

**Testimony of Jeff Schmidt, Chapter Director
Sierra Club Pennsylvania Chapter**

**Offshore Wind Energy in Pennsylvania
March 14, 2011**

On behalf of our members, I wish to thank Senator Earll for the invitation to have Sierra Club Pennsylvania Chapter provide testimony concerning offshore wind energy in Pennsylvania. We are pleased that Senator Earll and Senator White are interested in this issue and have convened the hearing on the topic.

There are more than 24,000 Sierra Club members in Pennsylvania, and this testimony is presented on their behalf. Across the state, we have 10 separate local Sierra Club Groups, who are active on a variety of environmental matters on local, state, federal and international issues. Locally, our Lake Erie Group covers Erie, Crawford, Warren, Forest and Venango Counties.

With mounting evidence of the dire consequences of failure to slow and reverse the rate of greenhouse gas emissions into the atmosphere, the Sierra Club has made pursuit of clean and renewable energy sources one of its highest priorities. We strongly support wind energy projects, including those offshore, as important steps in moving away from energy production based on fossil fuels. At the same time, we are committed to the protection and restoration of Great Lakes, marine and coastal ecosystems. It is not enough for us to simply endorse wind energy projects as such. We seek to be involved in decisions on when, where, and how such projects are implemented to ensure that they are developed in a way that is protective of environmental values. Such projects seek to use valuable public resources, and the public should receive a commensurate benefit from the use of the resources.

We support legislation that would establish a bottomlands leasing program for offshore wind farms in Pennsylvania waters on the condition that it protect the vulnerable aquatic and avian wildlife and the natural beauty of northwestern Pennsylvania's state parks. The legislation should set up a leasing process that includes public participation as well as a thorough environmental review, with extensive pre-construction monitoring.

We believe that Pennsylvania's legislation can and should contain requirements that help guide the siting of offshore wind farms in Lake Erie. These requirements are not intended to slow or in any way prohibit offshore wind development in Pennsylvania. Rather, they are intended to ensure that offshore wind farms are sited appropriately, in a

way that will avoid major environmental impacts and that will protect Pennsylvania's iconic natural resources, such as the sunset view from beaches in Presque Isle State Park.

In addition to protecting key natural resources, we believe that these requirements will lead to offshore wind proposals that are more likely to meet the requirements of the National Environmental Policy Act (NEPA). Offshore wind facilities in the Great Lakes will be required to have a federal permit, issued by the US Army Corps of Engineers in consultation with the Environmental Protection Agency, US Fish & Wildlife Service, and other federal agencies, in addition to the state bottomlands lease required by this legislation. The federal permitting process will trigger a NEPA review and will require preparation of an Environmental Impact Statement (EIS). We believe that project proposals that are sited from the outset in areas most suitable for offshore wind development will have the best chance of meeting the requirements of NEPA, and thus avoiding costly site evaluations in locations that are environmentally inappropriate for offshore wind development.

The comments below provide more background on our view of offshore wind in general and the environmental issues that we believe need to be considered when siting specific projects in the Great Lakes.

Climate change and the Great Lakes

The Great Lakes hold one-fifth of the world's fresh surface water supply. They provide drinking water to 40 million people and support a robust manufacturing economy. They support more than 100 rare or endangered species, including many that are found nowhere else. They are vitally important to the ecology, economy and quality of life in the upper Midwest region.

Despite being so vast, the Great Lakes are incredibly vulnerable. The Great Lakes are currently impacted by a variety of stressors, including invasive species, pollution, and development. Many ecologists have said that the Great Lakes ecosystem is near a tipping point, where the cumulative impact of multiple stressors is reducing its resiliency and ability to adapt and respond to these stressors. The largest, currently unmitigated stressor to the Great Lakes is climate change.

The Great Lakes are already showing the impacts of climate change. Lake Superior is warming, with above average water temperatures for many of the last 30 years and the highest average surface water temperature ever recorded in 2010. Our region is also experiencing more severe precipitation events, with heavy downpours that cause flooding, sewer overflows, and significant polluted runoff. All of these impacts are further stressing an ecosystem that is at the brink.

Lake Erie and Northwestern Pennsylvania

The Great Lakes Commission reports that nearly 25 percent of Pennsylvania's population, some 3 million people, lives in the Lake Erie coastal region. The area creates

jobs for 5 million Pennsylvanians. Its harbors and marinas support a \$71 million annual recreational boating industry. The region's growing steelhead fishery attracts over 200,000 angler trips to the region each year; collectively these anglers spend \$10 million in the area and engage in \$6 million in value-added activity in Erie County. Lake Erie's natural beauty and the wide array of year-round out-of-door recreational opportunities it offers is a major aspect of the quality of life that northwestern Pennsylvania residents enjoy.

Role of Great Lakes offshore wind

The Great Lakes region currently gets 75 percent of its electricity from coal, which contributes to climate change and also causes the mercury contamination that has made many Great Lakes fish unsafe to eat for certain populations. In addition, 28 Great Lakes coal plants use once-through cooling, which kills billions of fish and fish larvae every year, causing unknown cumulative impacts to the fishery as a whole.

Shutting down these old coal-fired power plants is a top priority for the Sierra Club, and will require new sources of clean energy, in addition to gains made through energy efficiency and conservation. We view offshore wind in the Great Lakes as a critical component of a new, sustainable energy mix for the region. Appropriately sited offshore wind facilities will enable us to retire old coal plants and end their contributions to climate change, mercury contamination and negative impacts on the fisheries.

The key, of course, is ensuring that new offshore wind developments are sited and operated in a way that is protective of the Great Lakes ecosystem and the communities that it supports. We believe that this is achievable with attention to the following criteria, a process that allows for strong public input, and comprehensive environmental review of specific project proposals.

Key environmental criteria for offshore wind development in the Pennsylvania waters of Lake Erie

Avian and bat impacts

The shorelines of the Great Lakes and the islands of western Lake Erie provide important habitat, feeding grounds, and stop-over sites for birds, particularly during spring and fall migrations. The Great Lakes shoreline includes several identified Important Bird Areas, as well as some areas where wintering diving ducks and gulls are known to concentrate. Lake Erie is unique among the Great Lakes because its shallow depth provides forage grounds for ducks, loons, horned grebes, and other waterfowl across its entire surface. Shorebirds, songbirds and raptors all cross Lake Erie at varying altitude and locations. Migratory birds are already highly stressed—it is critical that we apply the best available scientific knowledge to site and operate offshore wind farms in a way that does not cause unnecessary impacts on bird populations through direct collisions with turbines and/or by causing birds to avoid critical habitat/stopover sites.

Migratory songbirds

Radar data and observations show concentrations of migrating songbirds crossing Lake Erie. The primary migratory flyways appear to be located generally between Point Pelee, Canada and Bass Islands in Ohio in the Lake's western basin, and between Long Point, Canada and Presque Isle in the Lake's central/eastern basin. Migratory songbirds are particularly at risk near the shoreline, when they ascend from and descend to shoreline rest areas, and during periods of poor weather when they are forced to fly at lower altitudes. Offshore wind farms should be located a minimum of 5 miles from shore to avoid impacts related to shoreline rest areas for birds migrating along the shoreline and for those ascending to or descending from a cross-lake flyway.

In addition, because the Presque Isle-Long Point, Canada, cross-lake flyway is such a critical migration route for songbirds (and bats), special care must be taken not to locate offshore wind farms within this flyway. Specifically, the legislation needs to contain a provision that excludes the corridor between Presque Isle and Long Point from leasing and offshore wind development, unless and until independent scientific studies (funded by fees generated by the leasing of areas outside of this corridor, as described further below) map the extent of the flyway. The flyway, once mapped, should be permanently excluded from development. The corridor defined in the initial leasing legislation should be adjusted as needed to reflect the flyway as defined by independent peer-reviewed research.

Finally, two years of site-specific pre-construction avian (and mammalian—see Bats below) monitoring should be required before permitting a wind farm anywhere in Lake Erie to ensure that its operation will not cause significant impacts to migratory birds.

Pelagic birds

More than 90 percent of activity for wintering and migrating diurnal ducks occurs within 1,000 meters of shore, due to greater food availability. However, as noted above, Lake Erie is unique in that its shallow depth provides potential habitat for pelagic birds across most of the Lake's surface. The US Fish & Wildlife Service and the Ohio DNR recently completed a two year study with over 75,000 observations to map pelagic bird distribution and abundance in the Ohio waters of Lake Erie. While this study did not address Pennsylvania waters, it found the highest concentrations of birds near shore and around islands, with far fewer individual pelagic birds in the open waters of the central basin. However certain species, including loons and horned grebes, were observed as far out as the international boundary with Canada. Again, two years of pre-construction monitoring should be required before permitting an offshore wind farm to ensure that its operation will not cause significant impacts to pelagic birds and waterfowl.

Raptors

Many raptors inhabit the Lake Erie environs and the US Fish & Wildlife Service has observed the migration of five raptor species across Lake Erie: peregrine falcons, short eared owls, osprey, bald eagles, and harriers. Peregrine falcons generally fly below the rotor-swept zone, but the other four species of raptor generally fly 20 – 200 feet above the water. Two years of pre-construction monitoring should be required before

permitting an offshore wind farm to ensure that its operation will not cause significant impacts to raptors.

Bats

Bats are also at risk from poorly sited or operated wind farms. Some onshore wind farms, particularly those located on forested ridges, are responsible for a significant mortality rate in bat populations. This is troubling because many of the most impacted populations are also those that are being devastated by White-nose Syndrome—a fatal fungus responsible for a 95 percent mortality rate in the hardest hit colonies.

Less is known about the prevalence of bats offshore. It is likely that there will be a decreased potential for major impacts to bat populations that are located offshore, but there is evidence of cross-lake bat migration. Two years of pre-construction monitoring should be required before permitting an offshore wind farm to ensure that its operation will not cause significant impacts to bat populations. In addition, the independent scientific flyway study mentioned above should assess and map bat cross-lake migration.

Aquatic habitat and fisheries

The shallow waters of Lake Erie support the most productive fishery of the Great Lakes ecosystem. As a result, the Lake also supports a large fishing and boating industry that is critical to local economies. One of the most important of these fisheries and the one which has the greatest economic impact is that involving trout—steelhead and brown. These fish return to the streams feeding Lake Erie to spawn. The streams and the areas at their mouths attract large numbers of anglers in the fall and spring. A 5 mile setback from shore (as recommended above to prevent avian impacts) will protect critical tributary and nearshore spawning grounds from disruption by turbine foundations. However, care must also be taken in the siting and installation of underwater transmission lines. In particular, the following streams are critical to Lake Erie's trout fishery: Raccoon Creek, Crooked Creek, Elk Creek, Godfrey Run, Trout Run, Walnut Creek, and Four, Six, Seven, Twelve, Sixteen, and Twenty Mile Creeks. The legislation needs to prohibit the installation of transmission lines in these tributaries and their entry points to Lake Erie.

In general, the primary known aquatic impacts from offshore wind development happen during the construction phase. The construction of offshore wind turbines will cause at least temporary disruption of aquatic habitat. Long term, there is the potential for well-designed and appropriately sited turbine foundations to create valuable aquatic habitat, as demonstrated by a number of European studies of saltwater wind turbines. Nonetheless, there have been very few studies of the impact of wind turbines on freshwater wildlife. Independent scientific studies need to begin as turbines are built and come into operation, to monitor their impact on aquatic wildlife and fisheries.

That said, offshore wind turbines should not be sited in areas of known sensitive fish habitat, such as designated protected areas. In addition, we recommend timing construction activities to avoid activity during time periods in which fish populations may

be particularly vulnerable, such as during spawning or at a time when anadromous fish may be migrating through the area.

Presque Isle State Park

Presque Isle is the most-visited State Park in Pennsylvania and as such is an important contributor to the region's economy. It is the anchor of a growing tourism economy and attracts 4 million visitors to Erie each year. As Pennsylvania's only "seashore," Presque Isle offers its visitors a beautiful coastline and many recreational activities, including swimming, boating, fishing, hiking, bicycling and in-line skating. Most of these visitors "come to the park for swimming and sunbathing at its seven miles of guarded, sandy beaches, which have earned the park a place in the nation's 'Top 100 Swimming Holes' listed by Condé Nast Traveler magazine." There is little doubt the broad, sandy beaches, and magnificent lake vistas they offer are one of Presque Isle's major attractions. National Geographic has rated the peninsula "as one of the best places in the world for viewing sunsets."¹ These visitors contribute well over \$100 million to the area's economy.

A National Natural Landmark, Presque Isle is a favorite spot for migrating birds. As a major resting spot on a migratory bird flyway the park attracts large numbers of birders whose spending adds an estimated \$3 million to Erie's tourist economy.

While the Sierra Club does not typically evaluate offshore wind projects for viewshed impacts, we do think that state and national parks, wilderness areas, and national lakeshores deserve special consideration with respect to the siting of developments that impact the wild and scenic characteristics that define these places. These areas were protected to allow current and future generations the opportunity to enjoy spectacular natural areas, without an excessive intrusion of modern life. This legislation should prevent visual impairment of the viewshed from Presque Isle State Park to the west and the north, with a particular focus on protecting the view from its world-class beaches.

Recommendations on the leasing and siting process for Great Lakes offshore wind

In summary, our specific recommendations for provisions to be included in the State of Pennsylvania's legislation to establish a bottomlands leasing program for offshore wind are as follows:

- Establish an "option to lease" program, as described in more detail below.
- Exclude bottomlands within 5 miles of the shoreline from development.
- Exclude development in sites that would cause visual impairment of the viewshed from Presque Isle State Park beaches with views to the west and the north.
- Exclude the corridor between Presque Isle and Long Point from leasing and offshore wind development, unless and until independent scientific studies map the extent of the flyway. The flyway, once mapped, should be permanently excluded from development (with the exclusion area as defined in this legislation adjusted as needed based on the independent research).

- Dedicate a portion of the leasing revenue from areas outside of these exclusionary zones to support independent, peer-reviewed research designed to map the avian and bat migratory flyway between Presque Isle and Long Point, and to study the impact of the construction and operation of offshore wind farms on freshwater aquatic, avian, and mammalian species.
- Exclude streams that are critical trout habitat from underwater transmission line routing, including Raccoon Creek, Crooked Creek, Elk Creek, Godfrey Run, Trout Run, Walnut Creek, and Four, Six, Seven, Twelve, Sixteen, and Twenty Mile Creeks.
- Require a minimum of two years of pre-construction avian and bat monitoring before granting a 25 year lease and/or issuing construction and operations permits.
- Reserve a portion of the leasing revenue for a mitigation fund in addition to any mitigation measures required by operation permits.

“Option to lease”

We recognize that developers may be reluctant to commit the millions of dollars necessary to conduct site assessment and site characterization activities on an area of the bottomlands without an assurance they will have the right to develop that site if an Environmental Impact Statement (EIS), using site-specific data, finds that development can occur there. As noted above, full environmental review in the form of an EIS will be required of any Great Lakes offshore wind project under the National Environmental Policy Act (NEPA), and is needed to secure public support for projects.

While we recognize that developers need to secure exclusive rights to a site before investing in extensive site-specific research, we believe that it is critical that a commitment of state bottomlands for site assessment and characterization be revocable if environmental monitoring shows that the site is unsuitable for development. A commitment of exclusive rights for site assessment and characterization should not in any way impair the government’s authority to refuse, without payment or compensation, to grant a right to construct and operate an offshore wind project following site-specific environmental review.

Therefore, we recommend that this legislation establish an “option to lease” program, similar to that used by the state of Ohio. Such a program should grant exclusive rights of access by a developer to a specific site (that otherwise meets the requirements of the legislation with respect to exclusionary zones, etc) for purposes of site characterization, assessment, and environmental monitoring. If the results of the monitoring demonstrate that the site is appropriate for development, the “option to lease” can be converted to a full lease.

Conclusion

Thank you for the opportunity to testify on this critical issue. We look forward to working with the Commonwealth of Pennsylvania to make appropriately sited offshore wind a reality. We applaud the General Assembly for investigating this tremendous opportunity to spur economic development and generate clean, renewable energy. We

look forward to working with all involved to advance offshore wind in a way that protects the vulnerable aquatic and avian wildlife and the natural beauty of northwestern Pennsylvania, ensuring that our natural treasures are left intact for current and future generations to enjoy.