



Mapping Work Group Update

June 22, 2010

Under executive order 2009-46, the Michigan Great Lakes Wind Council was charged with recommending criteria to “identify those areas most favorable to lease for offshore wind development.”

In its 2009 report to the governor, the council recommended a set of 22 criteria, listed in Exhibit 1, to identify and map the “most” and “least” desirable areas for offshore wind energy development in the state’s Great Lakes, as summarized below. The council recommends that these criteria be considered by state or federal agencies as part of any leasing and siting processes.

EXHIBIT 1 Mapping Criteria

Criteria	Buffer distance or Exclusion
Scenic vistas	6 miles
National park lakeshores	13 miles
Shoreline parks and wilderness	6 miles
Shipwrecks	0.5 miles
State bottomland preserves	Excluded
Underwater archeological sites	Buffered during permitting
Habitat/biological (5 criteria)	
• Concentrations of bird or bat species of conservation concern	5 miles
• Threatened and endangered species	5 miles
• Recreational fish spawning sites and refuges	1 mile
• Very high concentrations of birds or bats on at least a seasonal basis	5 miles
• Nearshore zone of biological productivity	3 miles
Commercial fishing areas	0.5 miles
International and state boundaries	0.5 miles
Shipping lanes	1 mile
Aids to navigation	Buffered during permitting
Buoyed navigation channels	Buffered during permitting
Coastal airport zones	Excluded
Military operation areas	Excluded

Criteria	Buffer distance or Exclusion
Submerged transmission lines	Buffered during permitting
Disposal sites	0.5 miles
Harbors/marinas	5 miles
Large river mouths	5 miles

SOURCE: Michigan Great Lakes Offshore Wind Council, 2010.

Each of the mapping criteria was assigned one of three designations with an associated color for visual representation:

- **Categorical exclusion areas (red):** Bottomlands that are not suitable for development based on existing uses and/or state or federal laws that provide for other exclusion uses (e.g., navigational channels, coastal airport setbacks, etc.)
- **Conditional areas (yellow):** Bottomlands that may have potential for development but contain one or more potentially competing values such as wildlife habitat, harbors, commercial fishing, scenic vistas, shipwrecks, etc.
- **Most favorable areas (green):** Bottomlands outside of categorical exclusion areas and conditional areas that do not contain any known features defined by the mapping criteria

Since September 2009, the mapping work group has been focused on the following activities:

- Refining data layers
- Revising the resulting most favorable wind resource areas
- Developing a process to make the mapping tool available to the public.

Each of these activities is discussed in more detail below.

REFINING DATA LAYERS

The work group developed a method for mapping commercial and tribal fishing activities in the Great Lakes. It also refined the maps that reflect biological values and habitat, and it improved the quality of the National Oceanic and Atmospheric Administration (NOAA) data layer for shipping lanes.

Commercial Fishing

Since the January 2010 council meeting, members of the mapping criteria work group have focused on analyzing and including data related to commercial and treaty fishing activities into the mapping tool.

Experience in European countries suggests that commercial fishing and offshore wind development are not incompatible as long as good planning takes place during the siting process. Council members and State Wind Outreach Team members have begun to engage members of Michigan's fisheries industry and they will continue to encourage a beneficial exchange of views between all concerned stakeholders. Substantial progress

has recently been made in bringing reliable information to bear on the issues created by the prospect of future wind development.

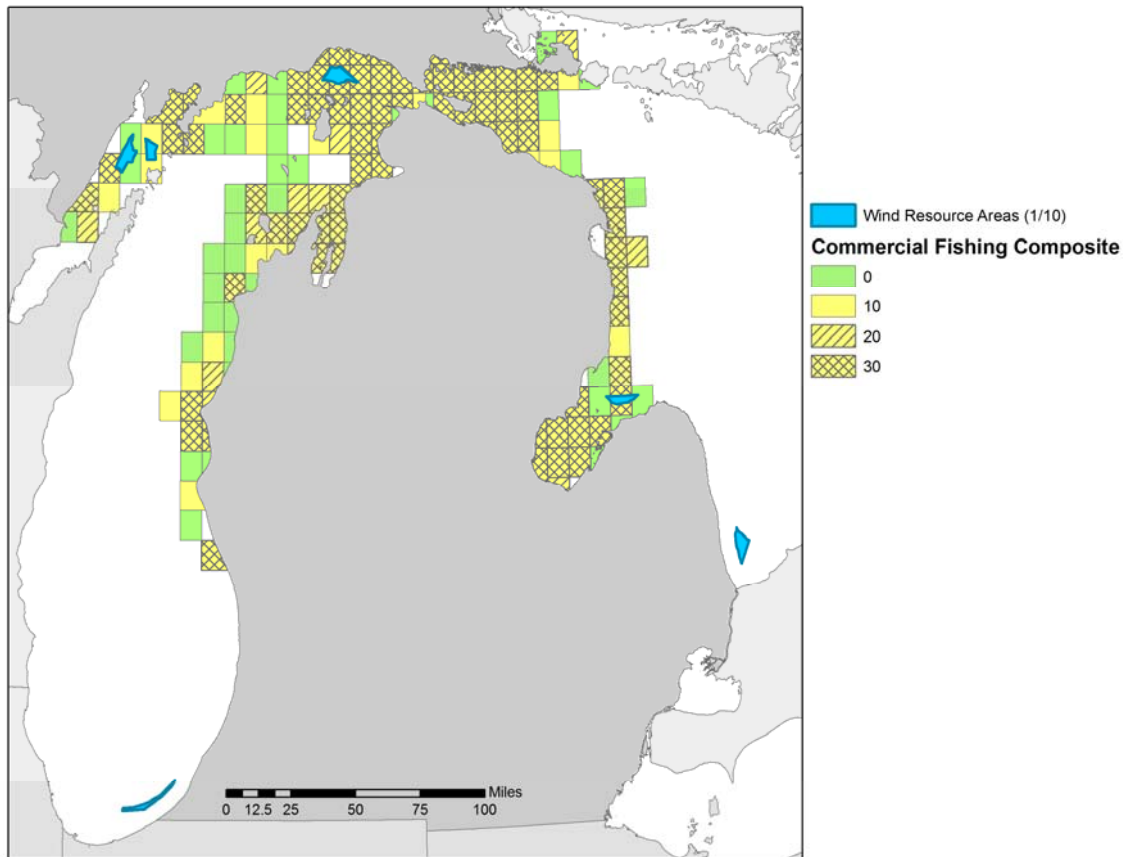
Members of the Mapping Work Group received a council staff proposal outlining issues related to commercial fishing (state- and tribal-licensed) and providing the mapping data layer proposed for inclusion in the lakebed alteration tool. This document presents the status of the criteria and scoring composite proposed by the Michigan Department of Natural Resources and Environment (MDNRE) for mapping the commercial fishing data layer. The work group met via conference call to discuss the proposal and agreed to the following: As originally designated by the full council, the commercial fishing data layer will be incorporated with the other data layers to delineate the “most favorable” wind resource areas and “conditional” areas as part of the overall mapping exercise.

The University of Michigan/Institute for Fisheries Research (IFR) recently mapped the commercial fishing layer (see Exhibit 2) using a data weighting and scoring process that is described below. The outer Saginaw Bay and Mackinac wind resource areas will be reclassified to “conditional” status. (The inner Saginaw Bay was reclassified prior to the council’s January meeting in consideration of avian habitat and noncommercial fish species habitat.) After applying the commercial fishing map layer, 70 percent of the commercial fishing areas are included in the yellow (conditional) classification. The previously designated Mackinac and outer Saginaw Bay Wind Resource Areas (WRAs) support significant commercial fishing activity and have a higher potential for incompatible offshore wind development. There are no commercial fisheries operating in the Berrien and Sanilac WRAs and the Delta WRA supports a low level of commercial fishing, indicating low potential for development conflicts.

In the development of the commercial fishing scoring composite, the MDNRE Fisheries Division developed three scoring categories based on: (1) the reported level of fishing activity; (2) fishing consistency, and; (3) recent activity, using commercial fishing data from 2001–2008. All three scoring categories were weighted equally (zero or 10) to avoid preference of one category over another. Commercial fishing grid size, used in this analysis, is a geographical unit based on ten minutes of latitude by ten minutes of longitude (approximately 90 square miles in Michigan waters), which is used by most tribal, state, provincial, and federal governments for reporting fishery statistics.

EXHIBIT 2

Commercial Fishing



SOURCE: Michigan Department of Natural Resources and Environment and Institute for Fisheries Research, 2010.
NOTE: The commercial fishing map layer does not contain western Lake Superior tribal commercial fishery data, which uses different reporting metrics. Review of this fishery will require investigation during siting.

The scoring categories were defined as follows:

1. **Heavily fished during 2001–2008:** The number of state-licensed commercial fishing days was totaled for each grid across the eight-year time series. This is the total number of days a state-licensed commercial fisher reported pulling one or more nets from the water. Grids with a cumulative activity level greater than 73 days were given 10 points. Grids with a cumulative activity level less than or equal to 73 days were given 0 points. The intent was to identify an activity level separating low-level experimental or unsustainable use of fishing grids while still retaining activity levels suggestive of seasonal fisheries.
2. **Consistently fished in six of the eight years:** If a grid was fished in at least six of the previous eight years it was considered to have consistent annual commercial importance and received a score of 10 points. If a grid was fished less than six of the previous eight years it received a score of zero.

3. **Recently fished:** If a grid was fished in both 2007 and 2008, it was considered to have recent commercial importance and received a score of 10 points. If a grid was not fished in both 2007 and 2008 then it was considered not to have recent importance to the fishery and received a score of zero.

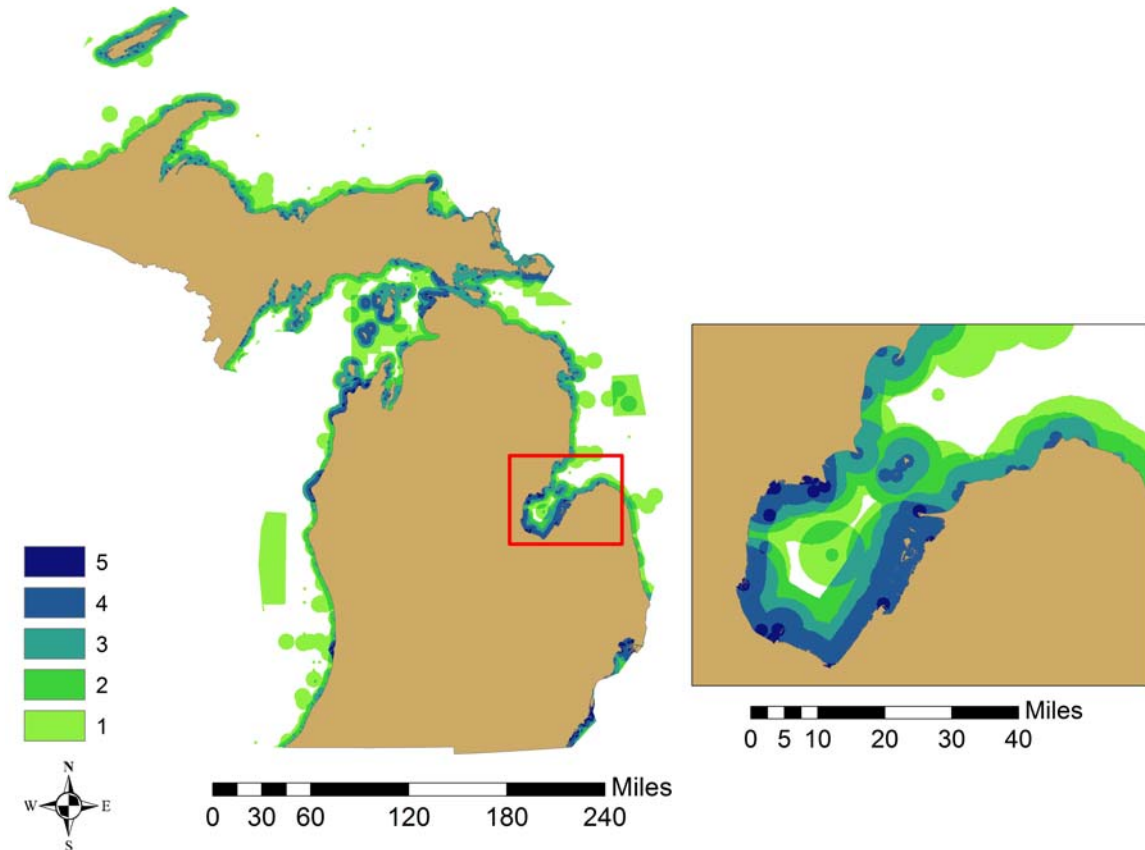
Grids with a total score 10 and higher are shaded yellow in the lakebed alteration mapping tool. This represents approximately 70 percent of the fishing grids reporting commercial activity during this period.

Because the color yellow indicates a “conditionally viable” area, one will find specific areas within the yellow layer that will have scores of 10, 20 and 30, indicating progressively more intense levels of commercial fishing (satisfying one, two, or three of the criteria). The precise score and other detailed commercial fishing activity (e.g., tribal-licensed vs. state-licensed) can be obtained during site-specific analysis, similar to work that may need to be done to identify any other potential conflicts within a WRA. The work group envisions that in the evolution of the lakebed mapping tool, the development of a weighted scoring system for criteria would help to further refine some data layers and enhance future resource management decision making.

Biological and Habitat Criteria, New NOAA Data

Since September 2009, additional information has been gathered and included in the mapping tool related to biological values and habitat. These updates added threatened and endangered species data layers and new avian habitat data. Also, the number of fish species in the spawning site data layer increased. These additions resulted in the reclassification of the inner Saginaw Bay wind resource area as “conditional,” thereby reducing the number of WRAs from six to five in January 2010. The mapping layer generated from this data is shown in Exhibit 3. Shortly thereafter, improved NOAA shipping lane data files resulted in reclassification of the Sanilac wind resource area as “conditional,” thereby reducing the number of WRAs from five to four.

EXHIBIT 3
Biological Data Layers



SOURCE: Michigan Department of Natural Resources and Environment and Institute for Fisheries Research, 2010.

REVISED MOST FAVORABLE WIND RESOURCE AREAS (WRAs)

When the council’s mapping criteria were applied in September 2009, six most favorable WRAs in shallow waters (greater than 20 contiguous square miles and 30 meters or less in depth) were mapped. These were located in southern Lake Michigan near Berrien County, northern Lake Michigan near Delta and Mackinac Counties, inner and outer Saginaw Bay, and Lake Huron near Sanilac County.

When the new shipping lane, habitat and fisheries data were incorporated into the mapping tool the number of WRAs (greater than 20 contiguous square miles and 30 meters or less in depth) declined to two and the size of one of the remaining wind resource areas was somewhat reduced. One policy implication of the reclassification is that the amount of bottomlands offered by the state in a lease-bidding process may be reduced (it is hoped the council’s identification of WRAs would provide guidance to that selection process); however, developers would not be precluded from nominating parcels for lease in the state’s conditional areas.

Exhibit 4 identifies the number of square miles in each of the categories and at two different depths after applying the updated data layers described above.

EXHIBIT 4

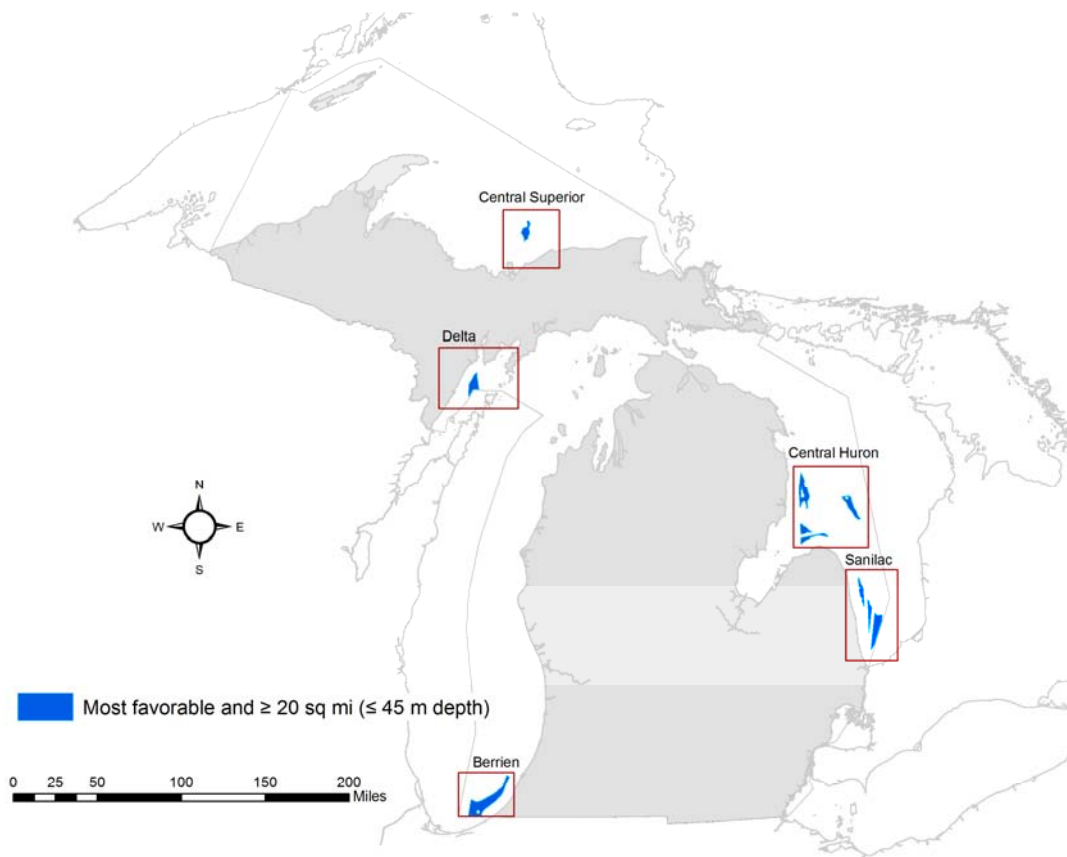
Square Miles in Categorical Exclusion, Conditional, and Most Favorable Areas

Area type	No depth restriction (sq. miles)	30 Meters or less (sq. miles)	45 Meters or less (sq. miles)
Categorical exclusion area	1,710	349	521
Conditional area	23,399	7,363	9,554
Most favorable area	13,339	157	565
Total	38,448	7,869	10,640

SOURCE: Institute for Fisheries Research, UM/MDNRE, June 2010.

The map below (Exhibit 5) shows the five most favorable wind resource areas. They are located in southern Lake Michigan near Berrien County, in northern Lake Michigan near Delta County, in central Lake Huron, in southern Lake Huron near Sanilac County, and in central Lake Superior near Alger County.

EXHIBIT 5 Most Favorable Wind Resource Areas



SOURCE: Institute for Fisheries Research, UM/MDNRE, June 2010.

These areas represent approximately 475 square miles that are contiguous, not more than 45 meters deep and most favorable for leasing and development. The workgroup recommends that the next council report to the governor should include mapping 20-square-mile contiguous areas at the 45-meter depth. These areas tend to be farther from shore, which research indicates may bring about an increase in public acceptance of leasing and development.

It is important to note that areas categorized as conditional represent extensive development potential, although they will require additional site assessment activities to ensure that they are suitable for offshore wind energy development.

PUBLIC AVAILABILITY OF THE TOOL

Currently the Institute for Fisheries Research is making data from the mapping tool available to members of the public upon request. The work group discussed alternatives for making the tool widely available. The options below are listed in order of the work group's preference.

- IFR staff could provide public data to members of the public upon request in the form of a compact disc. The data will be provided in Shapefile format for Geographic Information System (GIS) applications.
- The data used by the mapping tool could be made available online. The public data sets used in the tool, in their original forms, would be approximately 200MB. That is a large amount of data for Web distribution.
- Only the data used to develop the September 1, 2009, council report could be made available online. This dataset would be much smaller than that referenced in the option above.

Staff and select council members will continue to work with IFR staff to ensure public availability of both the data used in the mapping tool and the mapping tool itself.