
Proposed Report of the Michigan Wind Energy Resource Zone Board

August 24, 2009
Huron County Expo Center
170 West Soper Road
Bad Axe, MI 48413

Proposed Report of the Michigan Wind Energy Resource Zone Board

August 31, 2009
West Shore Community College
Auditorium in the Administrative and
Conference Building
300 North Stiles Road
Scottville, MI 49454

Background

- 2008 PA 295 called for creation of Wind Energy Resource Zone (WERZ) Board
 - 11 board members
 - Represent diverse professional backgrounds
 - Appointed by Michigan Public Service Commission (MPSC) but operate independently
 - Board met 12 times during 2009
 - Proposed report issued on June 2, 2009
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Board's Charge

- Study wind energy production potential and land availability in the state
 - Develop list of regions with highest wind energy potential
 - Estimate maximum and minimum wind energy potential for each region
 - Conduct modeling and other studies on:
 - Existing and proposed wind energy systems
 - Wind speeds
 - Viability of wind as a source of commercial energy
 - Issue final report to MPSC after accepting comments from local governments and the public
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Timeline



Board Consultant Team

- Consultants assisted the board in technical analysis and report writing
 - **Michigan State University's Land Policy Institute**—Technical analysis
 - **Public Sector Consultants**—Report writing and management of comment process
- Selected through competitive bidding process

Summary of Proposed Report

- Identified four regions with highest wind energy potential
 - **Region 1**—West Michigan (Allegan County)
 - **Region 2**—Upper Northwest Lower Peninsula (Antrim and Charlevoix Counties)
 - **Region 3**—Northwest Lower Peninsula (Benzie, Leelanau, and Manistee Counties)
 - **Region 4**—Thumb Area (Bay, Huron, Saginaw, Sanilac, and Tuscola Counties)
- Analyzed existing and proposed wind energy systems
- Determined that wind energy is a viable source of commercial energy generation in the state

Four Regions Identified by Board



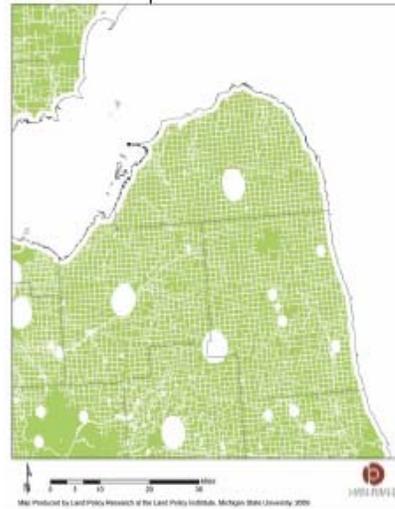
Methodology Overview

- Start with statewide map
 - Determine land available after application of exclusion criteria
 - Considered several scenarios based on different setbacks for roads, water, etc.
 - Overlay theoretical grid of wind turbines
 - Calculate wind energy production potential
 - Identify regions with highest potential
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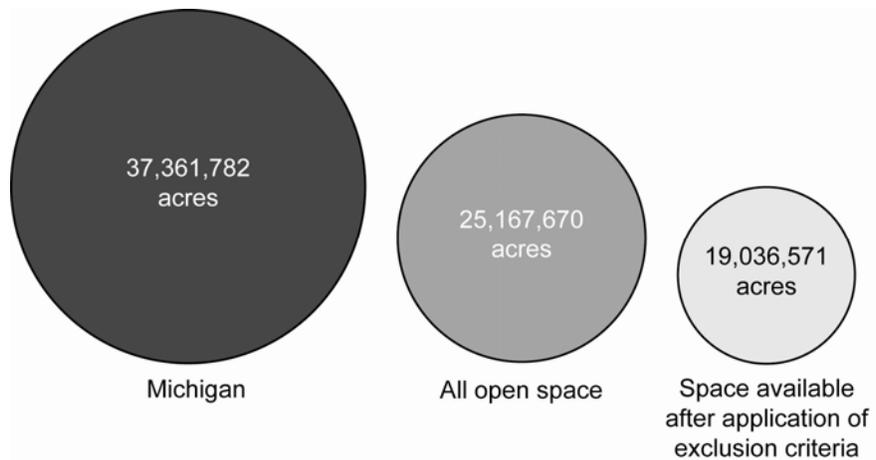
Exclusion Criteria

- Great Lakes shoreline
 - Areas not defined as “open space”
 - Airports
 - Wetlands, lakes, and rivers
 - Houses and other structures
 - Roads
 - Slope
 - Urban areas
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Application of Exclusion Criteria



Application of Exclusion Criteria (cont.)



Theoretical Grid Overlay



Wind Speeds (Class 3 or Higher – 50 Meters)

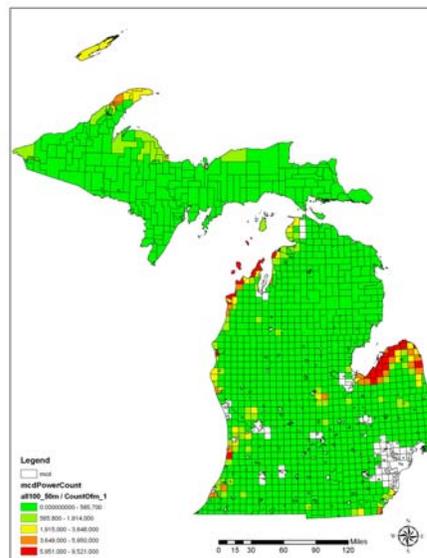


Power Production Potential Estimates

- Theoretical estimates of wind potential based on hypothetical placement of turbines
- Using wind speed data, turbine power output specifications, and other factors, wind energy potential and capacity calculated for each turbine
- Turbines not placed in cities, villages, and certain townships because of application of exclusion criteria

Selection of Regions

- Townships classified into tiers
- Based on estimates of energy production potential (Megawatt hours [MWh] per turbine and total MWh) by township
- Selected townships in highest tier out of five (red) to form building block of region
- Also included in region are adjacent townships in second tier and additional ring of adjacent townships



Reductions to Theoretical Estimates

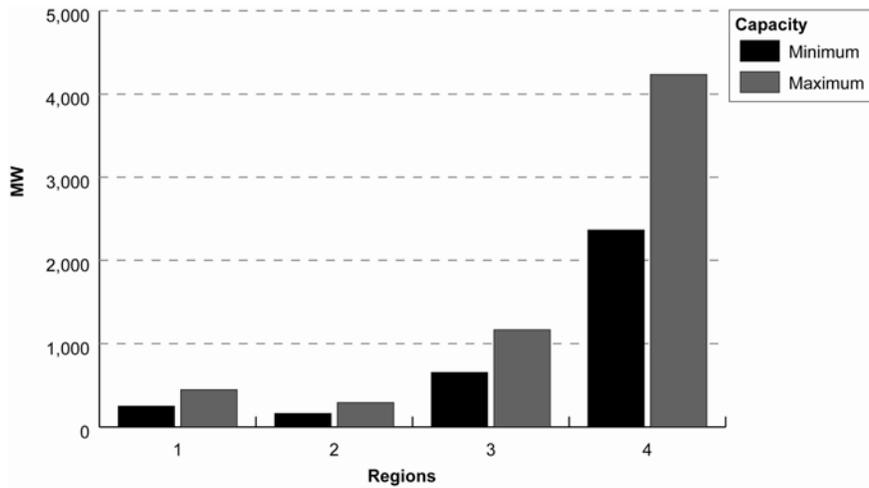
- For each region, board reduced theoretical estimates of capacity and energy potential to account for various factors affecting turbine placement
 - Maximum estimates - 66 percent reduction
 - Minimum estimates - 81 percent reduction
- Reductions based on information and general trends related to:
 - Land leases or easements
 - Land fragmentation
 - Local zoning restrictions
 - Competing land uses (development for other purposes)
 - Sensitive areas
 - Residential zoning

Wind Energy Production Potential

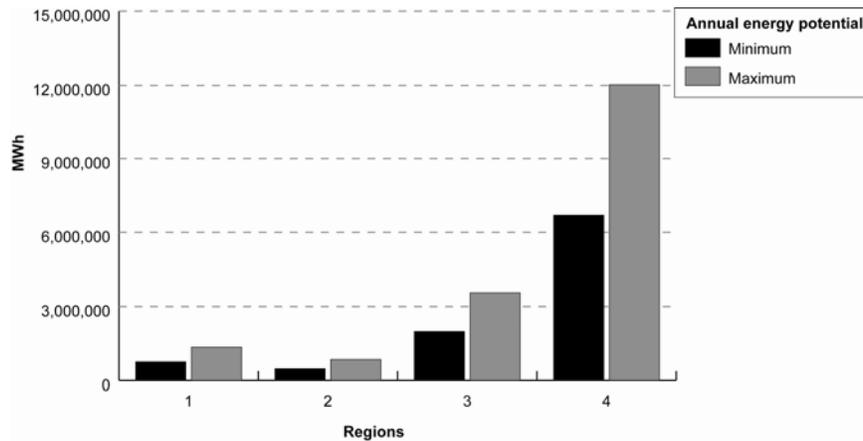
Total for Four Regions Identified by Board

	Minimum	Maximum
Estimated number of turbines	2,287	4,093
Estimated capacity (MW)	3,431	6,140
Estimated annual energy production (MWh)	9,933,151	17,775,113

Estimated Capacity (MW), by Region



Estimated Annual Energy (MWh) Production, by Region



Region 1 – West Michigan



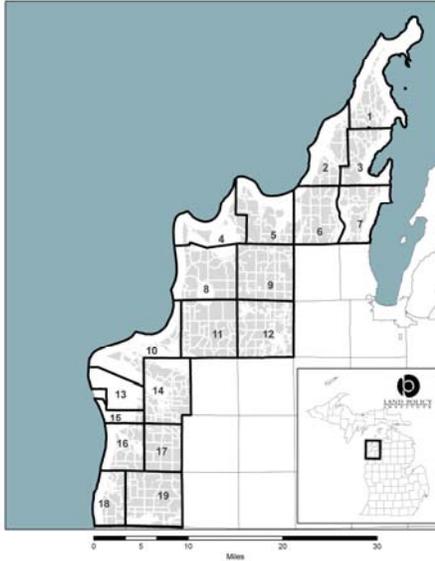
- County – Allegan
- Townships –
 - Casco (6)
 - Clyde (5)
 - Fillmore (2)
 - Ganges (4)
 - Laketown (1)
 - Lee (7)
 - Manlius (3)
- Also includes cities, villages, and Saugatuck Township but no turbines modeled

Region 2 – Upper Northwest Lower Peninsula



- Counties – Antrim, Charlevoix
- Townships
 - Banks (5)
 - Eveline (4)
 - Hayes (1)
 - Marion (3)
 - Norwood (2)
- Also includes cities, villages, and Charlevoix Township but no turbines modeled

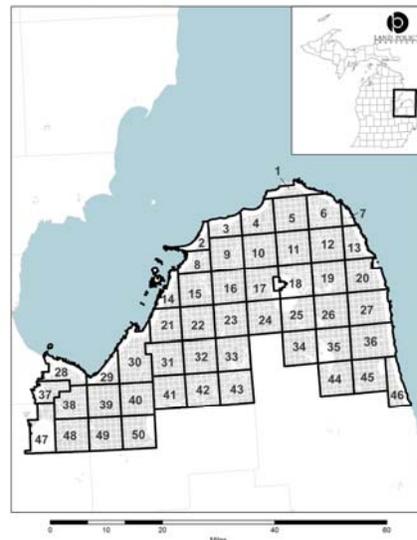
Region 3 – Northwest Lower Peninsula



- Counties – Benzie, Leelanau, Manistee
- Townships - Arcadia (18), Almira (12), Benzonia (14), Bingham (7), Blaine (16), Centerville (6), Cleveland (5), Crystal Lake (13), Empire (8), Gilmore (15), Glen Arbor (4), Joyfield (17), Kasson (9), Lake (10), Leelanau (1), Leland (2), Platte (11), Pleasanton (19), Suttons Bay (3)
- Cities and villages are included in region but no turbines modeled

Region 4 – Thumb Area

- Counties – Bay, Huron, Saginaw, Sanilac, Tuscola
- 50 townships (listed in proposed report)
- Cities and villages are included but no turbines modeled



Nine Alternative Regions

- Considered alternative approach using 15 tiers
- Townships in the top five tiers selected as core of region and include immediately adjacent townships
- Resulted in nine alternative regions
- Approach rejected; board preferred to identify only those regions with highest wind potential



Wind Generation Currently in Service

- Five wind systems operating in Michigan
 - Michigan Wind I, Huron County (69 MW)
 - Harvest Wind, Huron County (52.8 MW)
 - Stoney Corners, Missaukee County (5 MW)
 - Mackinac City (1.8 MW)
 - Traverse City (0.6 MW)
- Total nearly 130 MW of installed capacity
- Almost all placed into service during 2008

Proposed Commercial Wind Systems



- 24 proposed wind energy projects in the queue
- Represent nearly 2,700 MW of capacity
- Does not mean that projects will be constructed

Board's Analysis

- High-level statewide assessment of areas with highest wind energy potential
- Focuses on commercial-scale wind systems
- Does not:
 - Analyze specific sites or zoning requirements
 - Account for community acceptance
- Development may occur outside or inside of identified zones
- First step in more forward-looking planning process for both wind energy and transmission systems

Next Steps

- Board reviews comments on proposed report
 - Online comment form
 - Public hearings August 24 and 31
 - Board issues final report October 15
 - Transmission companies study transmission system needs; submit report to board November 30
 - MPSC designates one or more wind energy “zones” based on:
 - Board’s final report
 - Transmission studies
 - Additional input and information
 - MPSC conducts public hearings and issues report regarding setbacks and other requirements related to wind energy
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Next Steps (cont.) – Transmission

- MPSC may issue expedited certificate for transmission line to deliver power from wind zone if certain requirements met
 - MPSC to issue decision within 180 days instead of one year
 - Affected municipalities and landowners have right to intervene
 - Same due process rights as other MPSC cases (present testimony, right to appeal, etc.)
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Next Steps - Transmission (cont.)

- Expedited siting certificate granted if proposed transmission line:
 - Facilitates transmission of electricity generated by wind energy systems in a wind energy zone
 - Has received federal approval
 - Does not represent an unreasonable threat to the public convenience, health, and safety
 - Is of appropriate capability to enable wind potential of the wind energy zone to be realized
- Route must also be feasible and reasonable

For more information and questions

- For more information, see:
 - www.michigan.gov/windboard
 - Presentations given to board
 - Copy of proposed report
 - Form to submit comments
- Accepting comments through September 8, 2009