Morning Session
November 10, 2009

Welcome

- Review of Governor’s Charge to Council
- New Exec. Order objectives and timelines
- Review protocols and today’s agenda
Council Recommendations 09/09

- Legislation
  - non-riparian right to develop offshore
  - leasing program
  - regulatory framework
  - rents/incentives

- Public acceptance research and outreach
  - focus on selected lease candidate areas
  - statewide and local sampling research

“identify the most favorable places…”
Offshore Wind Decision Support Tool

Council’s 22 Criteria

- Aides to navigation
- Buoyed navigation channels
- Coastal airports
- Military operation areas
- Submerged transmission lines
- Habitat/Biological (5 criteria)
- Disposal sites
- Harbors/marinas
- Large river mouths
- Shoreline (nearshore view buffer)
- National park lakeshores
- Shoreline parks and wilderness
- Shipwrecks
- State bottomland preserves
- Underwater archaeological sites
- Commercial fishing areas
- International and state boundaries
- Recommended (shipping) course lines

- All of these filtering criteria are now in the integrating GIS software, the UM/IFR Decision Support Tool
  - Some data still needed

www.michiganglowcouncil.org
## Decision Support Tool Output

![Map showing water depth consideration](https://www.michiganglowcouncil.org)

### Water Depth Considered

<table>
<thead>
<tr>
<th>Total State-Owned Bottomland 38,448 Sq Mi</th>
<th>Depth of area (mi²)</th>
<th>Depth of area (mi²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;= 30m</td>
<td>&lt;= 45m</td>
</tr>
<tr>
<td>Excluded</td>
<td>356</td>
<td>528</td>
</tr>
<tr>
<td>Conditional</td>
<td>6,981</td>
<td>8,898</td>
</tr>
<tr>
<td>Most favorable</td>
<td>537</td>
<td>1,222</td>
</tr>
<tr>
<td>Total area sq. miles</td>
<td>7,874</td>
<td>10,648</td>
</tr>
</tbody>
</table>

www.michiganglowcouncil.org
Six Largest Areas of Interest “Wind Resource Areas” - WRAs

Strawman Ranking of 6 WRAs

<table>
<thead>
<tr>
<th>Wind Resource Area Name</th>
<th>Size of WRA Square Miles</th>
<th>Gross Potential Megawatts (12.9 x area)</th>
<th>Nearest Port (WPI class &gt;= “medium”)</th>
<th>(strawman) Ranking 11/9/9 6 = highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>InnerBay</td>
<td>104</td>
<td>1,347</td>
<td>Detroit</td>
<td>6</td>
</tr>
<tr>
<td>Berrien</td>
<td>25</td>
<td>324</td>
<td>Gary</td>
<td>5</td>
</tr>
<tr>
<td>OuterBay</td>
<td>53</td>
<td>686</td>
<td>Detroit</td>
<td>4</td>
</tr>
<tr>
<td>Mackinac</td>
<td>95</td>
<td>1,230</td>
<td>Manitowoc</td>
<td>3</td>
</tr>
<tr>
<td>Delta</td>
<td>94</td>
<td>1,217</td>
<td>Manitowoc</td>
<td>2</td>
</tr>
<tr>
<td>Sanilac</td>
<td>36</td>
<td>466</td>
<td>Detroit</td>
<td>1</td>
</tr>
</tbody>
</table>

Next market characteristics to consider could be: transmission, port facilities details, substrate, engineering concerns, public acceptance…. 
Why These Areas?

- 22 Criteria were refined by workgroups between March and July
  - result: most favorable to least favorable
- Resources/Traditional uses were mapped
  - result: 10,000 sq miles “favorable”
  - Council decided on 30 meters depth as most “feasible” for 2009 tower technology
    - result: 537 sq. miles at this depth, some scattered, too small
- Workgroup used industry recommendation of “20 square miles” minimum size in 9/1/09 report
  - result: 6 large wind resource areas to study for Michigan’s first leasing program

Why Focus on Just 6 Areas?

- We don’t need energy from all 38,000 mi²
  - a few hundred square miles can provide several million MWh energy
- We are concerned with which areas are most likely to be leased/developed
  - legislature may want to prioritize areas
  - administration may want to prioritize areas
- The 6 large wind areas represent a good cross-section of GL wind resources
Why Focus on Just 6 Areas?

Business purposes

- Industry needs to know which areas are most favorable to develop
- Shallows are currently “feasible”
  - floating systems are at least 5 years away
- Cannot afford to study “everywhere”
  - Interconnection studies
  - Biological studies
  - Archeological and other site studies
  - MET tower placement costs must be focused

Putting Our Best Foot Forward for a New Leasing Program

- Q: If the state is going to offer some of Michigan’s “most favorable” areas, which of them are the “most marketable”? (In other words, which will investors favor?)
- Staff considerations for “strawman” ranking

<table>
<thead>
<tr>
<th>wind resource</th>
<th>(unknowns)</th>
</tr>
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<tbody>
<tr>
<td>water depth</td>
<td>price of power</td>
</tr>
<tr>
<td>expansion potential</td>
<td>site engineering</td>
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<tr>
<td>proximity to load</td>
<td>port facilities</td>
</tr>
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<td></td>
<td>transmission capacity</td>
</tr>
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<td></td>
<td>public acceptance</td>
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</table>
There is more than one way to slice it…

- **InnerBay WRA**
  - Area-wide average NREL wind classification: 5.4
  - Average depth in WRA (meters): 6
  - Rank bottomland less than 45m within 5 miles: 6
  - Total population of counties within 100 miles (millions): 7.9

Overall rank among WRAs = 6? (Highest?)  
Potential MW = 1,347
InnerBay WRA

Area-wide average NREL wind classification
5.4

Average depth in WRA (meters)
6

Rank bottomland less than 45m within 5 miles
6

Total population of counties within 100 miles (millions)
7.9

Overall rank among WRAs = 6? (Highest?) Potential MW = 1,347

OuterBay WRA

Area-wide average NREL wind classification
6.1

Average depth in WRA (meters)
21

Rank bottomland less than 45m within 5 miles
3

Total population of counties within 100 miles (millions)
4.5

Overall rank among WRAs = 4? Potential MW = 686
### Outer Bay WRA

- **Area-wide average NREL wind classification**: 6.1
- **Average depth in WRA (meters)**: 21
- **Rank bottomland less than 45m within 5 miles**: 3
- **Total population of counties within 100 miles (millions)**: 4.5
- **Overall rank among WRAs**: 4
- **Potential MW**: 686

### Sanilac WRA

- **Area-wide average NREL wind classification**: 5.1
- **Average depth in WRA (meters)**: 25
- **Rank bottomland less than 45m within 5 miles**: 2
- **Total population of counties within 100 miles (millions)**: 6.4
- **Overall rank among WRAs**: 1 (lowest)
Sanilac WRA
Area-wide average NREL wind classification: 5.1
Average depth in WRA (meters): 25
Rank bottomland less than 45m within 5 miles: 2?
Total population of counties within 100 miles (millions): 6.4
Overall rank among WRAs = 1? (lowest)

Berrien WRA
Area-wide average NREL wind classification: 5.2
Average depth in WRA (meters): 28
Rank bottomland less than 45m within 5 miles: 1?
Total population of counties within 100 miles (millions): 16.3
Overall rank among WRAs = 5? Potential MW = 324
Berrien WRA
Area-wide average NREL wind classification 5.2
Average depth in WRA (meters) 28
Rank bottomland less than 45m within 5 miles 1?
Total population of counties within 100 miles (millions) 16.3
Overall rank among WRAs = 5? Potential MW = 324

Mackinac WRA
Area-wide average NREL wind classification 6.0
Average depth in WRA (meters) 20
Rank bottomland less than 45m within 5 miles 5
Total population of counties within 100 miles (millions) 0.84
Overall rank among WRAs = 3? Potential MW = 1,230
Mackinac WRA

Area-wide average NREL wind classification: 6.0
Average depth in WRA (meters): 20
Rank bottomland less than 45m within 5 miles: 5
Total population of counties within 100 miles (millions): 0.84

Overall rank among WRAs = 3
Potential MW = 1,230

Delta WRA

Area-wide average NREL wind classification: 5.8
Average depth in WRA (meters): 23
Rank bottomland less than 45m within 5 miles: 4
Total population of counties within 100 miles (millions): 1.7

Overall rank among WRAs = 2
Potential MW = 1,217
Delta WRA

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<th>Value</th>
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Overall rank among WRAs = 2?
Potential MW = 1,217
Workgroup Task:
Decide Which Areas Should Receive State’s Focus

- Improve upon staff’s ideas for “strawman” ranking or devise a new way for council
  - what are the important considerations?
  - how should they be weighted?
- Full council will consider workgroup’s output

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Workgroup effort needed before community meetings
  • Objective: Select three counties before end of holiday season
  • Process:
    ◦ Workgroup will review/revise the ranking criteria
    ◦ Look closely at the features of six largest areas
    ◦ Workgroup decide meeting duration, format, and recommended counties for hosting 3 meetings

Council decisions next meeting…
  • Confirm counties for coastal community public meetings
  • Confirm meeting content and approach
  • Identify which council members will be hosting coastal meetings

Public Engagement

  First step for Council - Conduct 3 public meetings in counties near “best” places
  • Present the pros and cons
  • Listen and learn from all concerned

  Advise researchers and outreach team during the next 12 months