1,300 feet – *even for trained employees wearing hard hats!*

Since 500 feet isn't nearly enough to protect neighboring properties from the safety hazard, let alone from shadow flicker or noise, we have to conclude that neighboring landowners are expected to provide a Wind Farm Buffer Zone *on their own land.*

Of course, some neighboring landowners may have reasons for allowing wind turbines near their property line. For example, they may be planning wind farms of their own, as are some neighbors of Dry Lake II – NZ Legacy and Nacel Energy.

But what if a neighbor wants to subdivide and develop a new community? On land adjacent to Dry lake II, Aztec Land and Cattle Company has plans for "Snowflake North," a mixed use community including commercial, residential, recreational, and other uses.

Or what about another neighbor, Pigs for Farmer John? PFFJ has a building just about 1,000 feet from a Dry Lake II wind turbine. Pigs may be even more sensitive to wind turbine noise than people.

What if you don't live on your land, don't plan to subdivide or to build a wind farm, and don't have pigs, horses, or cattle? Common sense tells you, even if Department of Energy statisticians won't, that your property value won't be the same after a wind farm goes in next door.

Poet Robert Frost famously wrote "Good fences make good neighbors." That's easy when you are trying to keep your herd separate from your neighbor's cattle. It's more complicated, and much more costly, when your next door neighbor is a wind turbine.

## For More Information

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For more information about these and related issues, check out these videos.

Noise and Shadow Flicker at 1,120 Feet

Noise and shadow flicker experienced at a home in Wisconsin that's 1,120 feet from the nearest turbine.

<http://www.youtube.com/watch?v=iyOImGHytQ>

Interview with Dr. Mike Nissenbaum

Dr. Nissenbaum describes health effects reported by people living up to 3,500 feet from wind turbines in Maine.

<http://www.windaction.org/videos/22686>

And check out "Dry Lake Phase II" on the ARENA website for the Environmental Assessment, project layout, noise contour map, and more. That's at [www.arenawhitemountains.info](http://www.arenawhitemountains.info).

## ARENA Thanks

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Arizona Wind Working Group and NAU's Landsward Institute for a meeting regarding local area needs

Steve Brophy, President of Aztec Land and Cattle Company, for a presentation on the Aztec Area Plan

Susan Molloy and other members of the community of people with environmental illness for their community statement that was delivered at the February 9 Board of Supervisors meeting

Rhoda McGuire for graciously letting us meet at Amelia's Garden, and NPC for letting us meet in the Learning Center at the Silver Creek Campus

David Newlin and the Little Colorado River Plateau RC&D for continued support of ARENA, and for the Winter Watershed Conference

Greg Loper and the Navajo County Planning & Zoning Departments for monthly meetings

Christine Clementi, Susan Molloy, Gary Gumbel, and Christen Warwick for contributions to this newsletter

Donna Rescorla of the *White Mountain Independent* for some great reporting



To join ARENA's general interest mailing list, send email to [ARENA928@gmail.com](mailto:ARENA928@gmail.com) or phone Pam Brittain at 536-5914. Send tax deductible donations to ARENA, PO Box 3081, Snowflake, AZ 85937. Make your check payable to the Little Colorado River Plateau RC&D with a Memo notation "For ARENA." Thank you!

