Great Lakes Wind Collaborative

A multi-sector coalition of wind energy stakeholders working to facilitate the sustainable development of wind power in the bi-national Great Lakes region.

- Advance science and knowledge to inform decision-making
- Coordinate a broad array of interests
- Build consensus on issues affecting wind power

www.glc.org/energy/wind
Overcome barriers and impact the market for wind energy

Through development and strategic dissemination of information tools on best practices.
Methods and Tasks

Identified existing land-based policies and practices for wind development
Methods

• Literature review
• Develop criteria to evaluate and rank policies and practices
  – What makes a policy or process “better” or “best”?
• Compiles candidate practices and policies
• Applied criteria
• Conducted online survey of top candidates
• Conducted interviews:
  – ENGOs
  – Industry
  – Regulators
• Project Advisory Team engaged throughout
Evaluation and Ranking Criteria

- Administratively Efficient
- Cost-Effective
- Engages Public
- Environmentally and Culturally Protective
- Scientifically Sound
- Preferential to Clean Energy Sources
- Creates and/or Maintains Jobs
- Encourages Proactive Approaches
- Respectful of Landowner and Community Interests
- Adaptable
- Coordinative and Collaborative
Final Practices Selected by Workgroup Members from:

- Wind Industry
- Federal, state and local government regulators
- Environmental groups
- Best Practices
Each best practice is considered as part of a “menu” of preferred options from which regulators, communities and developers can choose.

Best Practices Menu

- 16 Land-based
- 2 Offshore Specific

Energy Policy

Offshore Wind

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Topics Addressed

- Siting, Planning and Permitting
- Energy Policy
- Public Engagement
- Offshore Wind

- Maximizing economic opportunities
- Sensitive to community needs and concerns
- Minimizing environmental impacts

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Energy Policy
Balanced and Uniform Siting Policies

- Regulators should create balanced and transparent policies that are uniform throughout a state or region to help protect communities and the environment, while enabling developers to propose wind farms that meet community approval.
  - Lack of planning and zoning uniformity often a major barrier to wind development.
  - All eight Great Lakes states are “home rule” states.
  - Local policies may differ substantially.
Case Example

- **Wisconsin Statewide Wind Siting Rules**
  - PSCW published final rules in December 2010 governing the siting of wind turbines in the state. Suspended as of March, 2011.
  - Gives local governments jurisdiction over wind projects that are under 100 MW, but require all larger projects to be sent to the PSCW for review.

- **Technical information**
- **Siting and supply alternatives**
- **Construction processes**
- **Substation and transmission information**
- **Public outreach**
- **Visual simulation**
- **Environmental impact assessments**
- **Wetland permits**
- **Noise and shadow flicker information**
Financing Mechanisms and Financial Incentives

- Regulators should provide clear, consistent, and well-designed financing mechanisms or financial incentives that assure developers they will be able to recoup costs in a competitive market.

1. Feed-In Tariffs (FITs)
2. Tax Credits
3. Loan Guarantees
4. Net Metering
5. Payment in Lieu of Property Taxes
6. Revolving Loan Funds for Renewable Energy Projects
7. Renewable Portfolio Standards (RPS)
Case Example

- **Ontario’s Feed-in Tariff Program**
  - North America's first comprehensive guaranteed pricing structure for renewable electricity production
  - Ontario Power Authority implements
  - Help Ontario phase out coal-fired electricity generation by 2014, the largest climate change initiative in Canada

- 13.5 cents per kWh for onshore wind
Renewable Portfolio Standards

- Jurisdictions should maintain RPS programs and increase state/provincial RPS/RES targets over time.
RPS Case Examples

• Wisconsin RPS
  – requires electricity providers to meet a gradually increasing percentage of their retail sales with renewable resources
  – overall statewide renewable energy goal of 10 percent by Dec. 31, 2015

• Massachusetts RPS
  – 1% each year until 15% by 2020
  – 1% each year thereafter
Integrated Resource Planning (IRP), Transmission Planning and Advanced Grid Management

• Regulators should implement transmission policies supporting the development and implementation of Integrated Resource Planning (IRP) and advanced grid management, consistent with federal and state/provincial legislative authority.

  • Inter-jurisdictional transmission planning and siting must be strengthened to optimize future investments and ensure the grid accommodates renewables

  • Cost allocation measures can improve system adequacy to lower overall costs of integration across multiple jurisdictions
Case Example

Minnesota Integrated Resource Planning (IRP)

1. Regulated utilities required to file IRPs every 2 years
2. Must include a 15-year demand forecast and the utility’s proposed capacity additions to meet the demand
3. The MPUC approves, modifies or rejects the resource plans of rate-regulated utilities.
4. Law prohibits new or refurbished nonrenewable energy facility unless the utility has demonstrated that a renewable facility is not in the public interest.
Strategic Siting for Efficient Transmission Management

• Strategically site wind developments to take advantage of existing transmission capabilities when possible and develop new electric transmission system infrastructure as needed to provide access to premier renewable energy.

• Issues
  • Cost – Who Pays?
  • Rights of Way
  • Land Use / Landscape Values
Case Example

- **Illinois Electric Transmission Grid**
  - Strong wind resources and well-developed transmission grid
  - Wind farms can tie into this
  - Lesser developed jurisdictions must invest millions of dollars building transmission lines to access their renewable resources
  - Companies opting to harness wind closer to existing transmission
    → As wind power expands, less of an option
Sitting, Planning & Permitting
Comprehensive Environmental Assessments

• Siting process should include steps to minimize both environmental and social impacts.
  1. Avoid areas with protected wildlife
  2. Conduct engagement and outreach to determine social and environmental sensitivities.
  3. Establish or be signatories of state-industry cooperative agreements.
     – Use environmental studies to provide guidance and consistency for development of wind project sites.
Case Example

Chanarambie Wind Power Facility
Murray County, Minnesota

1. 57-turbine, 85.5 MW wind farm is in SW MN; approximately 6,000 acres.

2. According to MEQB, Siting Application Permits must:
   1. Analyze potential environmental impacts
   2. Propose mitigation measures
   3. Identify unavoidable impacts

3. Numerous surveys, studies and mitigation measures of the proposed project site were required
Site Plans and Constraints
Maps

• Create a detailed site plan that build on the environmental assessment that maps site constraints
  – Wildlife and sensitive ecological features
  – Visual resources
  – Historic and cultural resources
  – Existing uses and infrastructure
  – Water resources
  – Local zoning
Standard Environmental Survey Protocols

- Should be developed where they do not currently exist.
- For both pre- and post-construction monitoring.
- Surveys commonly include:
  - Researching biological resources
  - Migration patterns
  - The protective status of migratory birds and nesting/resident
USFWS Voluntary Draft Guidelines

• “Tiered approach” for assessing potential effects on fish, wildlife, and their habitats from wind development on land

  1. Basis for developing state-specific protocols
  2. Survey methods scientifically robust and consistent with USFWS guidelines, or existing state protocols.

• Draft Eagle Conservation Plan Guidance

  1. Methods and metrics for site assessments, surveys, and monitoring
  2. Information for conducting a risk assessment and developing an eagle conservation plan, and post-construction monitoring.
  3. Promotes Early coordination with fed/state agencies.
Case Example

- Ohio Department of Natural Resources Terrestrial Wind Energy Voluntary Cooperative Agreement
  - For wind farms larger than 5 megawatts.
  - How best to avoid, minimize, and/or mitigate potentially adverse impacts to wildlife and native plant resources.
  - Includes:
    - Bird and bat pre- and post-construction monitoring protocols.
    - Pre and post-construction survey requirements.
Stormwater Pollution Prevention Plans (SWPPP)

• Steps and techniques used to reduce pollutants in stormwater runoff leaving a construction site.

• Costs of an SWPPP adds to overall project costs and development timelines.

  • May deter developers from doing anything above and beyond what is required by law.
  • Should incorporate handling of hazardous spills.
Case Example

- SWPPP for Stony Creek Wind Farm – Town of Orangeville – Wyoming County, New York
  - 59 wind turbines to be installed
  - SWPPP in accordance with NY State Standards and Specifications for Erosion and Sediment Control and the New York State Stormwater Management Design Manual
  - NYSDAM developed “Guidelines for Agricultural Mitigation of Wind Power Projects”.

  - Most of Stony Creek Wind Farm to be constructed in designated Agricultural Districts

  → Stony Creek implementing these guidelines during design and construction.
Construction Impact Mitigation

- Developers should ensure the construction of wind projects complies with general construction regulations and uses best management practices to minimize the construction footprint.

- Some construction best practices include:
  1. Implement standard safety precautions and practices
  2. Eliminate or reduce runoff (e.g., SWPPP)
  3. Seasonal restrictions reflecting site characteristics
  4. Minimize vegetation and soil disturbance
  5. Save excavated topsoil for reclamation later
  6. Dispose of waste properly and effectively control dust
  7. Restore the construction site as needed
  8. Implement mitigation measures such as acquisition of replacement habitat
  10. Whenever feasible, schedule different noisy activities (e.g., blasting and earthmoving) to occur at the same time

Some of these practices may be ensured by complying with state and local environmental and construction regulations.
Case Example

• Glacier Hills Wind Park, Columbia County, Wisconsin
  – Approved in January, 2010, slated to be the largest wind farm in Wisconsin
  – 207 MW capacity (90 1.8 MW turbines)
  – EIS evaluated the temporary and permanent impacts of the project and opportunities for remediation.
    • Impacts of construction are a major aspect of project’s EIS.
  – After public comment on EIS: changes made to the number and location of wind turbines; eliminated overhead collector circuits.
  – Areas of emphasis regarding construction of the wind park:
    • Roads
    • Waterways and wetlands
    • Forests and other ecologically important habitats
    • Bird and bat mortality
    • Post-construction mitigation, restoration and monitoring
Using Brownfields for Wind Projects

• Should be explored as candidate sites for wind development project
• Select over undeveloped greenfields in areas where both types are available
• Innovative use of delinquent properties
• Need only be cleaned up to levels required for commercial or industrial land uses.
• Generally closer to load centers requiring less transmission infrastructure.
• Often viewed positively by community
Case Example

Steel Winds Project – Lackawanna, New York

- Just south of Buffalo on a portion of the former Bethlehem Steel facility
- Circa 2000: Changes in NY State and federal environmental laws; financial and legal incentives to investigate and remediate the site.

- 30 acres of the site removed from RCRA list & placed under NY’s Brownfield Cleanup Program
- BCP financial assistance received; 30 acres remediated
- Late 2000s: construction of 8 turbines

→ Capacity to generate 20 MW; power 6,000 homes
Offshore
Adaptive Regulatory Roadmap for Offshore Wind

- Clear process needed that sets out:
  - Which agencies must or should be consulted
  - All Information requirements
  - Timing of review/approvals

- Individual federal and state agencies should develop
- Should be integrated into a single Regulatory Roadmap for offshore wind in the Great Lakes
- Should include mechanisms to streamline processes based on lessons learned
Case Example

Memorandum of Understanding to Improve State and Federal Permit Coordination in the Development of Offshore Wind Energy Projects in the Great Lakes

1. Creation of a regulatory roadmap to identify current permitting processes
2. Improvement of interagency and federal-state communications and collaboration.
3. Application of administrative efficiencies to existing and future projects.
Bottomlands Leasing Policy

Enact policies which provide a clear, coordinated and fair process for leasing lake bottomlands to facilitate appropriate offshore wind development.
Case Example

Michigan Legislation to Guide Leasing of Great Lakes Bottomlands

Red = categorically excluded
Yellow = conditional
Green = most favorable

Application of mapping criteria for Michigan offshore wind siting. Red = categorically excluded; yellow = conditional; green = most favorable.
Decommissioning
Decommissioning and Reclamation

- Developers should create provisions for future site decommissioning and reclamation.
  - Outline the expected end of the project life.
  - Explain when and under what circumstances it should occur.
  - Describe the anticipated manner in which the project will be decommissioned
  - Plan for Minimizing environmental impacts
Decommissioning and Reclamation (cont’d)

- **Decommissioning Plan should also include:**
  - Costs of net salvage value in current dollars
  - How the plan will be secured (e.g., bonds, contract)
  - Site reclamation procedures

- **Plan shows “good faith effort” to community**
  - Careful and well-planned deconstruction
  - Site will be properly taken care of upon dismantling instead of abandoned and left in disrepair for the community to contend with or even pay for.
Case Example

Ontario Renewable Energy Approvals

• Requires Utility managers to submit a Decommissioning Report, including:
  
  – Planned procedures for the dismantlement or demolition of the facility after its lifespan;
  
  – Activities related to the restoration of any land and water that have been negatively affected by the facility;
  
  – Planned procedures for the management of excess materials and waste (including emergency response actions).
Public Engagement
Community Support through Public Engagement and Outreach

- Developers should maintain a high level of transparency, cultivate relationships with the surrounding communities and increase support for their projects by incorporating public involvement early in the planning process and continuing with public outreach throughout the life of a project.

1. Gather information from local conservation groups, landowners and community residents – valued landscapes, cultural resources, etc.

2. Educate community about
   - proposed project
   - related public policy issues.

3. Engagement vs. Outreach
Community Support through Public Engagement and Outreach

- Choose outreach mechanisms that will facilitate dialogue and ensure that questions are answered.
- Build in adequate time and resources for multiple outreach events.
- Make information readily available to the public
- Early and ongoing outreach and community engagement
  - Reach broader segments of a community who may not have yet formed an opinion.
  - Vocal opposition does not necessarily mean a majority opposition.
  - No ‘one size fits all’ approach.
Case Example
Gratiot County, Michigan
Community Involvement

- **Included:**
  - Meetings with local officials, and landowners,
  - Discussions with people who already live near wind farms
  - Field trips to a wind farm

- Operational in early 2012
- 133 Turbines
- Power for 54,000 homes
Noise Impact Assessments

• Developers should use available noise models to assess noise impacts from wind energy projects.

  – May be required as part of environmental review or local laws
  – Include wildlife impacts
  – Implement mitigation measures
  – Effectively communicate to the community

DECIBELS

- JET PLANE: 150
d- 140
- 130
- INDUSTRIAL NOISE: 120
- 110
- INSIDE CAR: 100
- 90
- HOME: 80
- 70
- BEDROOM: 60
- 50
- FALLING LEAVES: 40
- 30
- WIND TURBINE: 20
- 10

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Case Example

Port Alma, Ontario Wind Farm Noise Impact Assessment

- Performed tests to find the ambient noise level at various monitoring sites.
- Details the classification of affected area and the sources of noise.
- Explains different parts of the proposed wind farm that will produce noise, and their cumulative effects throughout the area.

Construction of Port Alma Wind Farm

Report concluded:
- Noise impact does not exceed the most restrictive nighttime noise limits
- No need for mitigation measures or further studies
Visual Impact Assessments

• As part of the public engagement process, developers should conduct a visual impact assessment.

1. Early planning: assessment of visual resources – involve relevant agencies and the public.
2. Prepare spatially accurate and realistic photo simulations of wind turbines in the proposed location.
3. Assessment should include the nature and magnitude of potential visual impacts.
4. May not be required by regulatory agencies – however, if not done, may put the project at risk of delay or cancellation.
Case Example

- Viewshed Analysis for Proposed New York Wind Farm in Jordanville, NY
  - Analysis for views from Otsego Lake.
  - Stone Environmental conducted analysis: which of proposed 76 399ft turbines would be visible from the lake?
  - Turbines modeled at two heights: nacelle height, and tip-of-blade height.
  - Results modeled in tables in charts showing the most visible turbines

Location map on left; examples of three views of turbines that could be seen from the lake – red being the most visible viewpoints of that turbine.
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- Minnesota Department of Commerce
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- Ohio Department of Natural Resources
- Public Service Commission of WI
- The Nature Conservancy
- Wisconsin Department of Natural Resources

Cooperating Partners

- Clean Energy States Alliance
- Great Lakes Legislative Caucus
- Midwestern Governors Association
- Department of Energy - EERE
Best Practices Toolkit

- Compiled document
- Online Toolkit
  - 18 Best Practices
    - Action/Rationale
    - Challenges and Benefits
    - Who Should Implement This Practice?
    - Case Example
    - Timeline

Available online
www.glc.org/energy/wind
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