



Lessons Learned

“Those who fail to learn from the mistakes of their predecessors are destined to repeat them”

George Santanaya (Attrib.)

Background Materials

EUROPEAN EXPERIENCE

US OCEAN OFFSHORE REGULATIONS

STATE INITIATIVES

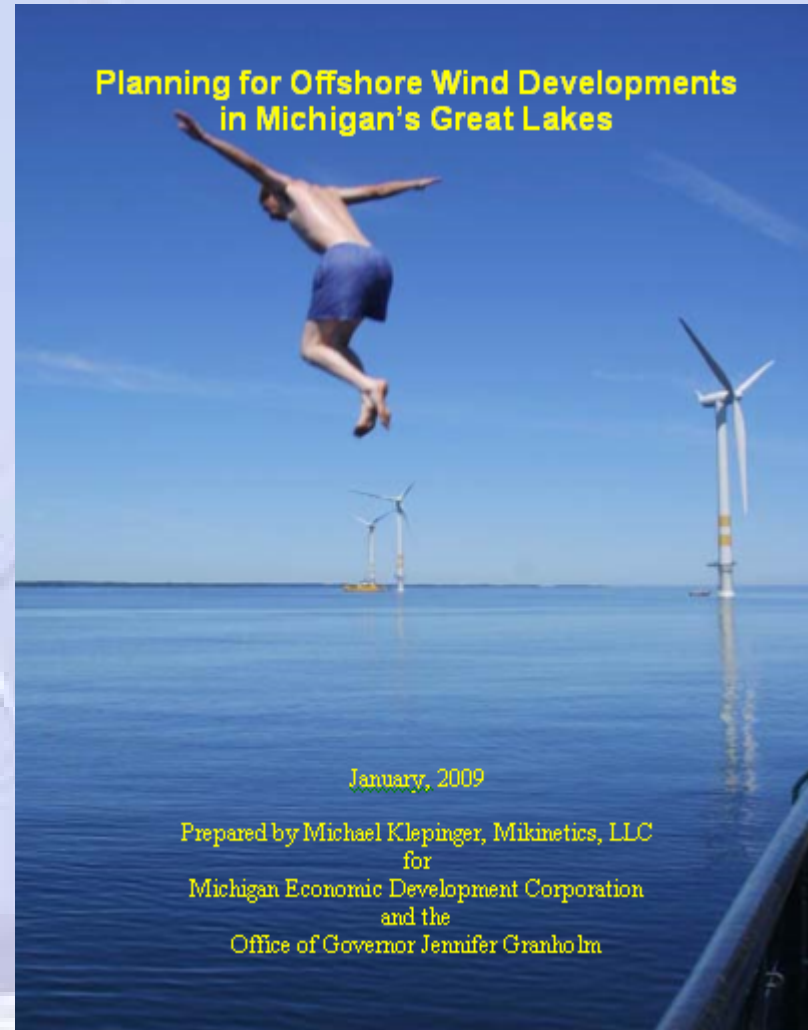
THE GREAT LAKES

**POLICY OF THREE LEADING
ENVIRONMENTAL ORGANIZATIONS**

PUBLIC ENGAGEMENT

RECOMMENDED READING SHORT LIST

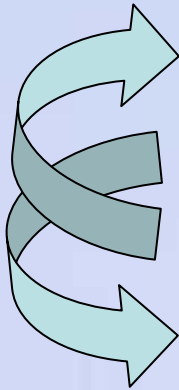
REFERENCES AND RESOURCES



What's Working? Where?

- Denmark
 - United Kingdom
 - MMS/USOWC
 - Ontario
 - Rhode Island
 - New Jersey
 - Ohio
 - Maine
 - Michigan
- One Stop Shop
 - Guidance Notes
 - Access System
 - Sixty-four Sites
 - Ten “area mgmt plans”
 - RFP for 3,000mw
 - Favorability Mapping
 - Demonstration Plots
 - Learning from all of the above

Council's Primary Charge



1. Identify criteria that can be used to review applications for offshore wind development.
2. Identify criteria for mapping areas that should be categorically excluded from offshore wind development as well as those areas that are most favorable to such development...

Which comes first – specifying application review criteria or identifying areas most suitable for development?

Offshore Wind Energy Development in the Great Lakes: Possibilities and Challenges for the State of Michigan

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**Lakebed Habitat Alteration Guidelines Workshop
U. S. Geological Survey Science Center
Ann Arbor, Michigan
Sept. 20-21, 2005**

Abstract

The State of Michigan possesses significant wind resources within its bound Great Lakes. A rough analysis of these resources by the National Renewable Energy Administration has shown that moderately intensive offshore wind development would yield a generating capacity. Michigan's current net summer generation capacity is 10,000 MW. The advantages of offshore wind in Michigan include higher average wind speeds to those on land, proximity to population centers and grid connections, mitigation of noise concerns and the ability to move very large wind energy equipment via established water transportation infrastructure. Michigan, with its large industrial base and access to water-based shipping routes, also has the potential to be one of the manufacturing hubs for wind turbines. No wind farms have been placed or sited in the Great Lakes - this is unexplored regulatory territory. Significant opportunities exist for Michigan from developers of offshore wind energy in Europe and other U.S. states.

Introduction

Michigan wind maps compiled and verified by the National Renewable Energy Administration indicate a very significant potential for offshore wind energy production (see Figure 1).¹ Much of Michigan's total wind resource that might be harnessed for development lies offshore, over the Great Lakes. Calculations for this report estimate there is a total of 44,000 MW of offshore wind generating capacity in the Great Lakes.² Michigan's current installed electric power generation capacity is 10,000 MW.³

The Michigan economy and power sector have profiles typical of the other industrial states in the "rust belt". The bulk of the state's generation is provided by coal — with most of the rest coming from nuclear and natural gas — 1

ECOLOGICAL CONSIDERATIONS PERTAINING TO LAKE

Introduction

In the late 1980s, there was increasing interest in the Great Lakes for the enhancement of fishing opportunities and the effectiveness of artificial reefs in the Great Lakes. The Artificial Reef Task Force under the auspices of the U.S. Geological Survey, the U.S. Commission, and production of GLFC Special Report on Artificial Reefs, Statement and Evaluation Guidelines for Artificial Reefs. Over time it has become clear that the lakebed habitats considered for installing a number of different types of structures and public works infrastructure. These include discharge structures, natural gas and oil rigs, wind turbines, etc. We evaluate and respond to these projects, guiding the GLFC sponsored the Lakebed Alteration Permitting Process on September 20 – 21, 2005.

This document distills information from this work done by states/provinces and federal governments on the protection of biological resources and regulating physical alterations to lakebeds. It provides requirements to assist those responsible for making regulatory decisions when addressing proposed projects. It is the intent of this guidance to assist the concerned public to make better and better-informed decisions where the existing regulatory framework does not take these considerations into account, it is recommended incorporating these guidelines into their decision-making process.

GLFC 2006

MEDC 2008

Michigan Great Lakes Offshore Wind

Permitting Dry Run

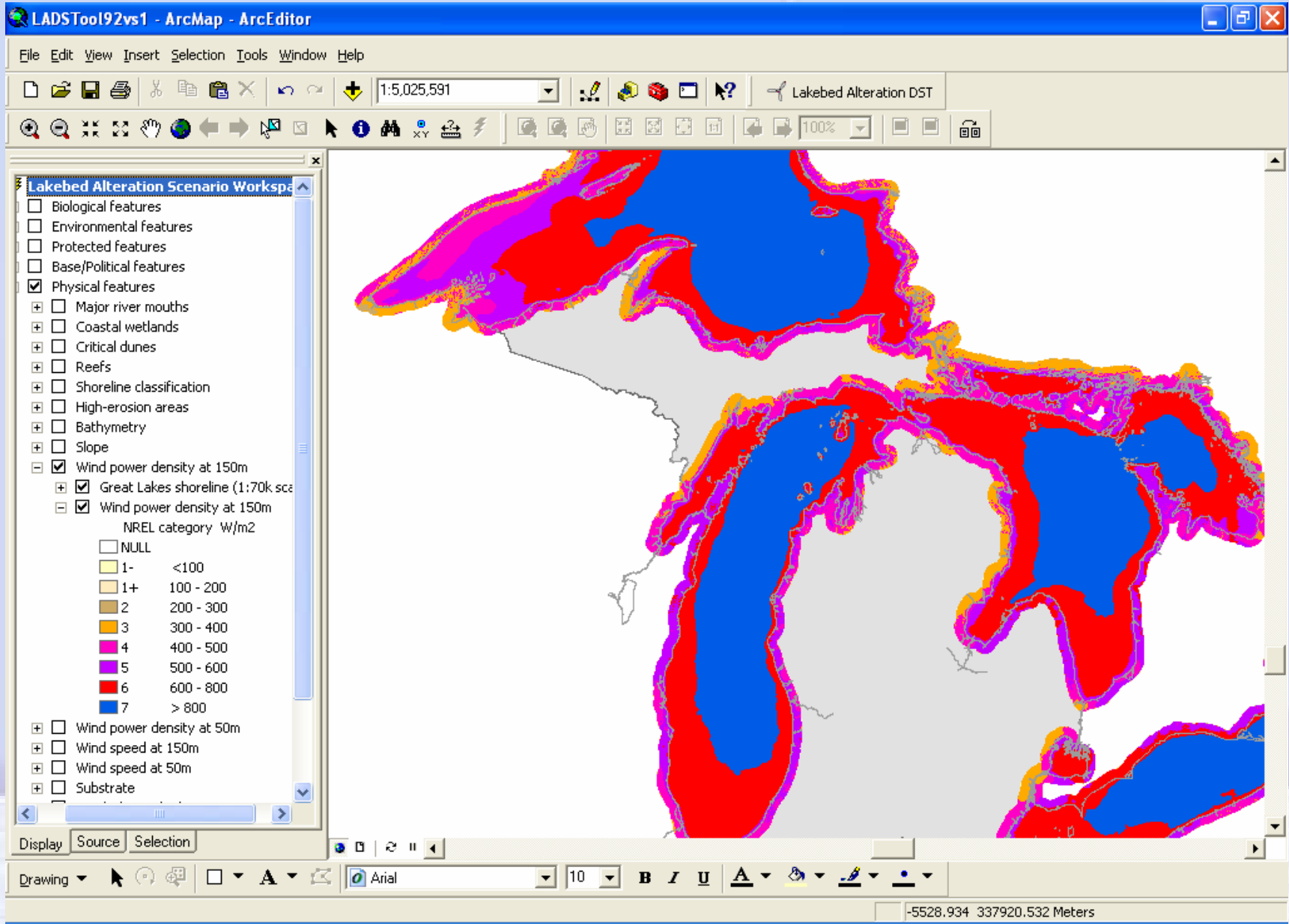
Final Report

UM 2005

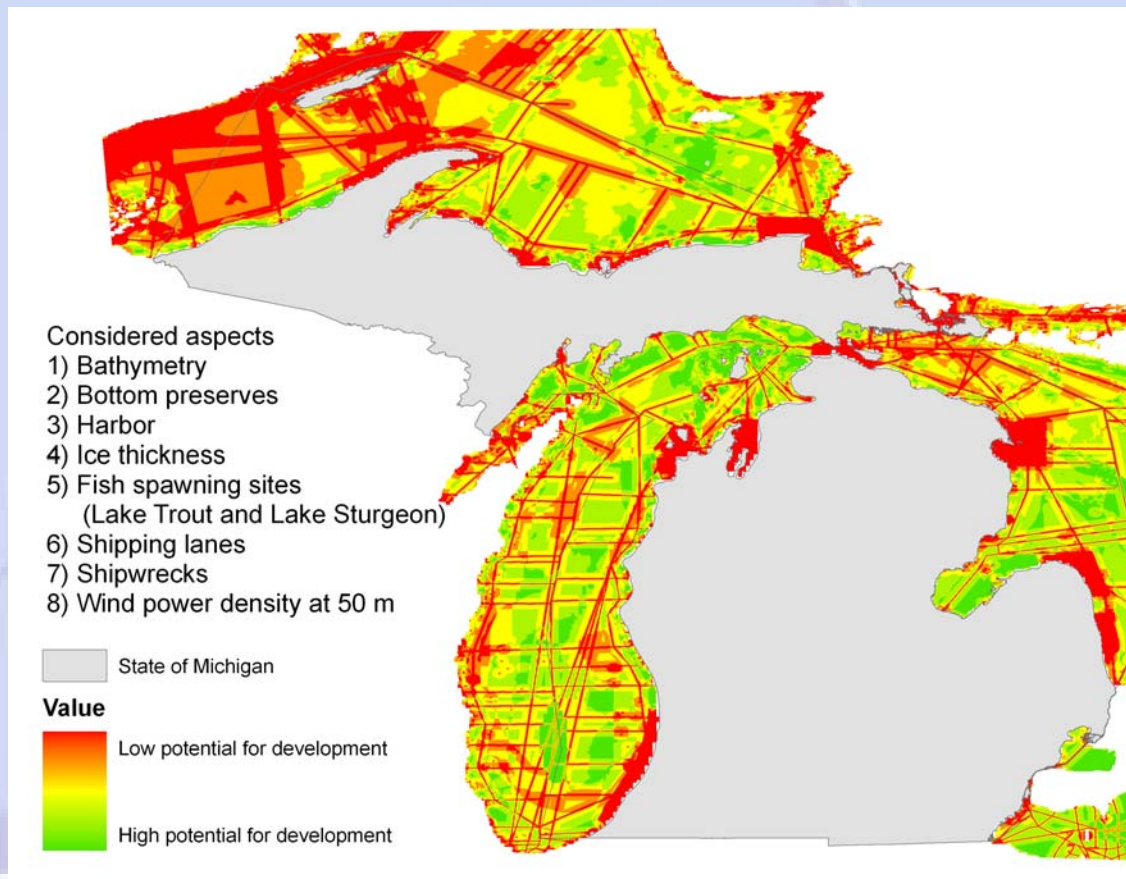
Michael Klepinger, Proprietor of *Mikrometris Consulting, LLC*, submitted this report in partial fulfillment of a contract between the Michigan Economic Development Corporation (MEDC) and the Great Lakes Renewable Energy Association (GLREA). The report has not been subjected to a peer-review process, nor have its findings or recommendations been endorsed by MEDC, GLREA, or the State of Michigan.

May 2008

Michigan Bottomlands Atlas



Bottomland Development Suitability

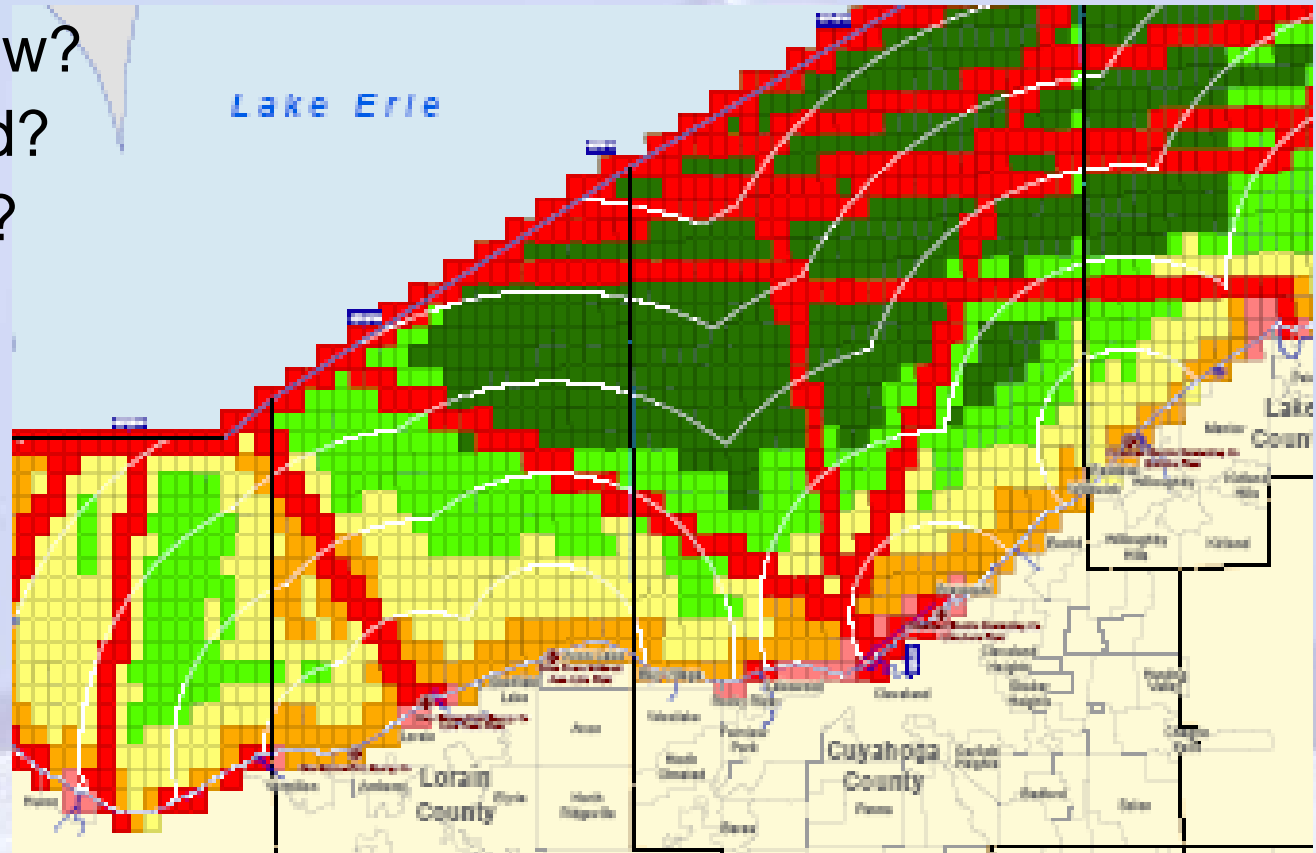


Michigan DNR/GLERL Project Future Direction

- Add sophistication to the tool
 - e.g., a weighting mechanism
- Better incorporate some data
 - e.g., Consent Decree, shipwrecks, ice coverage, trolling lanes
- Make tool more comprehensive

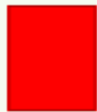
Ohio Staff Decisions on Weighting

- Ohio DNR mapping project 2009
 - Too narrow?
 - Too broad?
 - Just right?



Legend

Wind Turbine Placement Favorability



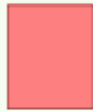
Extensive Factors

Manually assigned cell values due to highly extensive factors:

Grid cells intersected by Shipping Lanes or International/State Boundaries;
Grid cells fully or partly contained within 1/2 mile proximity of Raptor Nests;
Grid cells fully or partly contained within Military Exercise Area

Grid cell count: 1,205 (31%); Combined cell area: \approx 763,970 acres

Determination and range based on comprehensive sum of cell weights - Symbology method: Natural Breaks



Extensive Limiting Factors

Grid cell count: 135 (3%); Combined cell area: \approx 85,590 acres



Moderate-High Limiting Factors

Grid cell count: 391 (10%); Combined cell area: \approx 247,894 acres



Moderate Limiting Factors

Grid cell count: 630 (16%); Combined cell area: \approx 399,420 acres



Moderate-Low Limiting Factors

Grid cell count: 537 (14%); Combined cell area: \approx 340,458 acres



Minimum Limiting Factors

Grid cell count: 1,017 (26%); Combined cell area: \approx 644,778 acres

Ohio Raptor Nest Criteria

- Nest within $\frac{1}{2}$ mile = 0
- Nest within 2 miles = 1
- Nest beyond 2 miles = 2

Higher weighted scores indicated higher favorability for wind development

Ohio Sport Fishing Criteria

- 100,000 to 700,000 hours percid = 1
- 25,000 to 100,000 hours percid = 2
- 4,000 to 25,000 hours percid = 3
- 0 to 4,000 hours percid = 4

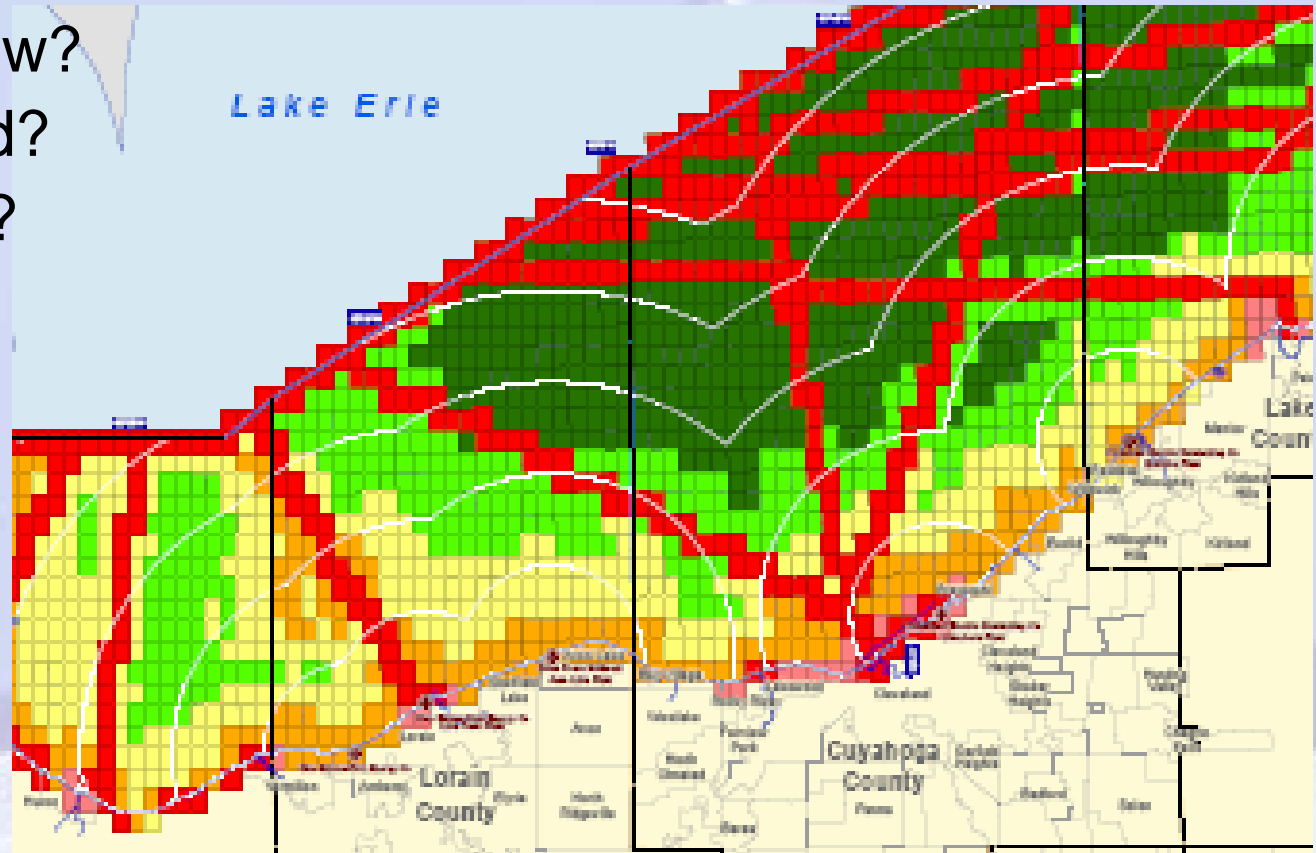
Higher weighted scores indicated higher favorability for wind development

Ohio Weighting Criteria

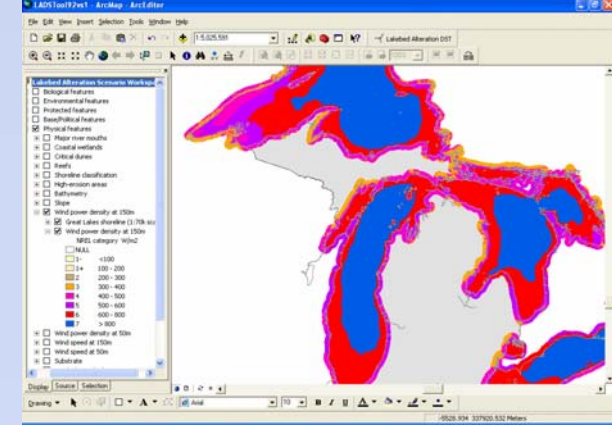
- Shipping lanes, fairways, harbors
- Distance from shore
- Raptor nests
- Important bird areas
- Natural heritage observances
- Fish habitat and bathymetry
- Reefs and shoals
- Substrates
- Sand and gravel mining
- Military zones
- Confirmed shipwrecks
- Sport fishery effort
- Commercial fishery trap net lifts

Ohio Staff Decisions on Weighting

- Ohio DNR mapping project 2009
 - Too narrow?
 - Too broad?
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Recommendation to Council



- Compile a short list of constraints to offshore wind
 - help set boundaries for public discourse
- Work with GIS experts on weighting
 - use the Council’s list of constraints to create a graphic representation of three planning area types for offshore wind:
 - red (worst), yellow (mid), green (best)

After Lunch - Grounding

- Presentations and Discussion
 - Risk assessment and decision-making
Bonnie Ram
 - Identifying Ontario's 64 sites
Patrick Henn
- Next Steps... Council's Work Plan

