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THE DARK SIDE OF "GREEN": WIND TURBINE ACCIDENTS, INJURIES AND FATALITIES RAISE SERIOUS SAFETY CONCERNS

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By Miriam Raftery

April 4, 2012 (San Diego's East County) – Today marks the “International Protest Day Against Wind Power” with 765 websites participating.

A dark side of the wind industry that many media outlets have failed to report on is the thousands of documented cases of serious accidents. These include numerous documented cases of turbines falling over, blades flying off, injuries to workers and the public, and at least 99 reported fatality accidents.



Of the deaths, 67 were wind industry and direct supporters workers or small turbine operators and 32 were public fatalities.

How many tragedies have occurred worldwide is a well-kept secret within the wind industry. In the United Kingdom alone, however, Renewables UK, an industry trade association, has admitted to 1,500 wind turbine accidents/incidents in the UK alone during the past five years, the *London Telegraph* reported <http://www.telegraph.co.uk/news/uknews/8948363/1500-accidents-and-incidents-on-UK-wind-farms.html>. Those included 300 injuries and four deaths—in just one small part of the world.



A partial database of accidents, injuries and deaths through December 2011 has been compiled at the Caithness Wind Farm Information Forum: <http://www.caithnesswindfarms.co.uk/page4.htm>

According to the Caithness database, which estimates it represents only 9% of actual accidents (based on the RenewablesUK figures), an average of 128 accidents per year have occurred from 2007-2011, up from just 6 a year back in 1992-1996 due to the growing number of wind turbine installations.

Among the most grisly tragedies was that of John Donnelly, a worker killed in Oregon in 1989 when a lanyard that as supposed to prevent falls for turbine workers became entangled, dragging him into the spinning machinery. According to Paul Gipe, an advocate of wind power who authored an article on fatalities, the medical examiner described Donnelly's demise as death by "multiple amputations", witnessed by a horrified coworker.

Another Oregon worker, Chadd Mitchell, young father of two, was killed when a wind turbine tower he was in collapsed to the ground in Sherman County after the turbine's rotor went into "overspeed," the *Oregonian* reported on February 6, 2010. Siemens Power was fined for safety violations, and the family filed a lawsuit.

Other deaths have included electrocutions, falls, crush injuries, construction accidents, and a Minnesota man who was nearly cut in half by a chunk of ice knocked off a turbine tower in 1994. Three suicides have also been linked to turbines, including a worker who hanged himself, a parachutist, and a farmer who killed himself after neighbors protested a turbine he put on his property.

Caithness also has documented 221 separate incidences of blade failure, with pieces of blades documented to have flown over 1,300 meters—or 4,266 feet (4/5 of a mile). Blade pieces have gone through roofs and walls of nearby buildings.

At least 121 structural failures have been recorded too, including entire wind turbines that have crashed to the ground. The website www.windaction.org documents many of these. Turbines have crashed to the ground in school yards, near homes, roads and walking paths where only by sheer luck was no one underneath when the multi-ton structures collapsed. In

the Palm Springs area, a turbine spinning out of control forced closure of a major highway. There are also concerns about many turbines still standing—where failures such as cracked foundations and sinkage have been observed.



Around 168 wind turbine fires have been documented. Some sparked brush fires and left some fire departments helpless to watch as oil in turbine components burned hundreds of feet in the air—out of reach of hoses—whirling burning debris across the landscape.

There are also many instances of ice throws hurling chunks of ice off blades—94 times in 2005 alone. Another 93 transport accidents involving turbines have been reported, including one turbine section that rammed through a house and another that knocked a utility pole through a restaurant.

Disturbingly, *EnergyBiz Magazine* reported in its March/April 2011 edition that “More troubling for wind fleet owners and operators is that many turbines are coming off warranty. The end of last year marked the first time in U.S. history that more wind turbines were operating out of warranty than were covered, according to *Wind Systems* magazine, while many more are approaching the end of their warranties. Hidden costs of maintenance have climbed sharply, though some promising technologies may help reduce those costs, *Energy Biz* noted.

Still the issues raise troubling questions: who will be responsible for catastrophic failures when warranties have run out? Are local boards making decisions regarding turbine placement sufficiently educated on the risks? How far away from a wind turbine is a safe setback distance? Locally, some proposed industrial wind projects would place turbines within a half mile of homes, on up to three sides of the dwellings, in Ocotillo. In McCain Valley, Iberdrola's Tule Wind proposes setbacks from roads of only 1.1 times the height of the turbine - or around 455 feet maximum.

In Kansas, Rose Bacon, a member of the Governor's Energy Task Force, became so concerned about lack of teeth in regulations and vulnerability of inexperienced local officials in small towns facing proposals from international wind companies that she likened the scenario to the “wildcatter days in the oil business,” the *McPherson Sentinel* reported in 2005.

Below are some specific examples of serious incidents documented through the above websites, where many more incidents can also be found. A wind turbine crashed to the ground at a wind farm near The Dalles, Oregon in August 2007, killing one worker and injuring another, Associated Press reported.

- A blade from a wind turbine at Lister Hospital in the United Kingdom flew off and hit a car just one month after becoming fully operational in September 2011, the *Comet* reported.
- California Highway Patrol shut down Highway 58 for several hours to protect motorists from a runaway wind turbine in the Tehachapi area. “The runaway wind turbine, when it deteriorates or explodes, can send scrap metal and steel up to a mile away,” CHP Officer Ed Smith said, the Tehachapi News reported.
- A wind turbine plunged nearly 200 feet to the ground near I-10 in North Palm Springs after going into “overspeed”, KPSP news reported on May 1, 2009.
- An Iberdrola wind turbine caught fire on May 14, 2009 at Locust Ridge wind farm in Pennsylvania; the fire was blamed on a gear box problem.



- A 187-ton wind turbine crashed to the ground at the Fenner wind farm in New York after breaking off at its base. Enel shut down the entire 20-turbine wind farm in Madison, County New York in June 2010 for at least six months, the *Oneida Daily Dispatch* and other newspapers reported.
- Large chunks of seven turbine blades broke off at the Allegheny Ridge Wind Farm in Pennsylvania, with pieces flying over 500 feet, the *Patriot News* reported in May 2007. Spanish wind-energy company Gamesa blamed insufficient glue for the failures.
- In Dolfor, United Kingdom, a turbine exploded and fell to the ground near walking tracks, leading the *Shropshire Star* to conclude In January 2012, "Turbines should be nowhere near public footpaths."
- At Perkins High School in Ohio, blades on a month-old turbine broke apart while spinning, sending fiberglass pieces up to 40 yards (120 feet) away in February 2009. In December 2010 a blade again detached; fortunately school was not in session.
- A wind turbine crashed down near Western Reserve High School in Berlin Center in April 2011 in Ohio, WKBN news reported.
- At Fakenham High School in the United Kingdom, students witnessed a 40-foot wind turbine crash onto the school's playing field and crush a contractor's van in December 2009, Windaction.org reported.
- Redriven Power recalled blades after turbines threw blades onto an Ohio high school and an organic fig farm in northern California, *Eastern AgriNews* reported in May 2009.
- A General Electric turbine collapsed at an Altona, New York wind farm, the *Press-Republican* reported, after neighbors heard explosions and the turbine caught fire.
- In Norway, a blade from a Suez Energy North American V-90 wind turbine was hurled about 1,600 feet, landing near a home's back door, the *Journal Pioneer* reported in December 2008.
- A turbine blade crashed through the roof of a neighbor's home in Wallaceburg, Canada, the *Chatham Daily News* reported in February 2009.
- In November 2009, the *Press & Journal* reported that a wind turbine collapsed at Rassay Primary School, forcing children to be sent home after it landed in their playground.
- A damaged transformer leaked 491 gallons of mineral oil in 2007 at the Maple Ridge Wind Farm's substation in New York; in 2009 a transformer at the same site was destroyed by fire, the *Watertown Daily News* reported.
- A turbine near a highway twice lost blades, the *Huron Daily Tribune* reported in December 2010.
- Offshore wind farms in the North Sea are in danger of tumbling down, Wind Energy Update reported on March 18, 2011, noting that dissolved grout had shifted turbines within their foundations at around 600 of Europe's 948 offshore turbines.
- Renewables UK has warned that hundreds of offshore wind turbines could be suffering from a design that makes them sink into the sea, the *Times Online* reported on April 13, 2010.
- Two men were injured while constructing a wind turbine tower in Rochester, Minnesota, the *Post-Bulletin* reported on January 14, 2011.
- Proven Energy told owners of over 600 smaller turbines to shut them down due to fears of catastrophic mechanical failure, the *Press and Journal* reported in September 2011; the manufacturer suspended sales.
- Five U.S. wind projects owned by Australia's Infigen Energy have been engaged in legal actions with turbine manufacturer Gamesa over repair costs and lost production due to various warranty-related disputes, *Recharge News* reported in December 2011. The largest of those cases involves the Kumeyaay Wind Farm in Campo, where all 75 turbine blades had to be replaced due to storm damage at a cost of over \$34.5 million. Kumeyaay has "vigorously" contested a Gamesa claim and was pursuing warranty-related claims of \$10 million against Gamesa, the story added. [Note: This project is listed by Pattern Energy as a "success" story in its application to the California Public Utility Commission for the Ocotillo Wind Express project]
- Texas state representative Susan King had a wind turbine on her ranch that caught fire and burned two acres. She described it "throwing fire balls on my property"; KTXS found that despite pledges by Next Era Energy to support volunteer fire departments, no funds had been provided in the past four years.

- In Hokkaido, Japan, firefighters found hoses were too short to extinguish a fire in a 66-meter-high wind turbine, which took four hours to burn itself out.
- Huge blades from three turbines in Huddersfield, England “were blown across a busy road and could have hurt wildlife or caused damage to property as well as endangering life,” the *London Telegraph* reported in January 2012. Gale force winds were blamed.
- In Western Illinois in 2008, a 6.5 ton blade sailed about 150 feet away, the *Associated Press* reported.
- One month earlier, a 330 foot turbine “burst into flame in Ayrshire” during a 165-mph storm on the Scottish border and crashed to the ground near a road, the *Telegraph* reported.
- A Sheffield, Vermont wind turbine spilled 55-60 gallons of gear oil, spraying it out 200 yards; each turbine generator holds about 110 gallons of hydraulic and lubricating oils, the *Burlington Free Press* reported.
- An Abilene, Texas wind turbine erupted into flames and spread to grass around the tower, KTXS News reported on August 26, 2011. The turbine was owned by NextEra Energy.
- Iberdrola, the Spanish wind energy producer, blamed falling Suzlon Energy turbine blades on a one-tie accident, the *Bloomberg News* in North Dakota reported in May 18, 2011, suspending operations at its wind farm in North Rugby, North Dakota. The same model, however, suffered cracked blades starting in 2007, prompting a \$100 million global retrofit.
- Three blades came off a turbine at a residence and farm in Forked River, New Jersey, causing the state to shut down its entire onshore wind turbine program in March 25, 2011, the *NJ Spotlight* reported.
- A lightning fire at a wind turbine in Peterson, Iowa in August 2010 was the “third or fourth” turbine fire that the Peterson Fire Department had put out in a dozen years, the *Sioux Cit Journal* reported.
- In White Deer Texas, News Channel 10 reported oil seeping down the sides of multiple turbines.
- In Iga Mie Prefecture, Japan, the *Asahi Shimbun* reported in January 2008, “malfunctions and accidents involving wind turbines have occurred repeatedly across the country, leading to suspended services and even the scrapping of one facility... Slipshod surveys of wind, flawed designs or sheer incompetence have dealt a blow to the reputatin of wind turbines...”
- Hundreds of motorists near Sunderland in the UK witnessed a turbine fire that caused rotor blades to break off; two more turbines by Vestas later fell over in high winds in *Scotland*, the *JournalLive* reported in 2008.
- Clipper Windpower had to spend \$300 million to fix faulty blades after cracks appeared at multiple facilities, *Enviornmental Finance* reported in May 2009.
- A \$6 million wind turbine caught fire at the Cathedral Rocks Wind Farm, starting blazes on the ground from falling embers the *Adelaide Now* newspaper covering Australia/New Zealand reported in February 2009.
- In Florida, the *Desert Valley Star* reported in January 2009 that FPL/NER operates 60 wind turbines—and reportedly 40% were “malfunctioning, in disrepair, or need maintenance.”
- *Windtech International* reported that a survey of 75 wind farm operators in the U.S. in 2008 found that 60% of turbines may be behind in critical maintenance due largely to a shortage of qualified turbine technicians.



While there are certainly many wind turbines that have never malfunctioned, the dangers cited above are real and have led many municipalities to adopt setback requirements from homes, roads, campgrounds, walkways, playgrounds and any inhabited buildings.

The wind industry has resisted setbacks, however. In *Wind Energy Comes of Age*, published in 1995, wind energy advocate Paul Gipe contends that setbacks of 500-1000 feet from residences are "more than adequate to protect public safety" and notes that in Europe, windmills have often been installed in places frequented by the public. Gipe insists that despite many accidents, the odds of being injured by a wind turbine remain less than that chance of being struck by lightning.

Setback distances vary widely. Some California communities use a multiple of size, such as three times the height of the turbine. Other areas have larger setback requirements. For instance, in Victoria Precinct, Australia, the government has adopted a 2 meter (1.24 mile) setback requirement for wind turbines to protect residents from risks of mechanical collapses.

In Brown County, Wisconsin, the Board of Health in January passed a resolution seeking emergency financial aid for residents near wind turbines who suffered serious health impacts including some families who abandoned their homes due to health concerns.

The Board called for adoption of the Wisconsin Citizens Safe Wind Siting Guidelines which would require setbacks of at least 2,640 feet from property lines, with further restrictions on shadow flicker, noise and other factors. Developers would also be required to submit a report with blade and debris throw calculations to protect public safety.



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Comments

Aesthetics

Submitted by LogikAl on Tue, 04/10/2012 - 02:08

Anyone who thinks beauty is not in the eye of the beholder should be disqualified from debate.

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Slant and anecdote

Submitted by Mike Barnard on Thu, 04/05/2012 - 08:35

There are approximately 165,000 active industrial wind turbines in the world today. They are installed world wide. Asserting that a very vanishingly small percentage of standard construction accidents plus a bunch of unrelated incidents including people using the structures for suicides somehow constitutes a reason to not put them up just doesn't make sense.

It's worth noting that the Caithness mortalities information includes a bunch of tiny windmills, non-industrial wind mills, that are installed for very localized power for homes and farms. Depending on where you draw the line, one third to two thirds of fatalities are associated with non-industrial efforts. Including these in the statistics is just misleading.

No one has ever been killed or injured by a wind turbine that failed. Claiming otherwise is just lying. Wind has an amazing safety record. Every form of generation has construction and maintenance accidents.

Set back discussions are reasonable, but mostly for wind turbine noise attenuation. Ontario's 359/09 mandates setbacks of a minimum of 550 meters (about 1925 feet) for smaller wind turbines, and 1500 meters (about 5250 feet) for large ones or collections based upon noise guidelines aiming for 40 dBA in inhabited bedrooms. With those set backs, the likelihood of anyone being injured by the vanishingly small percentage of turbine failures or ice throws is the equivalent of winning the lottery; only those with no grasp of statistics would consider it possible.

For comparison, coal kills roughly 13,000 people a year in the United States alone due to particulate matter emissions. If you really want to reduce deaths, putting up a lot more wind turbines is a pretty good way to do it.

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By your own definition, setbacks locally are not safe.

Submitted by miriamg on Fri, 04/06/2012 - 00:17

I toured the Tule Wind site yesterday with Iberdrola. They said the setback from roads will be just 1.1 times the height of the turbine. Turbine heights can be a max of 456 feet - so 461 feet from roads. That's not even close to the 1925 you yourself recommend - and this is a public road in a federal recreation area.

I agree that suicides are not the companies' fault which is why I specified that some of the deaths were not accidents. It's also true that some of the Caithness data is for smaller wind turbines, but since a lot of schools are throwing these things up that's relevant for some readers. They don't have it broken down by turbine types, but there are also a lot of failures with the larger industrial ones, including some that are very recent.

As for fatal accidents I expect we will see more as more and more of these get built close to homes, roads, schools, parks, etc. unless we begin to impose more reasonable setbacks. I agree, coal is the worst of all energy forms -- but that doesn't mean we should just throw up wind farms everywhere with no concern for taking reasonable safety precautions or looking at the other consequences.

And while wind has killed far fewer people than coal, that doesn't mean it's the best option out there. Rooftop solar is approaching price parity now due to lower prices, and other than the utility companies I haven't heard anyone objecting to rooftop solar - it's the cleanest and safest option, not an eyesore, doesn't kill wildlife, and even if it cost a bit more many would say it's worth it to avoid despoiling our beautiful scenic areas and making people feel stressed or ill near turbines.

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The wind energy business is a sham

Submitted by billslycat on Thu, 04/05/2012 - 02:49

INDUSTRIAL WIND TURBINES DO NOT PROVIDE CLEAN ENERGY! Not one coal or gas plant the world over has been decommissioned because of IWTs...and eliminating our dependence on fossil fuels is their whole purpose. To quote an expert: "Because wind blows intermittently, electric utilities must either keep their conventional power plants running all the time to make sure the lights don't go dark, or continually ramp up and down the output from conventional coal-or gas-fired generators (called "cycling"). But coal-fired and gas-fired generators are designed to run continuously, and if they don't, fuel consumption and emissions generally increase." This is happening worldwide, and in places like Colorado and Texas where CO2 and power plant pollution have increased since installing wind farms:

<http://www.forbes.com/2011/07/19/wind-energy-carbon.html> http://www.denverpost.com/headlines/ci_15081808

<http://www.clepair.net/IerlandUdo.html>

<http://www.thespec.com/news/ontario/article/610422--cost-of-green-energy...>

<http://articles.baltimoresun.com/2011-07-25/news/bs-ed-wind-farms-201107...>

The wind industry is built on crony capitalism, it is the only way it can exist. Taxpayer money builds them and power companies are mandated to buy wind generated power at much higher rates than conventionally produced power. There is no true benefit, except to wind power companies, politicians and lobbyists.

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Forbes and others based on deeply flawed Bentek Report

Submitted by Mike Barnard on Thu, 04/05/2012 - 08:41

Most of the references are based on the Bentek report "The Wind Power Paradox". There are innumerable flaws in the Bentek analysis that make it's conclusions unsupportable, and Bentek is a deeply biased organization that dominantly supports the natural gas industry. Believing their report requires willful desire to believe that wind energy is inherently flawed.

For example, their methodology gives wind energy credit for only one hour of emissions savings when it forces a coal power plant to turn off for a much longer period of time, and it gives no credit to wind energy when it allows the grid operator to store additional water behind a hydroelectric dam that is used to displace fossil generation later on, both of which are common events.

Both Bentek reports are directly refuted by large bodies of U.S. Department of Energy and grid operator data showing that fossil fuel use and pollution decrease drastically as wind energy is added to the grid. In particular, the first report's claim that wind energy has not reduced emissions in Colorado and Texas is directly contradicted by government data.

Bentek is a natural gas consulting firm whose President and CEO, Porter Bennet, happens to be the Chairman and Director of the Natural Gas Committee of the fossil fuel lobby group the Independent Petroleum Association of Mountain States, as well as a member of the Colorado Oil and Gas Association.

<http://www.quora.com/Wind-Power/Is-the-Bentek-report-The-Wind-Power-Para...>

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Unspeakably ugly, unsafe,

Submitted by craig s. maxwell on Wed, 04/04/2012 - 16:46

Unspeakably ugly, unsafe, inefficient and terribly destructive; but otherwise, wind turbines are a great idea, right?

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C Maxwell

Submitted by caarecengi on Thu, 04/05/2012 - 12:13

Consider this: these turbines produce a LOT of power and energy with virtually no polluting by-products. Ugly? That's subjective. Unsafe? Let's see - we kill more birds in a year with automobiles than with wind turbines. We kill more humans every month that we do with these devices nationwide in a 5-year span.

I guess the alternative is to keep using fossil fuels until we're paying \$20 a liter...

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In fact, they don't produce

Submitted by craig s. maxwell on Fri, 04/06/2012 - 11:26

In fact, they don't produce a "lot" (lower case) of power. They are terribly inefficient. http://www.city-journal.org/2012/22_1_environmentalism.html

Yes, they are ugly. And, no, aesthetics are not subjective. You say a city dump is, to some people, just as beautiful as Yosemite Valley? Uh, *right*. (Well, maybe to a patient in a mental ward.) Or, try selling Playboy on the idea of a Rosie O'Donnell centerfold.

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