

## South Canoe Wind Project: Environmental Fact Sheet

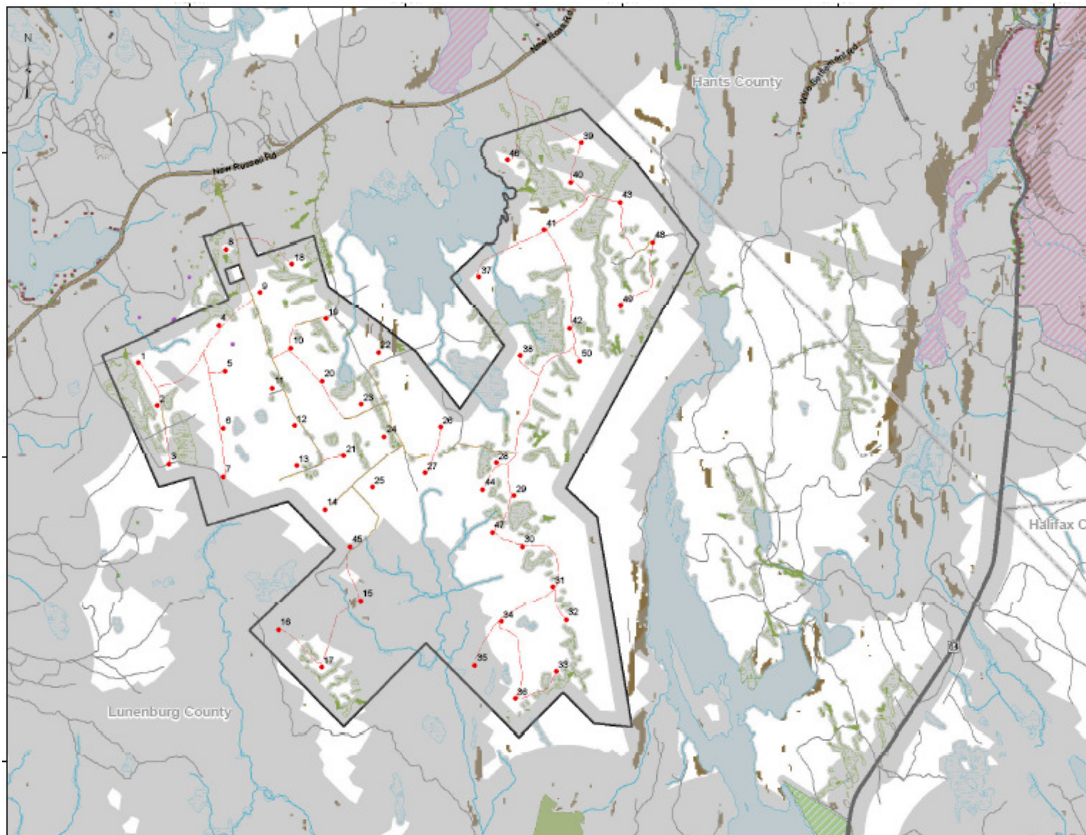
### Background

The South Canoe Wind Project received Environmental Approval with Conditions on July 13th, 2012. South Canoe is a 102 MW wind energy project located in Lunenburg County, Nova Scotia. This overview provides a quick look at the results of the Environmental Assessment and lists future activities to be undertaken to ensure the project meets environmental best practices and standards. The full environmental assessment can be found at:

<http://www.gov.ns.ca/nse/ea/south-canoe-wind-power-project.asp>.

As shown in the map below the project site sits to the South of New Russell Road and to the West of Highway 14. Turbine locations were chosen to optimize energy yield while considering the following buffers:

- 30 m buffer around wetlands, water bodies and watercourses
- 30 m buffer around rare plant species
- 165 m setback from property lines
- 200 m setback from public roads
- 1200 m setback from occupied dwellings, or residence
- Minimum 360 m setback from other turbines to minimize wake loss and turbulence



Studies monitoring the natural environment, economic impacts and health impacts were completed. These studies included:

Climate and Air Quality	Socio-Economic Study
Geology and Hydrogeology	Human Health
Freshwater Habitats	Radar/Radio Interference
Plant Studies	Archaeology Study
Wetland Studies	Visual Impact Study
Habitat Identification	Public Consultation
Terrestrial Fauna	Bat Study
Bird Studies	Sound Study

### Climate and Air Quality

- Air Emissions from South Canoe Project will be negligible.
- During the construction phase a mitigation plan will be established to reduce air emissions including dust control.
- The mitigation plan will be part of the project's Environmental Protection Plan to be approved by Nova Scotia Environment.

### Geology/Hydrogeology

- The majority of the site is overlain with a silty compact till material.
- Residential wells are at least 1.2 km from any turbine location.
- An erosion and sedimentation mitigation program will be established as part of the Environmental Protection Plan.

### Freshwater Habitats

- All water bodies on the project site have been assumed to be fish bearing for the purpose of environmental compliance.
- Turbine pads will exist a minimum of 30 metres from any water body.
- An Environmental Protection Plan will be developed for the Project, which will include provisions for an erosion and sediment control plan, as well as a spill contingency plan.

### Habitat Identification

- Vegetation on the project site is a mixed wood forest which includes red spruce, eastern hemlock, and white pine.
- American beech, sugar maple, and red oak are found on hilltops and exposed slopes.

Habitat Type	Percent Cover
Softwood	62.4%
Harvested Area	10.9%
Unclassified Forest	10.26%
Barren	7.9%

<b>Wetland</b>	3.55%
<b>Mixed Wood</b>	3.4%
<b>Hardwood</b>	<1%
<b>Water Body</b>	<1%
<b>Dead Stand</b>	<1%

### Wetland Studies

- Wetland identification on the project site was undertaken in Fall 2011 with a more targeted program being undertaken in August/September 2012.
- All turbine locations located within 30 m of the tip of a turbine blade from a wetland must be approved by NSE.
- Existing logging roads will be used where possible.
- An Environmental Protection Plan will be developed and approved by NSE.

### Terrestrial Vegetation

- Impacts to vegetation will be minimized by using existing logging roads to the extent possible.
- Multiple field surveys have been undertaken which have resulted in the identification of plant species on the project site.
- 1 NS DNR Red Listed Species was identified on the project site (Southern Twayblade)
- Sensitive areas on the project site will be avoided.

### Terrestrial Fauna

- Mammals observed at the project site are listed in the table below:

<b>Mammal</b>	<b>NS Department of Natural Resources Status</b>
American Beaver	<b>Green</b>
American Black Bear	<b>Green</b>
American Mink	<b>Green</b>
American Porcupine	<b>Green</b>
American Red Squirrel	<b>Green</b>
Bobcat	<b>Green</b>
Coyote	<b>Green</b>
Eastern Chipmunk	<b>Green</b>
Fisher	<b>Yellow</b>
Raccoon	<b>Green</b>
Red Fox	<b>Green</b>
Snowshoe Hare	<b>Green</b>
White Tailed Deer	<b>Green</b>

- Nova Scotia Environment requires that a monitoring program be developed for Mainland Moose and Canada Lynx in consultation with Nova Scotia Department of Natural Resources.
- Effects on mammals are considered very low but are most prevalent during the construction phase of the project.
- Habitat disturbance will be minimized to the extent possible.
- No priority amphibian or reptile species were identified on the project site.

### **Bird and Bat Studies**

- Extensive bird and bat surveys were conducted on the project site.
- Bird Studies included: Breeding Bird Survey (Spring), Spring and Fall Migratory Bird Survey, Nocturnal Survey and Acoustic Monitoring, and a Winter Bird Survey.
- Bat Study included Acoustic Monitoring.
- Clearing of the site will occur outside breeding and nesting season unless otherwise authorized by the Department of Environment.
- An Environmental Protection Plan will be established to be approved by NS Environment.

### **Public Consultation**

- Public consultation has been ongoing.
- Residents located within 3 km of the project have been contacted by phone.
- A Community Liaison Committee has been formed and has been meeting regularly.
- Newsletters have been circulated including information on various project milestones.
- 2 Open Houses have been held in Vaughan and Chester respectively.
- Various meetings have occurred between the project team and local stakeholders. (See full Environmental Assessment for details).

### **Human Health**

- A shadow flicker study was undertaken to assess the effect on residences and other buildings within 2 km of the nearest turbine location.
- The shadow flicker study showed that all buildings were below the allowable level of shadow flicker of no more than 30 minutes on the worst day and no more than 30 hours per year.
- Effects from Electromagnetic Fields (EMF) from wind developments are not significant. The largest emitter of EMF at a wind project is the transmission line which results in emissions 100 times less than a hair dryer at a distance of 40 metres.
- Ice throw can occur when ice accumulates on turbine blades and is subsequently thrown off.
- Distances from ice throw rarely exceed 100 m. Safety precautions will be followed on the project site and the turbine will shut off if ice is detected.

## **Socio-Economic Study**

- The project cost is approximately \$200 Million with many benefits remaining in the local communities.
- The project will employ approximately 100 people during the construction phase and 4-5 people during the operations phase.
- The project will result in a significant increase in tax revenue to the Municipality of the District of Chester.
- Local spin-offs will occur as a result of the increase in economic activity, particularly during the construction phase.

## **RADAR/Radio Interference**

- An Electric Magnetic Interference Study was undertaken.
- Appropriate agencies have been notified of the project to ensure interference is mitigated.
- Relevant agencies include NAVCan, Department of National Defence, RCMP, the Department of Environment, and Nova Scotia Power.

## **Archaeology Study**

- A desktop archaeology study was completed with a field study to follow.
- Desktop study concluded there is low potential for archaeological resources on the site in general.
- An archaeological field study will be undertaken to confirm results of desktop study.

## **Visual Impact Study**

- A visual impact study was completed as part of the Environmental Assessment.
- Photomontages from this assessment can be found at:  
<http://www.gov.ns.ca/nse/ea/south-cano-wind-power-project.asp>
- In general it was noted that the 1.2 km set back in combination with the forested area helps reduce the visual impact of the project.
- A revised visual assessment will be undertaken when site layout is finalized.

## **Sound Study**

- Acoustic modeling was undertaken to determine what effects the sound from the turbines will have on nearby receptors (buildings, schools, homes, etc...).
- Health Canada's guidelines recommend that sound at receptors not exceed 45 dBA.
- NS Department of Environment require that sound at a receptor not exceed 40 dBA.
- Specific mitigative measures will be created in relation to the acoustic environment. These will include provisions for post-construction monitoring and complaint resolution to be approved by NS Environment.

## **Next Steps (Fall 2012)**

- An Environmental Protection Plan will be developed to be approved by Department of Environment.
- Further field studies will be undertaken with regard to wetlands and water crossings.
- Mi'kmaq Ecological Knowledge Study will be completed.
- Environmental monitoring programs will be established in consultation with Department of Natural Resources for Mainland Moose, Canada Lynx, birds, and bats.
- Erosion and sedimentation control plan will be developed and included within Environmental Protection Plan.
- Archaeology field study will be completed.
- Sound Studies, Visual Impact assessment and shadow flicker analyses will be repeated once layout is finalized.
- Lighting Plan will be developed in consultation with Canadian Wildlife Service and Transport Canada.