Proposed Evanston Offshore Wind Farm FAQ

Version 3.0

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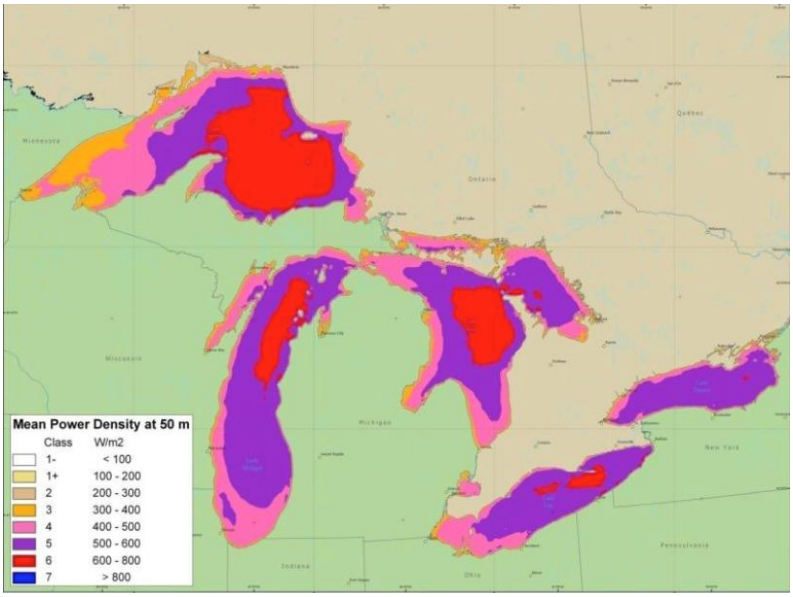
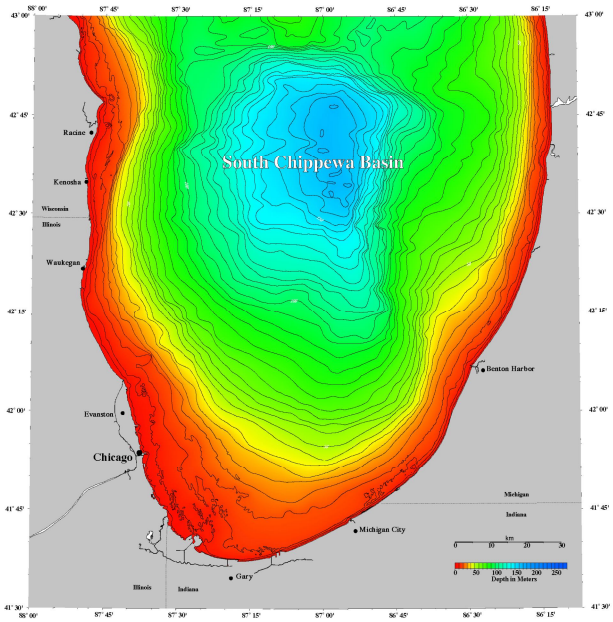
Why is Evanston a good choice for an offshore wind farm?

We have good wind. It is estimated that the average annual winds are approximately 18mph directly offshore. Offshore wind speeds tend to be higher and the wind is steadier. This means that turbines built further offshore will capture more wind energy. Because wind power goes up with the *cube* of wind speed (doubling the wind speed produces *eight* times the power!), locating a wind farm in the lake will potentially be the most productive location in all of Illinois.



Offshore wind typically produces its maximum power in the middle of the day when the power is most needed and can therefore offset fossil fueled peak power plants (coal and natural gas) that produce the most CO2 emissions.



The lakebed in front of Evanston is relatively shallow(less than 100') for several miles from the waterline. Thus, construction costs will be cheaper than other deeper water sites. Erecting the turbines farther from the shore will improve their performance as the wind is more consistent.

The further from the shore the less visual disruption from the shoreline.

The area offshore of Evanston has no significant water use conflicts. There are no islands, river mouths, reefs and other natural configurations that might be harmed.

Evanston is a good access point to bring the electricity ashore. One of the major problems with many wind farm proposals is they are too far from the consumers of electricity.

The vast majority of offshore sites being considered in the U.S. are working in close partnership with nationally renowned engineering schools. Having the wind farm located adjacent to Northwestern would seem to foster a natural partnership opportunity with the McCormick Engineering School.

How many jobs will come to Evanston?

Directly, probably not many but indirect benefits are possible. Wind farms do not need a lot of manpower for ongoing maintenance. Since the wind farm is tentatively located 4 miles offshore, access by boat may come from the industrial harbor of Chicago or possibly Waukegan.

Northwestern has expressed interest in the wind farm via the related research that it could bring to the University.

There could be significant tourism dollars and related jobs created by the wind farm.

Since turbines of this size are difficult to transport long distances, the wind industry has brought many manufacturing jobs to the Midwest.

How many wind turbines will there be?

The current idea is 40 or more turbines, but this number can go up or down depending on the results of the feasibility study. The goal is to produce more than 200MW of power.

Where exactly are the wind turbines to be located?

The exact location depends on the results of a feasibility study which will take into account the contours of the lakebed, the wind profile, and other technical and aesthetic considerations. The working concept places the turbines approximately four miles off the Evanston shore stretching between Northwestern's northern boundary to the southern edge of Dawes Park. The current notion for the layout of the wind farm is to have the turbines arrayed in rows slightly angled from the northwest to the southeast. This will limit the visual impact of the turbines both to the north and south of the site.

How much electricity will be produced

The proposed turbines will produce enough electricity to power approximately 40,000 homes, which would provide power for all the residences of Evanston (there are approximately 30,000 homes in Evanston).. The extra capacity can be used for commercial and industrial needs or sold to neighboring towns, such as Skokie, Wilmette and Chicago.

Where will we get power if the wind isn't blowing?

Wind power is another source of electricity, just like natural gas, coal and nuclear. When the wind isn't blowing, the other sources will be used. Offshore wind tends to be more consistent than land based wind farms, and also produces its maximum power during the middle of the day when it can help offset dirtier forms of power generation.

Don't wind turbines kill birds?

Birds occasionally collide with turbines, as they do with any tall structure. A few older wind projects have raised concerns about bird impacts because they were built in areas with sensitive raptor populations. Careful siting and wildlife studies make it possible to avoid most wildlife problems.

Detailed studies and monitoring following construction of other wind farms indicate that this is a site-specific issue that will not be a problem at most potential wind sites. Also, wind's overall impact on birds is low compared with other human-related sources of avian mortality—no matter how extensively wind is developed in the future, bird deaths from wind energy are unlikely to ever reach as high as 1% of those from other human-related sources such as hunters, house cats, buildings, and autos. (House cats, for example, are believed to kill 1 billion birds annually in the U.S. alone.) Wind is, quite literally, a drop in the bucket. Still, areas that are commonly used by threatened or endangered bird species should be regarded as unsuitable for wind development. The wind industry is working with environmental groups, federal regulators, and other interested parties to develop methods of measuring and mitigating wind energy's effect on birds.

Onshore, wind energy can also negatively impact birds and other wildlife by fragmenting habitat, both through installation and operation of wind turbines themselves and through the roads and power lines that may be needed. This has been raised as an issue in areas with unbroken stretches of prairie grasslands or of forests. More research is needed to better understand these impacts.

Offshore wind turbines may affect migratory birds. Citizens for Greener Evanston have already had a series of discussions this with the local branch of the National Audubon Society.

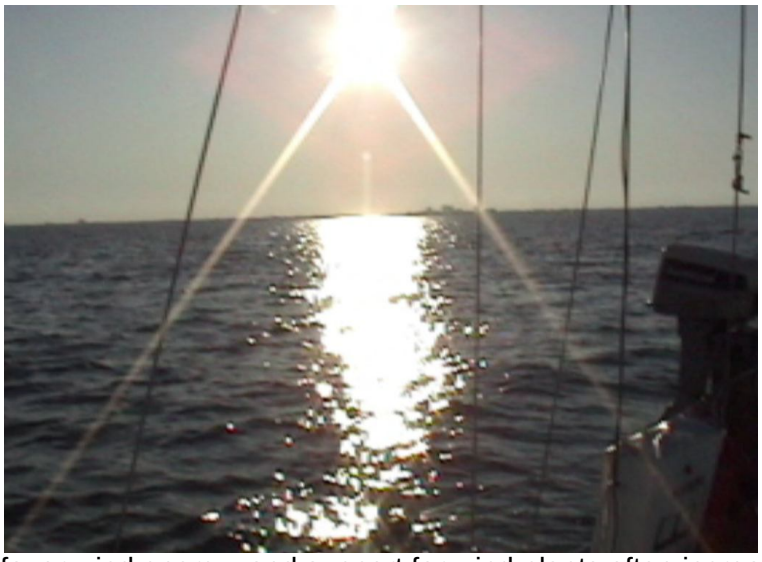
…or bats?

Bat deaths at wind plants generally tend to be low in number and to involve common species which are quite numerous. Human disturbance of hibernating bats in caves is a far greater threat to species of concern. Still, a surprisingly high number of bat kills at a new wind plant in West Virginia in the fall of 2003 has raised concerns, and research at that plant and another in Pennsylvania in 2004 suggests that the problem may be a regional one. The wind industry has joined with the U.S.

Fish and Wildlife Service, the U.S. Department of Energy's National Renewable Energy Laboratory, and Bat Conservation International to form the Bats and Wind Energy Cooperative (BWEC), which funded the 2004 research program and is continuing to explore ways to avoid or reduce bat kills. One simple yet effective method is to shut down the turbines for a short period of time when conditions for bat deaths exist. Since this occurs only briefly and in low wind situations, overall power output is not greatly affected. It is believed that bats generally are not out on the lake at the location of the proposed wind farm. As with the birds, bat studies will need to be done to determine what issues will have to be taken into account.

What will I see from the beach in Evanston?

Obviously, this depends on the size of the turbines, exactly how close they are to the shore, and weather conditions. The short answer is that turbines four miles offshore will be barely visible. Here is a picture taken from four mile offshore looking back at the Evanston skyline. The visual impact is very small.



Visual impacts can be minimized through careful design of a wind farm. Using turbines of the same size and type and spacing them uniformly generally results in a wind plant that satisfies most aesthetic concerns. Computer simulation is helpful in evaluating visual impacts before construction begins. Public opinion polls show that the vast majority of people favor wind energy, and support for wind plants often increases after they are actually installed and operating.

Aren't wind turbines noisy?

On a windy day, the sound of the turbine is drowned out by the wind even just a short distance from the turbine. Current technology makes noise almost a non-issue at most wind farms. Aerodynamic noise has been reduced by changing the thickness of the blades' trailing edges and by making machines "upwind" rather than "downwind" so that the wind hits the rotor blades first, then the tower (on downwind designs where the wind hits the tower first, its "shadow" can cause a thumping noise each time a blade passes behind the tower). A small amount of noise is generated by the mechanical components of the turbine. To put this into perspective, a wind turbine 300 meters away is no noisier than the reading room of a library.

Remember, the Evanston offshore wind farm will be at least four miles away. It is unlikely to ever cause disruption by noise.

Will I be able to boat/sail near the turbines?

There will be boundaries for boaters to observe for safety. The U.S. Coast Guard authorizes wind turbine locations for navigational concerns and determines the markings, lights, and fog signals needed. Should a ship inadvertently go off course, its radar will readily detect the wind turbines, which are excellent radar reflectors. Wind turbines are also equipped with warning devices to alert ships in foul weather.

What are the steps needed to have an operating wind farm?

The first step is to invite a wind developer to do a feasibility study. This study would include a thorough economic analysis, geotechnical analysis of the proposed site, wind studies, etc.

After determining that the project is feasible, the developer will begin the process to secure approvals from the various agencies in the city, county, state and federal governments. During the approval cycle detailed environmental studies will be undertaken. Financing will be arranged. Community outreach will need to be an ongoing event to keep the local stakeholders informed on key decisions. Contract discussions with the power purchasers will begin.

Then the construction phase begins (see below for more details) and finally the operating phase. The time from the start of the project until the wind farm becomes operational is approximately seven years.

What happens during the feasibility study?

The most important factor to consider in the construction of a wind energy facility is the site's wind resource. A site must have a minimum annual average wind speed in the neighborhood of 11-13 mph to even be considered (initial research suggests Evanston's wind is comfortably above the minimum). To study the wind, a temporary tower may be set up on site to gather wind data at various altitudes over the course of many months or even years.

Further, the fact that a site is windy does not mean it is suitable for wind power development. A developer needs to consider many factors in a project. Is there any migratory bird activity in the area that the wind farm might interfere with? Are there endangered or protected species that could be jeopardized by the presence of the facility? Is the site's geology suitable and appropriate for industrial development? Will noise and aesthetics be issues for the local community? Will the turbines obstruct the flight path of local air traffic? There are quite a few environmental and social issues that will need to be addressed in the siting of a wind power facility. Wind farms can make great neighbors, but it is the obligation of the developer to work to ensure that a project proceeds in a fashion that is acceptable to regulators and the local community.

What permits are required to build a wind farm?

This list is not exhaustive. For the Feasibility Study approvals are likely needed from:

- City of Evanston (and preferably from Northwestern University)
- Cook County
- Illinois EPA
- Federal Aviation Administration
- US Coast Guard

For construction and operation of the wind farm:

- State of IL: Submerged land lease
- US Army Corps of Engineers Construction approval
- US Fish and Wildlife
- Department of Defense
- City of Evanston
- Cook County
- Illinois EPA
- Federal Aviation Administration: Air hazard navigation
- US Coast Guard:

Will construction affect the lakebed?

Any proposed wind farm will involve a full investigation of wave and coastal processes prior to construction. However, the turbine structures and distance offshore are such that it is very unlikely they would significantly affect the lakebed, wave patterns or water quality. There is no evidence from the European experience with offshore wind farms of any detrimental effects on coastal processes. The installation of the foundation for the each wind turbine would be similar to how a bridge support is installed, which is not an uncommon element in the waters in the area.

What about affecting the lake's water quality and our drinking supply?

The turbine structures and distance offshore are such that it is very unlikely they would significantly affect our water quality. There is no evidence from the European experience with offshore wind farms that water quality is degraded.

How much will it cost?

There are many factors contributing to the cost and productivity of a wind plant. For instance, the power a wind turbine can generate is a function of the *cube* of the average wind speed at its site, which means that small differences in wind speed mean large differences in productivity and electricity cost. Financing methods can make a major difference in project economics as well. Securing significant investment capital or joint ownership of a project can cut costs significantly. Furthermore, there are federal and state incentives for which a project may qualify and which could reduce costs and encourage more favorable investment.

Early very rough estimates are $10 million for each turbine erected in waters depths of approximately 180' or less. Beyond that depth, the construction costs become prohibitive.

Where will the financing come from?

This is a highly capital intensive project and financing will likely be complex and involve many parties. There are no plans at this time for financing to come from the City of Evanston.

Who will do the feasibility study?

A wind developer will lead the study. The developer may join with Northwestern and other research groups for assistance. The developer will also likely work with the City of Chicago to obtain the detailed meteorological data from Chicago's water intake cribs.

Having the water intake cribs in Chicago is a tremendous advantage that other sites in the Great Lakes typically do not have. One thought is to locate an additional wind speed test tower on the Wilson Avenue water intake crib. Because of the crib, expensive structures to support temporary data gathering equipment would not be necessary. Other, more site specific wind testing can be done with other methods such as buoy mounted wind anemometers and LIDAR, a type of radar to track wind speeds.

Who will do the construction?

The wind developer will contract a specialist in offshore construction. The construction work requires very specialized crane ships and other support vessels that are located in the Great Lakes.

Because other cities such as Toronto and Cleveland (and others) are already moving forward with their plans for offshore wind farms in the Great Lakes, this equipment will already be in place.

Who will maintain and operate the wind farm?

The wind developer may continue as the operator, or they may sell the wind farm to an operator. The developer may also subcontract the operational work.

Operation and maintenance includes regular inspection, replacement of wear items, periodic adjustments, etc. Wind turbines require relatively little maintenance and the operating staff will likely be quite small.

Who will own the wind farm?

The wind developer may be the owner, or after construction, they may sell or lease the farm.

Is wind energy expensive?

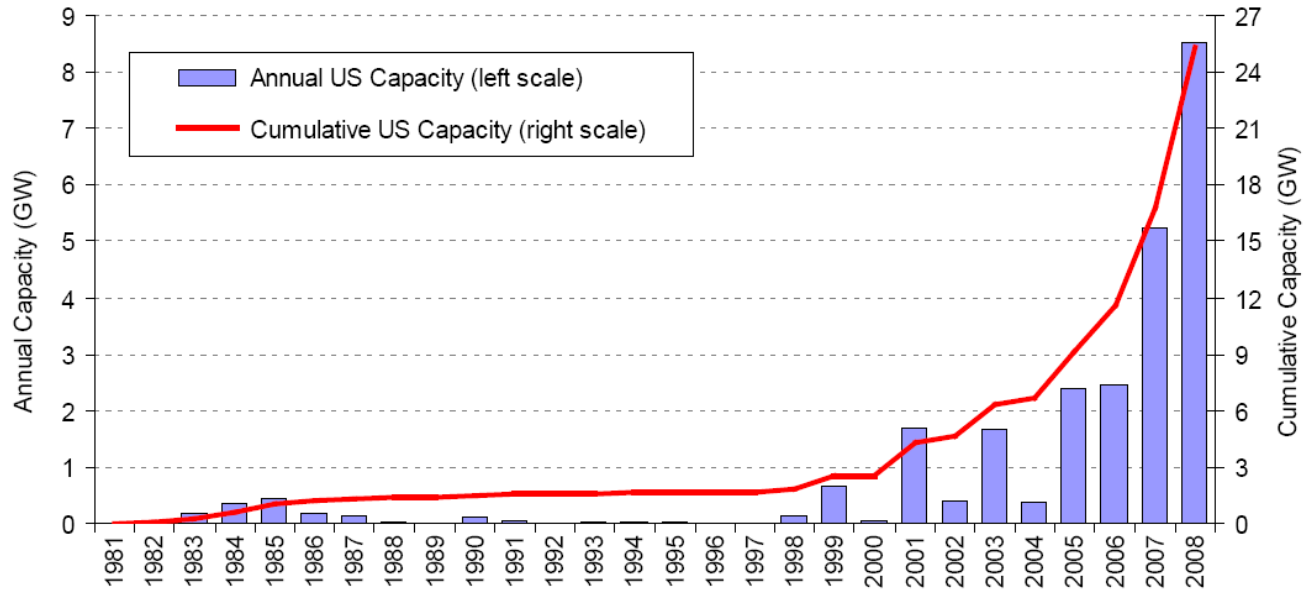
Wind energy is the cheapest form of new electricity generation available today. Wind power is more expensive than power from old, established power plants (in particular cheap dirty coal plants), but is cost competitive with any new power plant.

What is the status of the wind energy market in the United States?

The U.S. wind energy industry shattered all previous records in 2008 by installing over 8,500 megawatts (MW) of new generating capacity (enough to serve over two million homes), increasing the nation's total wind power generating capacity by 50% to over 25,300 MW and channeling an investment of some $17 billion into the economy.

US Wind Power Capacity Growth

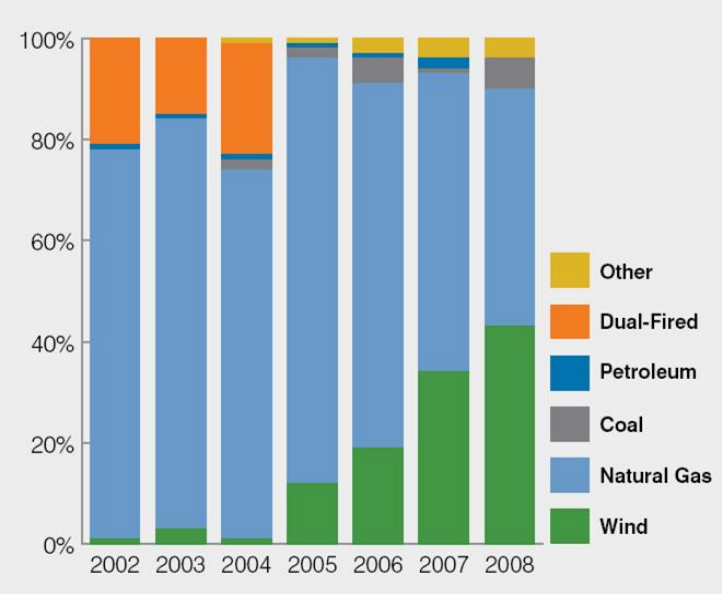
Source: NREL 2008 Wind Technologies Market Report



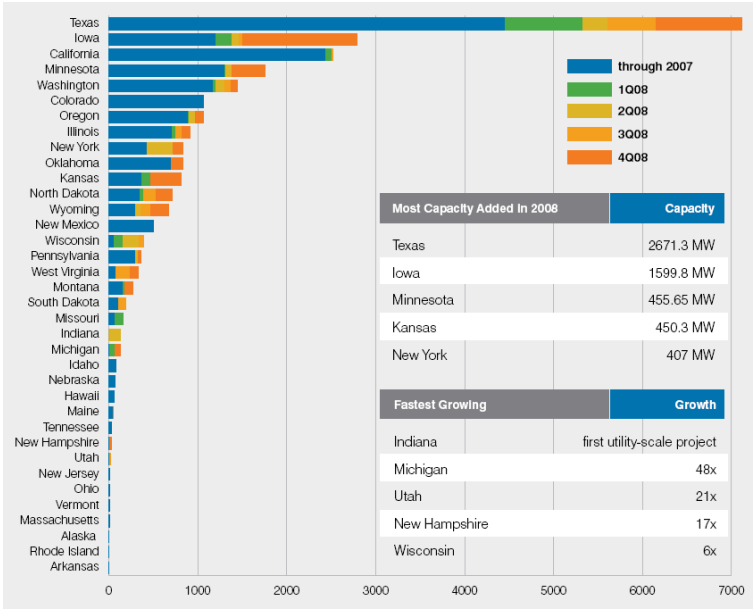
For the fourth year in a row, wind power was second only to natural gas in terms of new capacity added. 2009 will most likely be a slower year in terms of new installations than 2008, yet at least 5,000 MW of new wind installations are expected to be commissioned in 2009.

Texas leads the nation in installed wind power capacity, with Iowa ranked second and Illinois eighth.

Percentage of New Capacity Additions
Source: AWEA Annual Wind Industry Report 2008



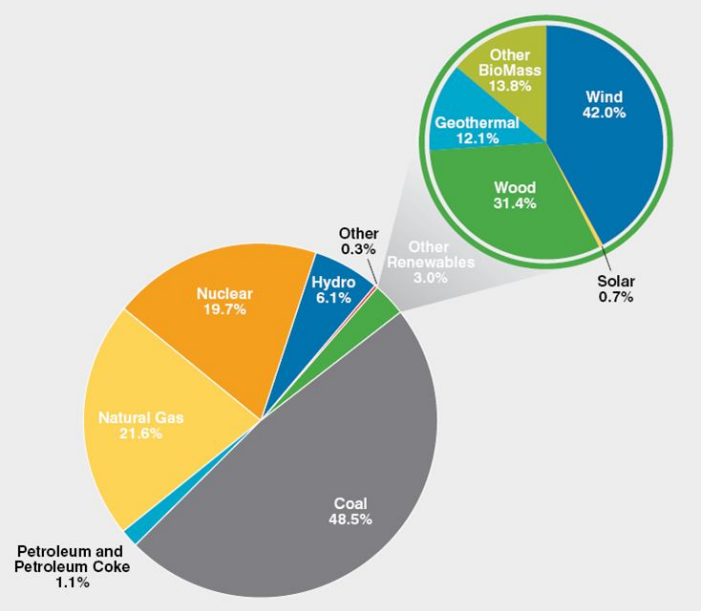
US Wind Power Capacity By State
Source: AWEA Annual Wind Industry Report 2008



The new wind projects completed in 2008 account for about 42% of the entire new power-producing capacity added nationally last year, according to initial estimates, and will avoid nearly 44 million tons of carbon emissions, the equivalent of taking over seven million cars off the road.

Renewable energy represents only 3% of all US electrical generation, of which wind power account for 42%. Although the US leads the world in terms of installed wind power capacity, we rank 12th in terms of wind energy as percentage of total electric generation.

Approximately 85,000 people are employed in the wind industry today, up from 50,000 one year ago. The recent growth of the wind power industry has also accelerated job creation in manufacturing, where the share of domestically



Sources of US Electricity Generation
Source: AWEA Annual Wind Industry Report 2008

manufactured wind turbine components has grown from under 30% in 2005 to about 50% in 2008. Wind turbine and turbine component manufacturers announced, added or expanded 70 new facilities in the past two years, including over 55 in 2008 alone.

What is a wind turbine and how does it work?

Wind turbines, like windmills, are mounted on towers to capture the most energy. At 100 feet (30 meters) or more above ground, they can take advantage of faster and less turbulent wind. Turbines catch the wind's energy with their propeller-like blades. Usually, two or three blades are mounted on a shaft to form a *rotor*.

A blade acts much like an airplane wing. When the wind blows, a pocket of low-pressure air forms on the downwind side of the blade. The low-pressure air pocket then pulls the blade toward it, causing the rotor to turn. This is called *lift*. The force of the lift is actually much stronger than the wind's force against the front side of the blade, which is called *drag*. The combination of lift and drag causes the rotor to spin like a propeller, and the turning shaft spins a generator to make electricity.

Turbine subsystems include:

- a rotor, or blades, which convert the wind's energy into rotational shaft energy;
- a nacelle (enclosure) containing a drive train, usually including a gearbox and a generator;
- a tower, to support the rotor and drive train; and
- electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.
- Other features on current turbines include monitoring systems, aviation markings on the blades, aviation lights, service personnel lift, smoke detectors, fire extinguishing system in nacelle, Low temperature operation, Ice detection system,

How big is a wind turbine?

Offshore turbine designs have larger rotors—at the moment, the largest has a 110 meter (360 foot) rotor diameter and the hub (nacelle) sits 100 meters above the water line.

In terms of power generation, the largest offshore wind turbines are rated up to 5 megawatts.

How many homes can one megawatt of wind energy supply?

An average U.S. household uses about 10,655 kilowatt-hours (kWh) of electricity each year. A one megawatt wind turbine can generate from 2.4 to more than 3 million kWh annually, enough for 225 to 300 households. It is important to note that since the wind does not blow all of the time, it cannot be the only power source for that many households.

It is estimated that the proposed turbine array would be able to provide enough power annually for nearly all Evanston households plus some portion of the power needed for commercial and industrial uses. For reference, Evanston has about 32,000 residences.

This would offset approximately 112,500 tons of CO2, 80% of the City of Evanston's goal for CO2 abatement as outlined in the Evanston Climate Action Plan.

Will turbines interfere with fishing?

Given the relatively small area of seabed that is required there is no evidence to suggest that total fish catch will decline as a result of wind farm developments; if anything the opposite is true. Many environmental groups believe that wind farms will provide welcome sanctuary for fish spawning.

The wind industry is working actively with the fishing industry to ensure that the fishing industry is not disadvantaged by the growth of offshore wind farms.

What if there's a storm in the Lake?

As with onshore turbines, offshore turbines are warranted and tested to withstand extreme wind conditions. In the event of severe weather, the blades turn out of the wind and will slow down for safety reasons when wind speeds reach 50 miles per hour and above.

Will turbines affect marine life?

There are three significant stages of a wind farm from the point of view of marine life: construction, operation and decommissioning. Construction and decommissioning have the potential to generate the most amount of disturbance, and the wind industry, as well as several marine conservation groups, is currently investigating these impacts on marine life.

However, it is important that such impacts be considered in the context of other marine activities such as fishing, shipping, oil and gas extraction, etc. Also, it should be noted that the duration of the construction and decommissioning will be about 6 months only. For the 20-year operational period there are no known impacts on marine life.

It has been suggested that the noise from wind turbines will travel underwater and could disturb sea life. However, studies carried out on the impact of noise from existing offshore turbines note that the noise is very low frequency, and many species are actually unable to hear it.

As with any other local impact issues, these concerns will be addressed while a wind farm project is going through the permitting process.

What are the environmental benefits of wind power?

Wind energy system operations do not generate air or water emissions and do not produce hazardous waste. Nor do they deplete natural resources such as coal, oil, or gas, or cause environmental damage through resource extraction and transportation, or require significant amounts of water during operation. Wind's pollution-free electricity can help reduce the environmental damage caused by power generation in the U.S. and worldwide.

In 1997, U.S. power plants emitted 70% of the sulfur dioxide, 34% of carbon dioxide, 33% of nitrogen oxides, 28% of particulate matter and 23% of toxic heavy metals released into our nation's environment, mostly the air. These figures are currently increasing in spite of efforts to roll back air pollution through the federal Clean Air Act.

Sulfur dioxide and nitrogen oxides cause acid rain. Acid rain harms forests and the wildlife they support. Many lakes in the U.S. Northeast have become biologically dead because of this form of pollution. Acid rain also corrodes buildings and economic infrastructure such as bridges. Nitrogen oxides (which are released by otherwise clean-burning natural gas) are also a primary component of smog.

Carbon dioxide (CO_2) is a global warming pollutant --its buildup in the atmosphere contributes to global warming by trapping the sun's rays on the earth as in a greenhouse. The U.S., with 5% of the world's population, emits 23% of the world's CO_2. The build-up of global warming pollution is not only causing a gradual rise in average temperatures, but also seems to be increasing fluctuations in weather patterns and causing more frequent and severe droughts and floods. The World Meteorological Organization (WMO) warned in July, 2003, that extreme weather events appear to be increasing in number due to climate change.

Particulate matter is of growing concern because of its impacts on health. Its presence in the air along with other pollutants has contributed to make asthma one of the fastest growing childhood ailments in industrial and developing countries alike, and it has also recently been linked to lung cancer. Similarly, urban smog has been linked to low birth weight, premature births, stillbirths and infant deaths. In the United States, the research has documented ill effects on infants even in cities with modern pollution controls.

Toxic heavy metals accumulate in the environment and up the biological food chain. A number of states have banned or limited the eating of fish from fresh-water lakes because of concerns about mercury, a toxic heavy metal, accumulating in their tissue.

Development of just 10% of the wind potential in the 10 windiest U.S. states would provide more than enough energy to displace emissions from the nation's coal-fired power plants and eliminate the nation's major source of acid rain; reduce total U.S. emissions of CO2 by almost a third; and help contain the spread of asthma and other respiratory diseases aggravated or caused by air pollution in this country.

If wind energy were to provide 20% of the nation's electricity -- a very realistic and achievable goal with the current technology -- it could displace more than a third of the emissions from coal-fired power plants.

Will wind energy hurt tourism?

We think it will help tourism in Evanston. An offshore wind farm will bring publicity to our community and enhance Evanston’s image. There is no evidence that wind farms reduce tourism, and considerable evidence to the contrary. For example, in late 2002, a survey of 300 tourists in the Argyll region of Scotland, noted for its scenic beauty, found that 91% said the presence of new wind farms "would make no difference in whether they would return." Similar surveys of tourists in

Vermont and Australia have produced similar results. Many rural areas in the U.S. have noted increases in tourism after wind farms have been installed, as have scenic areas in Denmark, the world's leader in percentage of national electricity supplied by wind. Other telling indicators: local governments frequently decide to install information stands and signs near wind farms for tourists; wind farms are regularly featured on post cards, magazine covers, and web pages.

Will wind energy negatively impact my real estate values?

A recently completed study by the Lawrence Berkeley National Laboratory titled “The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis” concludes that neither the view of the wind facilities nor the distance of homes to those facilities was found to have any consistent, measurable, and significant effect on the selling prices of those homes.

Why is there sometimes opposition to wind energy projects?

Local opposition to proposed wind farms usually arises because some people perceive that the development will spoil the view that they are used to. It is true that a large wind farm can be a significant change, but while some people express concern about the effect wind turbines have on the beauty of our landscape, others see them as elegant and beautiful, or symbols of a better, less polluted future.

The visual effect of wind farms is a subjective issue, but most of the other criticisms made about wind energy today are exaggerated or untrue, and simply reflect attempts by particular groups to discredit the technology, worry local communities, and turn them against proposed projects. In the electronic age, myths and misinformation about wind power spread at lightning speed.

The location of the proposed wind farm has been selected to minimize visual impacts. At its closest, the wind farm would be at least four miles from shore. That location would be inline with Northwestern University’s shore. Other locations to the north or south of this point would be further away.

I've heard that wind energy doesn't really reduce pollution, because other, fossil-fired generating units have to be kept running on a standby basis in case the wind dies down. Is this true?

No. It is true that other generating plants have to be available to the power system's operator to supply electricity when the wind is not blowing. However, the wind does not just start and stop. Typically, wind speeds increase gradually and taper off gradually, and the system operator has time to move other plants on and off line (start and stop them from generating) as needed--the fluctuations in wind plant output change more slowly than do the changes in customer demand that a utility must adjust to throughout the day. Studies indicate that for a 100-megawatt wind plant, only about 2 megawatts of conventional capacity is needed to compensate for changes in wind plant output.

Also, and potentially most importantly, whenever the wind is blowing, it displaces the most expensive conventional power plant that is generating. Typically, this tends to be the oldest and dirtiest gas plants on a utility system; wind power may displace coal. Offshore wind turbines produce their peak power in the middle of the day when peak power demand is at its highest and therefore offshore wind farms reduce the need for these dirtier forms of energy production.

Is wind energy dangerous to the public?

It has been estimated by a number of reliable sources that 50,000 Americans a year die from air pollution, of which about one-third is produced by power plants. By contrast, in 20 years of operation, the wind industry (which emits no pollutants) has recorded only one death of a member of the public--a German skydiver who parachuted off-course into an operating wind plant. Blade failures were more common in the industry's early years, but are very rare today because of better turbine design and engineering. Ice drops can occur but are of little danger because setbacks are sufficient to protect against danger to the public, and because ice buildup slows a turbine's rotation and will be sensed by a turbine's control system, causing the turbine to shut down. Given that the wind farm is no closer than four miles to shore, this is not an issue to be concerned about.

Will a wind project interfere with electromagnetic transmissions such as radio, television, or cell-phone signals?

Large wind turbines, such as those typically installed at wind farms, can interfere with radio or TV signals if a turbine is in the "line of sight" between a receiver and the signal source, but this problem is unlikely to arise from an offshore wind farm.

Will a wind project interfere with radar?

Yes. Radar is basically designed to filter out stationary objects and display moving ones, and moving wind turbine blades create radar echoes. It is possible to modify a radar installation to eliminate this problem, according to a consulting firm that has studied it for the British government-see http://www.bwea.com/aviation/ams_report.html. According to the study: "This study concludes that radars can be modified to ensure that air safety is maintained in the presence of wind turbine farms. Individual circumstances will dictate the degree and cost of modification required, some installations may require no change at all whilst others may require significant modification."

The interference is generally limited to objects (airplanes) that are physically shadowed by the turbines (that is, very low-flying aircraft). The Federal Aviation Authority has approval on this subject and radar disruption (or lack of it) will be carefully studied before construction authorization is given.

Are there any other offshore wind farms in the Great Lakes?

Not yet, but they're on the way. A feasibility study has been completed for a proposed wind farm in Lake Erie near Cleveland. Additional projects are being considered in Lake Ontario near Toronto and on the New York side as well as Lake Michigan near Muskegon and Ludington.

Here is a list of offshore wind projects(not a complete list) in North America:

CANADA (Ontario)

- Ontario is leading offshore wind development due to their feed in tariff
- Offshore wind guaranteed CDN 0.19/kWh (currently USD 0.18) for 20 yr PPA
- Streamlined approvals process administered by Ontario Power Authority
- Trillium Power Wind Corp. has several projects in development
- Trillium Power Wind I, 710 MW E. end of Lake Ontario near US border, construction to begin 2011
- 1600 MW Great Lakes Array (location not announced)
- 650 MW Superior Array (location not announced)
- 740 MW Trillium Power II, location not announced)
- Toronto Hydro is also active with 100 MW project near Toronto
- Southpoint Wind working on 30MW project in Lake Erie near Leamington

OHIO

- Cuyahoga County (Cleveland), 20 MW by 20112
- This is the only US Great Lakes Project mentioned in the article

OCEANIC PROJECTS

- New Jersey: leases have been granted for four 350 MW projects, strong support of the governor. Construction to begin 2011.
- Delaware: lease awarded for 450 MW project. Online 2014.
- Rhode Island: 424 MW project in development.
- Massachusetts: Cape Wind 468 MW permitted, construction to begin 2010.
- New York: preliminary studies underway for 350 to 700 MW project
- Maryland: looking for developers
- Texas: construction on 150 MW project to begin 2010, leases issued for two other 750 projects

by contrast Europe has:

- 1500 MW offshore wind installed since 1991
- 100 GW additional projects proposed or in development
- expect 2000 MW by end of 2009, 3000 MW by end of 2010

Wind Resources Link

National Renewable Energy Laboratory: *Wind Resource Atlas of the United States*
http://rredc.nrel.gov/wind/pubs/atlas

Illinois Wind Energy Association
http://www.windforillinois.com/

American Wind Energy Association
http://www.awea.org