HRM
Wind Energy Generation Master Plan

Presentation on Approach and Methodology

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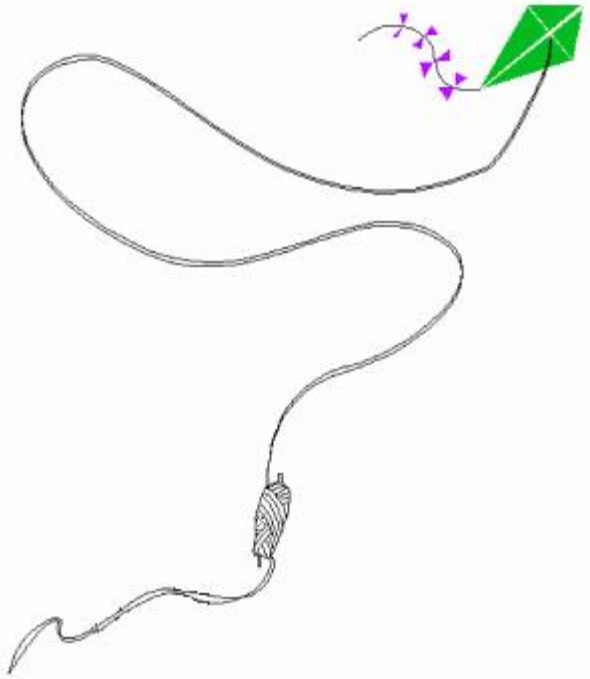
Why a Wind Master Plan?

Wind recognized for its potential as a renewable energy source.

Technology and Industry : ready to take off.

Municipality

Does not have the tools to regulate, enable, permit, and control wind generation development.



Industry

Is set back by the lack of clarity and coordination in regulatory procedures.

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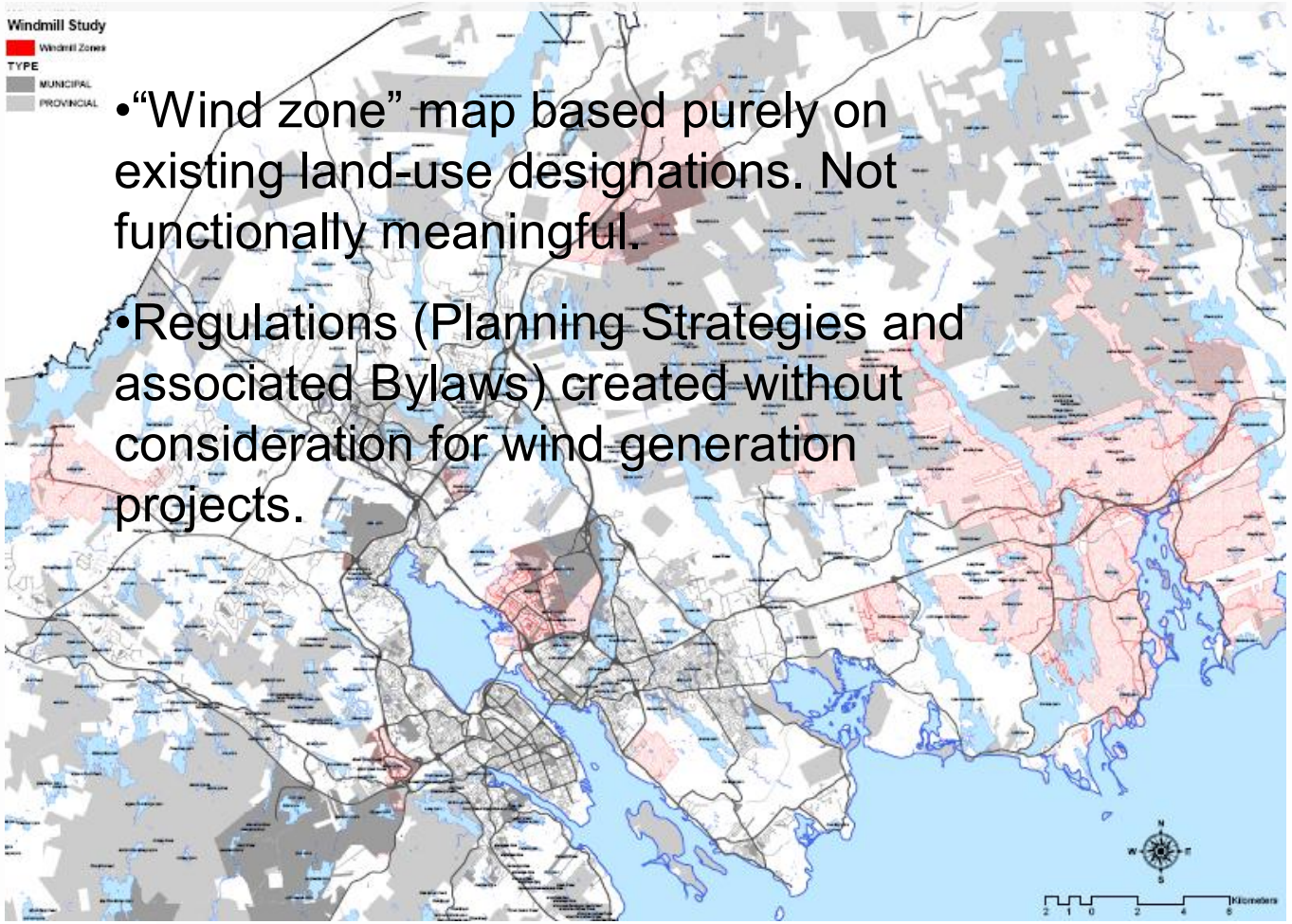
Current Situation



- "Wind zone" map based purely on existing land-use designations. Not functionally meaningful.
- Regulations (Planning Strategies and associated Bylaws) created without consideration for wind generation projects.

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Proposed Outcomes

• A revised map illustrating the relative suitability of sites in HRM for wind development, based on physical, social and economic considerations.

Stream A

• A set of recommendations for a regulatory approach to be adopted by HRM in its Planning Strategies and Bylaws.

Stream B

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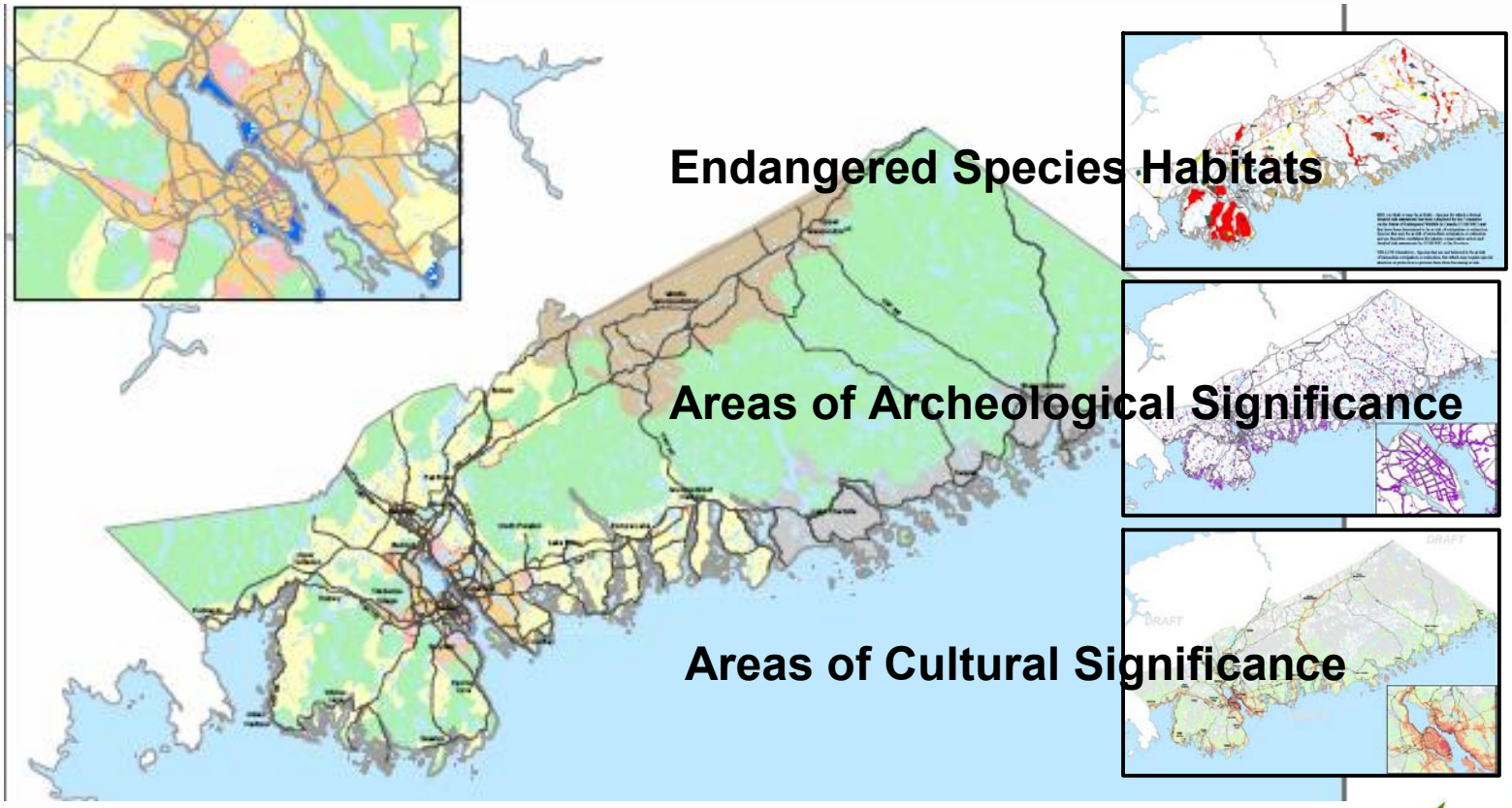
Stream A:
Constraint Mapping Exercise



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Stream A:
Constraint Mapping Exercise

Physical Constraints

- Prevailing winds
- Topography
- Hazard areas
- Power transmission lines
- Pipelines and other utilities
- All weather access roads
- Site flooding potential
- Forest/brush fire potential

Environmental Constraints

- Environmentally sensitive areas
- Important wildlife areas
- Species at risk habitat
- Conservation zones
- Watersheds
- Parks

Social Constraints

- Zoning
- Adjacent land uses
- Cultural heritage zones
- Archeological zones
- Recreational zones
- Television/Radio transmission
- Airports

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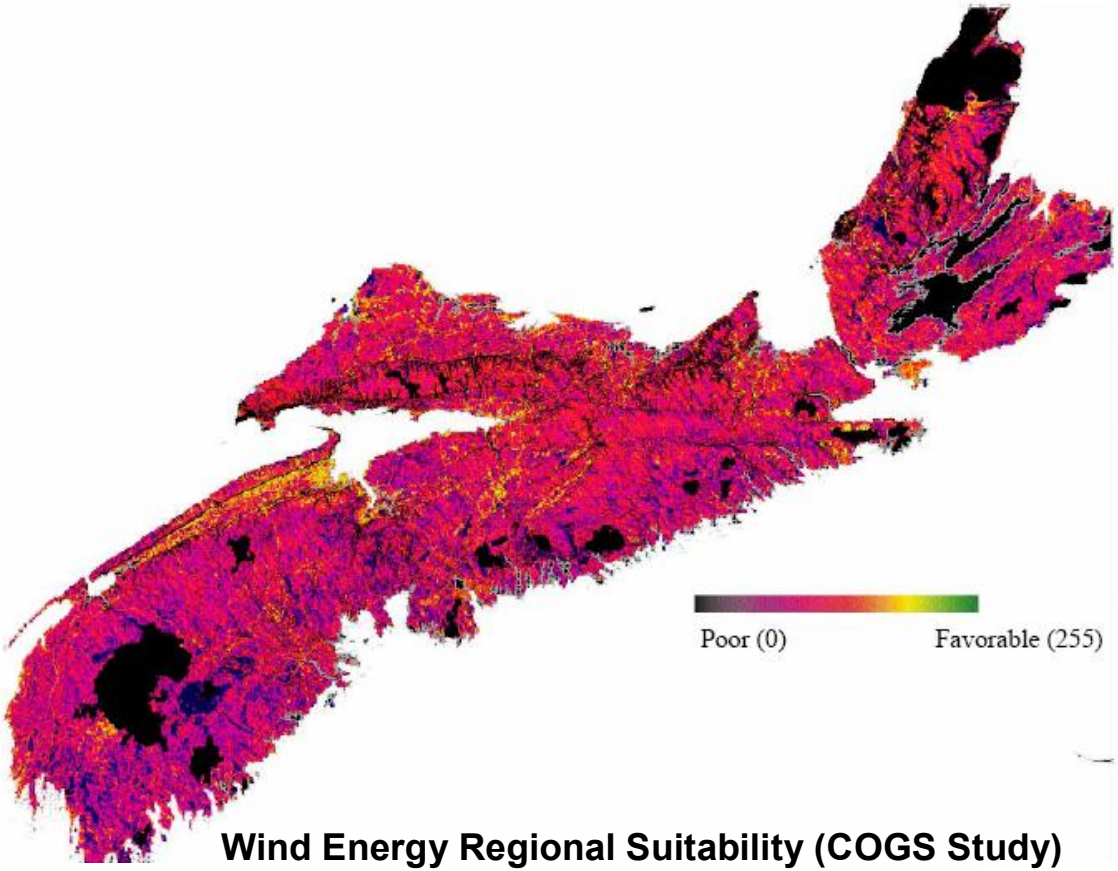
Constraint Mapping Exercise:

Nova Scotia Wind Energy Assessment

Constraints

- Wind speed
- Surface roughness
- Elevation
- Slope
- Aspect
- Protected areas
- Distance from roads
- Distance from power lines



Wind Energy Regional Suitability (COGS Study)

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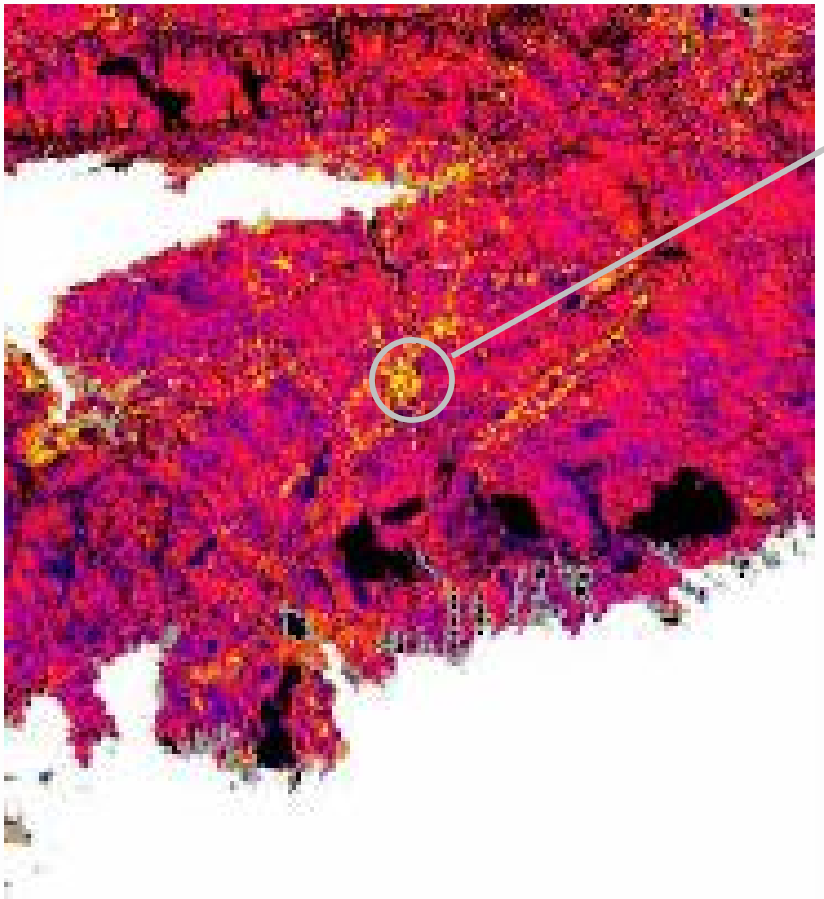
Stream A:
Constraint Mapping Exercise



Characteristics of this site are:

Strong winds, fairly flat, high elevation, not within a conservation area, no endangered species known, it is served by powerlines…

But it is adjacent to a residential area, the current zoning is not favorable, it is considered culturally significant, and it is a major recreational area.

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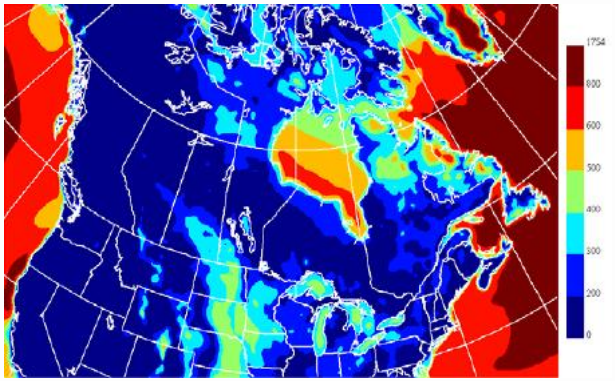
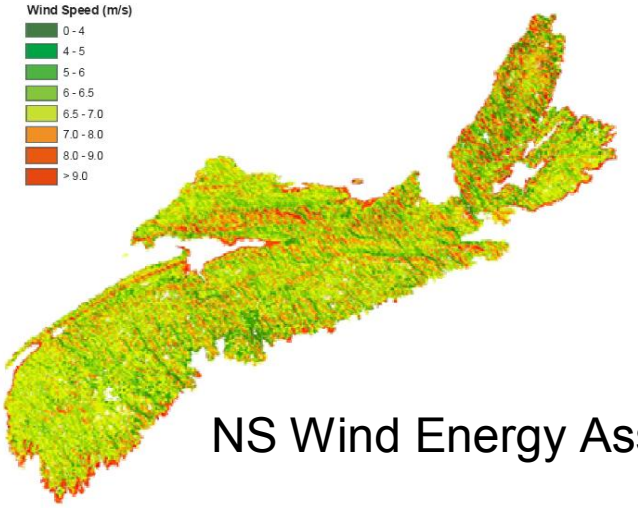
Stream A:
Constraint Mapping Exercise

… a word about wind data…



Canadian Wind Atlas



NS Wind Energy Assessment

Environment Canada's Weather Stations:

Bedford, Halifax Int. Airport,
Shearwater, McNabs Island

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Stream B:
Regulatory Recommendations

General Methodology:

1. Analysis of Potential Impacts
2. Review of Current HRM Regulations
3. Review of Regulations from other Jurisdictions (other Municipalities, as well as other levels of government)
4. Regulatory Recommendations
5. Financing & Partnership Opportunities

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Stream B:

Regulatory Recommendations

- What are the perceived and proven impacts of wind generation projects?
- Which of these impacts are important concerns given today's technology etc?
- Which of these impacts fall within the domain of municipal regulations?
- What is already being done to regulate the impacts?
- Are any new regulations necessary?
- What should the new regulations be?

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Stream B:
Regulatory Recommendations

Potential Impacts

- Visual impacts
- Birds and bats
- Shadow flicker
- Ice throw
- Noise
- Radio frequency
- Television signals
- Aviation
- Human safety
- Tower collapse
- Blade failure
- Fire damage
- Oil spills
- Traffic
- Construction
- Decommissioning

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Stream B:
Regulatory Recommendations

Approval Requirement	Departments or Agencies Involved	Trigger for review
FEDERAL		
1. Screening in accordance with the requirements of the *Canadian Environmental Assessment Act*	Canadian Environmental Assessment Agency Natural Resources Canada (Responsible Authority (RA)) Fisheries and Oceans Canada as RA to be confirmed Environment Canada Transport Canada	Construction on Federal land Application for federal Wind Power Production Incentive Possible effect on Navigable waterways

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Stream B:
Regulatory Recommendations

2. *Fisheries Act* subsection 35(2) authorization	Fisheries and Oceans Canada	Possible effect on fished waters
3. Blasting Permit near fisheries	Environment Canada	Possible effect on fished waters
4. *Navigable Waters Protection Act* permit	Transport Canada	Possible effect on Navigable waterways
5. Lighting scheme	Transport Canada	Any structure of taller than 90m above ground level (AGL) but below 150 m AGL
6. Aeronautical safety	NAV Canada	Any structure of taller than 90m AGL but below 150 m AGL

Provincial:

- Environmental Assessment Regulations under the *Nova Scotia Environment Act*
- *Nova Scotia Endangered Species Act*

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Stream B:
Regulatory Recommendations

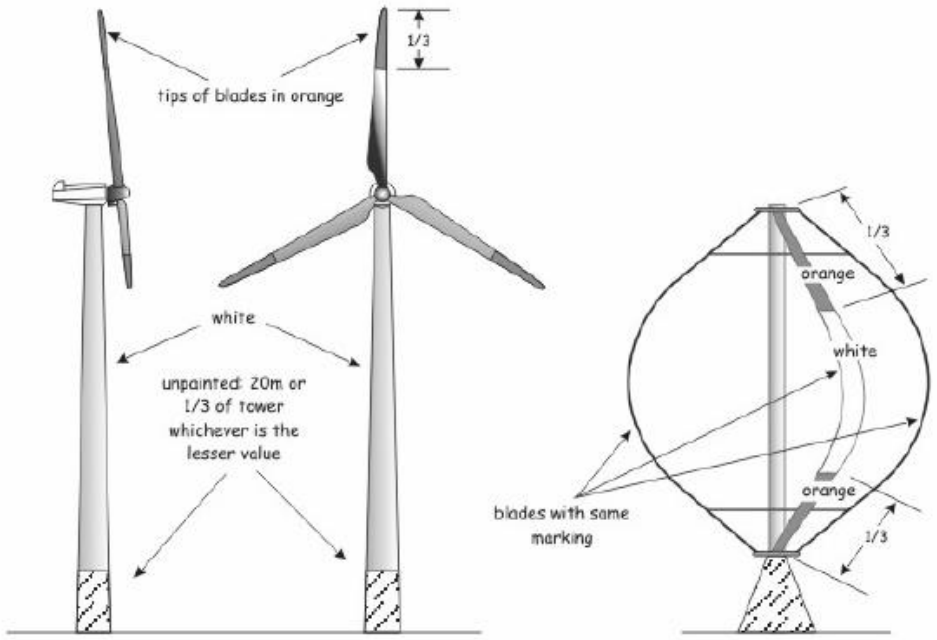

Figure 12-1: Marking of single windturbines
(less than 150m height)

Transport Canada Windfarm Marking and Lighting Guidelines

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Stream B:
Regulatory Recommendations

Wind farm in Pincher Creek, Alberta
Source: Vision Quest Windelectric Inc.

Wind farm in Pubnico, Nova Scotia
Source: Chronicle Herald

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Stream B:

Regulatory Recommendations

Financing and Partnerships

- Wind Power Production Incentive (WPPI)
- Green Municipal Fund
- Renewable Energy Deployment Initiative (REDI)
- Canadian Renewable and Conservation Expenses (CRCE)

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Some Questions…

- In your opinion, what are the largest social and political constraints or impacts for wind development?
- What are the main physical and environmental constraints or impacts?

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Some Questions…

- In your experience what are the municipal regulatory barriers, including specific bylaws or types of bylaws, that enable or disable wind development?
- Have you heard examples of what other municipalities are doing to facilitate wind generation projects?

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Some More Questions…

- Are you aware of upcoming changes in the Federal and/or Provincial regulations that might affect wind energy development?
- It has been suggested that there is a need for harmonization of Federal, Provincial and Municipal regulations in this domain. What are your thoughts?

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Some Questions…

- What is your perception of the potential for wind energy in HRM?
- Do you have or know of any local wind data or observations that you might be willing to share for the purposes of the HRM Wind Energy Master Plan project?

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Thank you.

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