



WIND POWER  
PROJECT

# Welcome



*Kent Breeze Wind Power Project*



## We Are Here To:

- Introduce Suncor Energy Products Inc. to the community
- Present the proposed Project and provide a status update
- Provide an overview of the Renewable Energy Approval (REA) process
- Answer questions about the Project and outline next steps
- Receive the community's input and feedback for consideration by the Project Team in Project design and the REA process



*Enercon Turbine at Ripley*

## Who Is Suncor?

- Suncor is one of the largest players in renewable energy in Canada (wind and biofuels)
- With increased demand for energy in this country, we support energy diversification and believe that renewable energy plays an important role in helping us to address air and water quality and provide solutions for greenhouse gas reductions
- We are committed to a “parallel path” for energy development, we build today's oil sands, conventional oil and natural gas resources while also bringing along new sources of energy for tomorrow
- We are dedicated to the safe and responsible development of renewable energy generation and have to date constructed 255 MW of wind power facilities across Canada – AB, SK, ON



Ripley Wind Power Project



## The Business of Wind Power

- Suncor's current renewable energy projects (wind and biofuels) are expected to displace the equivalent of nearly 1 million tonnes of carbon dioxide yearly
- This is equal to the annual tailpipe emissions of approximately 200,000 cars
- Suncor's 6 producing wind farms are expected to generate enough electricity to power 100,000 homes

Project Name	Commissioning Date	Location	Capacity	Number of Turbines	Technology
SunBridge Wind Power Project	2002	Saskatchewan	11MW	17	660 kW Vestas turbines
Magrath Wind Power Project	2004	Alberta	30MW	20	1.5 MW General Electric turbines
Chin Chute Wind Power Project	2006	Alberta	30MW	20	1.5 MW General Electric turbines
Ripley Wind Power Project	2007	Ontario	76MW	38	2 MW Enercon turbines
Kent Breeze Wind Power Project	2011	Ontario	20MW	8	2.5 MW General Electric turbines
Wintering Hills Wind Power Project	2011	Alberta	88MW	55	1.6 MW General Electric turbines



## Suncor Projects Under Development in Ontario

Project Name	Contract	Location	Capacity
Adelaide Wind Power Project	Feed-In-Tariff (FIT)	Middlesex County	Up to 40 MW
Camlachie Wind Power Project	No	Lambton County	Up to 20 MW
Cedar Point Wind Power Project	Phase I	Lambton County	Up to 50 MW
	Phase II	Feed-In-Tariff (FIT)	Lambton County



Recently erected wind turbine at Kent Breeze Wind Power Project

- Suncor has been developing three projects in Ontario
- Adelaide and Cedar Point Phase II are currently the only projects that have received a contract to deliver electricity to the Province
- Suncor continues to develop the Camlachie and Cedar Point Phase I project however contracts have not been awarded for these projects at this time















## Wind Turbine Details

The wind turbine selected is the Siemens SWT 2.3-113:

- Number of turbines: Maximum 46
- Maximum nameplate capacity: 100 MW
- Maximum hub height: 99.5 m
- Maximum blade length: 55 m
- Maximum tower height (both hub and blade length): 156 m
- Maximum rotor diameter: 113 m
- Rotor speed range: 6-13 rpm



This Project will create new jobs in Ontario. It is currently envisioned that the Project will generate new jobs for Ontario residents by:

- Using Siemens blades manufactured in Tillsonburg, Ontario (138 blades required);
- Steel plates used for towers will be formed in an Ontario foundry;
- Procurement of tower sections manufactured in Ontario (up to 46 towers);
- Procurement of heat exchangers manufactured in Ontario;
- Using substation step-up transformer wound in Ontario;
- Hiring construction labour who are residents of Ontario;
- Hiring consultants, accountants, and legal counsel who are residents of Ontario.







## Municipal Control

Key Permit / Authorization	Rationale	Timing
Municipal Consultation Form	To be provided to each municipality in which the project is located. To bring forward issues related to municipal serving and infrastructure that the proponent must consider	30 days before the first Public Meeting
Municipal Review of Draft Renewable Energy Approval (REA) Reports	Provide additional time for the municipality to review the REA documents and provide comment	90 days before the final Public Meeting
Municipal Consent, Work within the municipal R.O.W	Required for works in municipal road allowances	Before construction
Road Cut Permit	May be required for access roads from county roads or works to county roads	Before construction
Pre-Condition Road Survey	Assessment of pre-construction road conditions for engineering staff	Before construction
Building Permit	Compliance with building codes	Before construction
Entrance Permit	Entrance from county roads	Before construction
Transportation Plan	Adherence to road safety and suitability	Before construction
Additional Plans related to general engineering (e.g. siltation control, lot grading, plan of services, storm water, transportation, etc.)	Required supporting information/plans	Before construction
Municipal Road Right of Way Requisition Agreement	Establish requirements to return roads to agreed upon state	Before construction





## Renewable Energy Approval Process Setbacks

- A key component of the Renewable Energy Approval (REA) process is the establishment of common setbacks for all renewable energy facilities in the Province
- Where Project related infrastructure will be located within the setback distances for environmental features, additional analysis (i.e., Environmental Impact Study) will be provided in the REA application
- Key setbacks that will be applied throughout the design of the Project are as follows:

Feature	Setback Distance
Non-participating dwelling, school, etc.	40dBA and minimum 550 m (from centre of turbine base)
Public road right-of-way and railway right-of-way	Turbine blade length + 10 m (from centre of turbine base)
Property line	Turbine height (excluding blades) (from centre of turbine base)
Provincially significant wetland (PSW)	120 m (development prohibited within PSW)
Provincially significant Area of Natural and Scientific Interest (Earth Science)	50 m
Provincially significant Area of Natural and Scientific Interest (Life Science)	120 m
Significant valleyland	120 m
Significant woodland	120 m
Significant wildlife habitat	120 m
Lake or a permanent or intermittent stream	120 m from the average annual high water mark
Seepage area	120 m



# Turbine Setback Distances

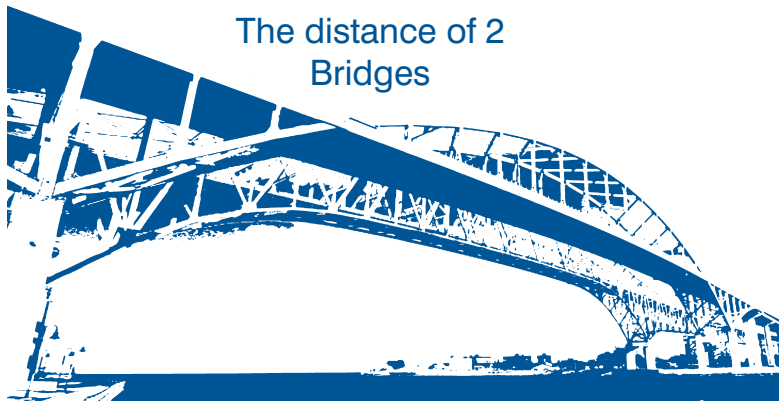
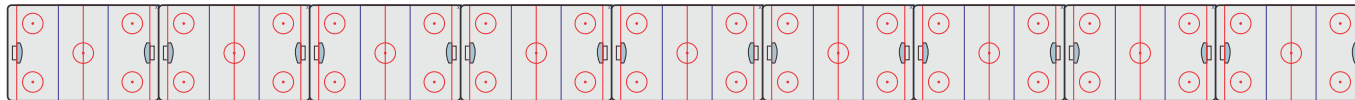


*\*The average minimum distance to a non-participating receptor is 771m.*

Minimum Distance from a Wind Turbine to a house 550m



550m

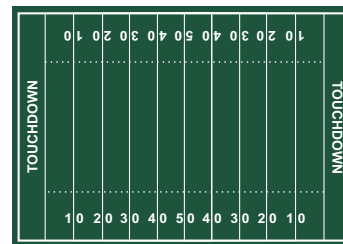


The distance of 2 Bridges

281 m

Bluewater Bridge 281m

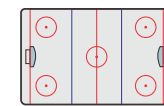
The distance of more than 4 CFL Football Field's



150 yards

Football Field 137m

The distance of more than 9 NHL Hockey Rink's



200ft

Hockey Rink 60m

\*Scale is Approximate.





# Natural Heritage Assessment - Construction

Environmental Feature	Potential Effect	Mitigation Strategy	Monitoring Plan and Contingency Measures
<p><b>Significant Wetlands</b></p> <ul style="list-style-type: none"> <li>• Indirect impacts such as dust generation, sedimentation, and erosion from construction activities including excavation, drilling, and use of dirt roads.</li> <li>• Change in surface water drainage to wetlands as a result of Project infrastructure (access roads) or site grading/compaction.</li> <li>• Loss of wetland habitat function.</li> </ul>	<ul style="list-style-type: none"> <li>• Project Location is located outside of wetland boundaries thus there will be no direct loss of wetland habitat.</li> <li>• Construction contractor to ensure no work occurs outside of the limits of construction envelope.</li> <li>• Minimize alteration to surface water drainage patterns and installation of culverts as required to maintain flows.</li> <li>• Stockpiling of materials will not occur within 30 m of wetland boundary.</li> <li>• If crossing of a wetland is required by a collector line, horizontal directional drill (HDD) under the wetland boundary.</li> <li>• Erosion control devices will be installed at the HDD location and drill cuttings will be collected and removed from the site for disposal in an approved and appropriate manner.</li> <li>• No clearing of trees in or near any wetlands that could result in wetland desiccation or drying.</li> <li>• Silt barriers (e.g., fencing) will be erected along the edge of wetland boundary.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of wetlands.</li> <li>• Inspection of the erosion and sediment controls after each significant rainfall event or weekly, whichever is more frequent.</li> <li>• Inspection of culverts and surface drainage patterns to wetlands. Grading and/or other surface water flow mitigation measures to be implemented if proposed mitigation measures do not function properly.</li> <li>• If siltation to a wetland occurs, related construction activities should cease immediately until the situation is rectified.</li> </ul>	
<p><b>Significant Woodlands</b></p> <ul style="list-style-type: none"> <li>• Indirect impacts such as dust generation, sedimentation, and erosion from construction activities including excavation, drilling, and use of dirt roads.</li> <li>• Temporary disturbance to woodland habitat from construction related noise.</li> <li>• Minimal pruning of trees in order to transport turbine components into proposed turbine locations.</li> <li>• Removal of trees to accommodate the installation and use of the transmission line.</li> </ul>	<ul style="list-style-type: none"> <li>• Install components in previously cleared areas.</li> <li>• Where development is planned within a woodland boundary, clearing to take place along outer edges of the woodlot to prevent fragmentation</li> <li>• To the extent practical, pruning/tree removal would be avoided during leaf fall, typically between September to November and be completed prior to or after the breeding season for migratory birds (May 1 to July 31).</li> <li>• As appropriate and prior to construction, the limits of tree pruning/clearing would be marked in the field. The Construction Contractor would ensure that no construction disturbance occurs beyond the marked limits.</li> <li>• Cleared trees would be provided to the landowner for personal use and/or sale in an attempt to minimize waste.</li> <li>• If required, replanting of native species and restoration of damaged areas with native species.</li> <li>• Adherence to the principles of any tree cutting bylaws such as replacement requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of woodland vegetation.</li> <li>• Inspection of the erosion and sediment controls after each significant rainfall event or weekly, whichever is more frequent.</li> <li>• Should pruning/removal be required during the breeding bird season, prior to construction, surveys will be undertaken to identify the presence/absence of nesting birds. If a nest is located, a designated buffer would be marked off within which no construction activity would be allowed while the nest is active. The radius of the buffer width ranges from 5-60 m depending on the species.</li> <li>• One year post pruning a certified arborist would undertake an evaluation of the health of the pruned trees.</li> <li>• Post-construction monitoring to ensure re-vegetated areas are functioning properly. Additional replanting/restoration in the event that previous works were unsuccessful.</li> </ul>	
<p><b>Significant Wildlife Habitat</b> (includes birds, bats, amphibians and other wildlife)</p> <ul style="list-style-type: none"> <li>• Indirect impacts such as dust generation, sedimentation, and erosion from construction activities including excavation, drilling, and use of dirt roads.</li> <li>• Amphibian road mortality.</li> <li>• Disturbance/removal to vegetation within Significant Wildlife Habitat.</li> <li>• Temporary disturbance to Significant Wildlife Habitat from construction noise and activities.</li> <li>• Fragmentation of habitat.</li> <li>• Changes in surface water patterns adversely affecting Significant Wildlife Habitat.</li> </ul>	<ul style="list-style-type: none"> <li>• All new access roads are proposed previously cleared agricultural lands.</li> <li>• Minimize construction activities adjacent to significant wildlife habitat during sensitive periods (i.e. the breeding season).</li> <li>• Where development is planned within significant wildlife habitat, clearing to take place along outer edges of the feature to prevent/minimize fragmentation.</li> <li>• Minimal alteration to surface water drainage patterns is proposed and culverts will be installed as required to maintain existing flows.</li> <li>• Restriction of construction activities primarily to daytime hours when breeding amphibian movement is less likely.</li> <li>• Vehicle speeds should be restricted to 30 km/h or less on access roads.</li> <li>• Silt barriers (e.g., fencing) will be erected along the edge of features when construction is proposed adjacent to the feature.</li> </ul>	<ul style="list-style-type: none"> <li>• Undertake studies to determine the actual use of the habitat prior to any construction activities occurring within 120 m of the habitat (species dependent, see NHA/EIS). Results to be provided to the MNR.</li> <li>• Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of natural vegetation.</li> </ul>	
<p><b>Vegetation</b> (not considered as part of a significant natural feature)</p> <ul style="list-style-type: none"> <li>• Removal and/or damage as a result of construction activities such as site clearing/grading and component installation.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid vegetated areas in the design of the Project.</li> <li>• As appropriate and prior to construction, the limits of the constructible areas including vegetated areas to be cleared would be marked in the field. The Construction Contractor would ensure that no construction disturbance occurs beyond the marked limits.</li> <li>• Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of natural vegetation.</li> <li>• Replanting of native species when removal is required and restoration of damaged areas with native species.</li> <li>• Adherence to the principles of any tree cutting bylaws including replacement requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Post-construction monitoring to ensure re-vegetated areas are functioning properly. Additional replanting/restoration in the event that previous works were unsuccessful.</li> </ul>	







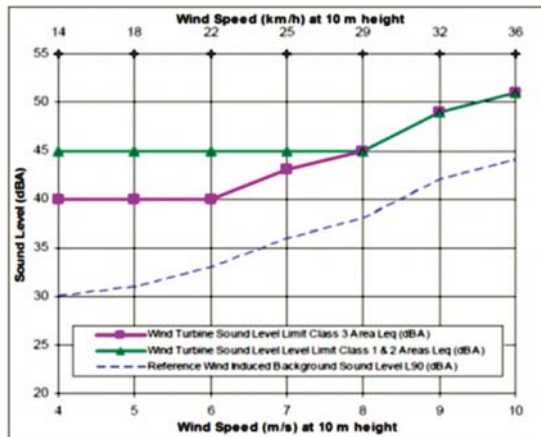
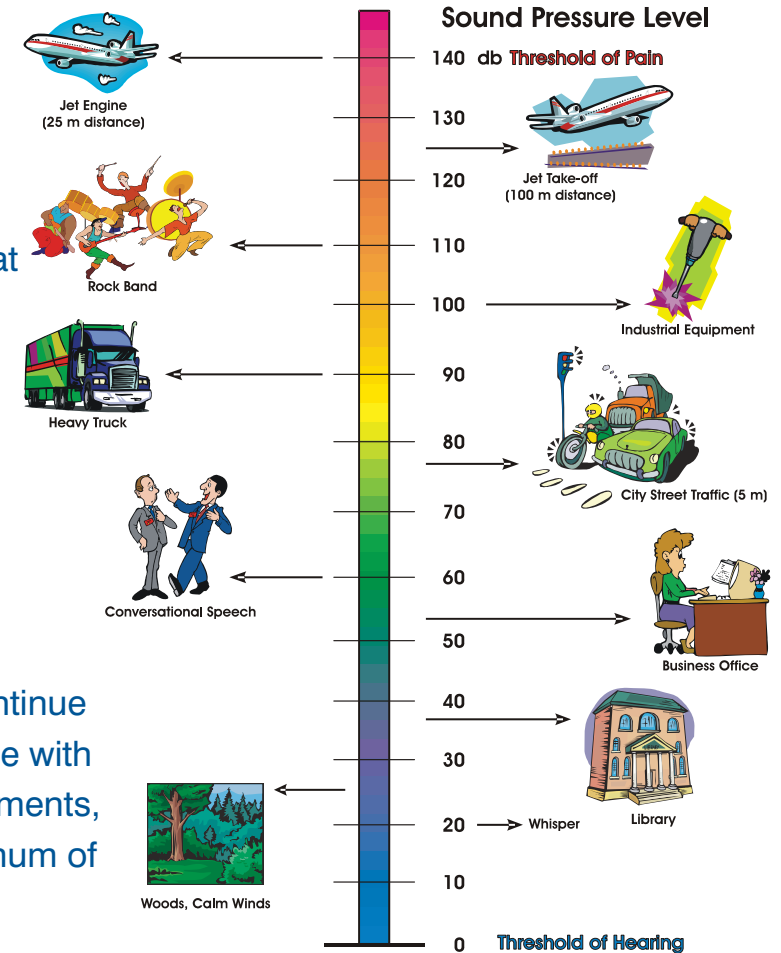




## Typical Sound Levels and Wind Farms

- There are two potential sources of sound typically associated with wind turbines:
  - **Aerodynamic** - blades pass through the air and create a “swishing” sound
  - **Mechanical** – originated from the gearbox and generator that are housed in the nacelle
- A project this size requires a Noise Assessment Report be completed to ensure the project complies with Ministry of Environment requirements
- The Noise Assessment will consider other operational or proposed wind facilities within a 5 km radius of an identified project point of reception

## Common Sounds



Source: Table taken from the Ministry of Environment Noise Guidelines for Wind Farm October 2008.

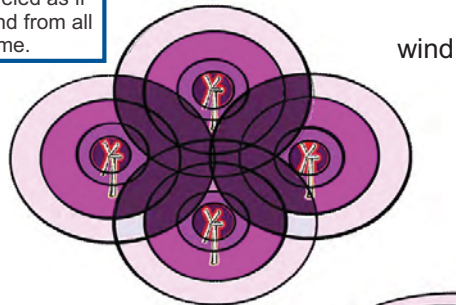
- Turbines have been and will continue to be sited to ensure compliance with Ministry of Environment requirements, including being located a minimum of 550 m from non-participating receptors (residents)
- The Project is located in a Class 3 area, which is defined as “a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic” as per the MOE Noise Guideline

Source: Suncor



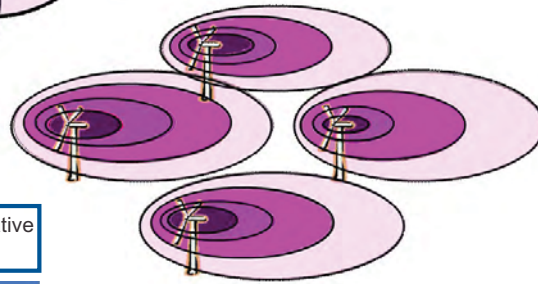
# Sound Propagation, Modeling and Assessment

1. Houses are modeled as if they are downwind from all turbines all the time.

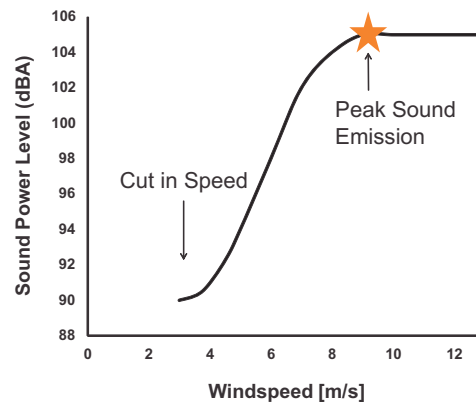
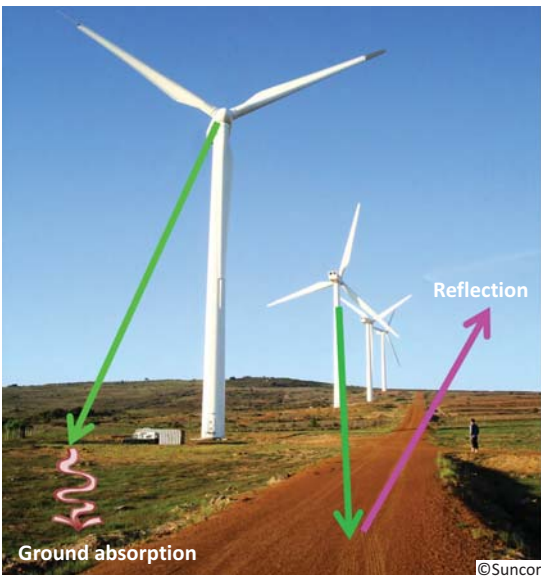


wind

One-directional wind



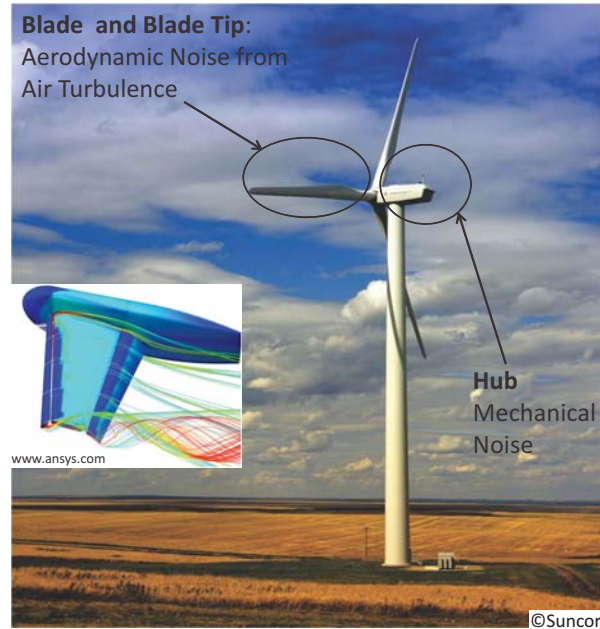
2. Selection of ground conditions should be conservative and based on conditions at the receptor.



## Sound Generation

How Sound is Emitted...

Blade and Blade Tip:  
Aerodynamic Noise from  
Air Turbulence

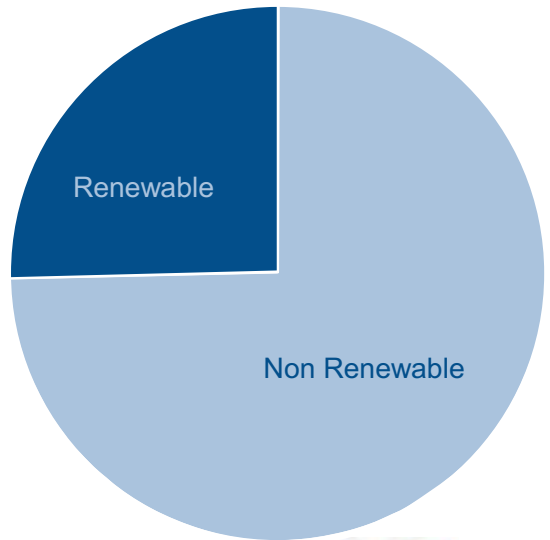




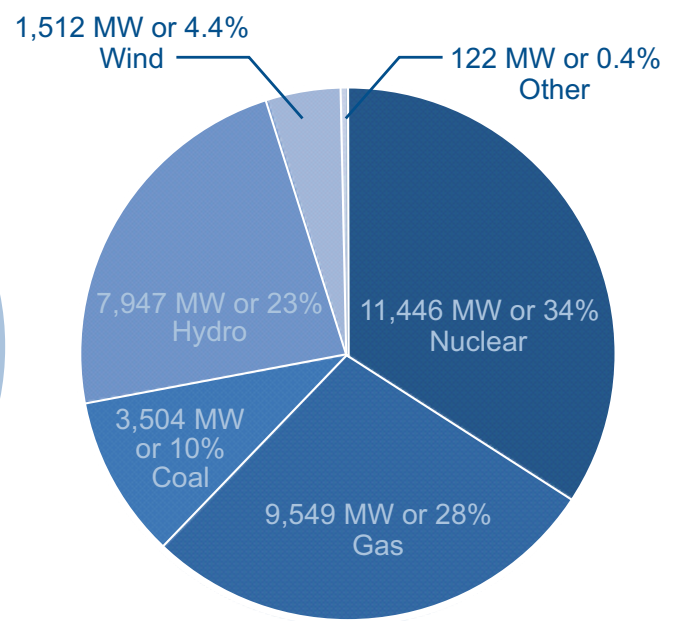


# Ontario Power Supply Mix

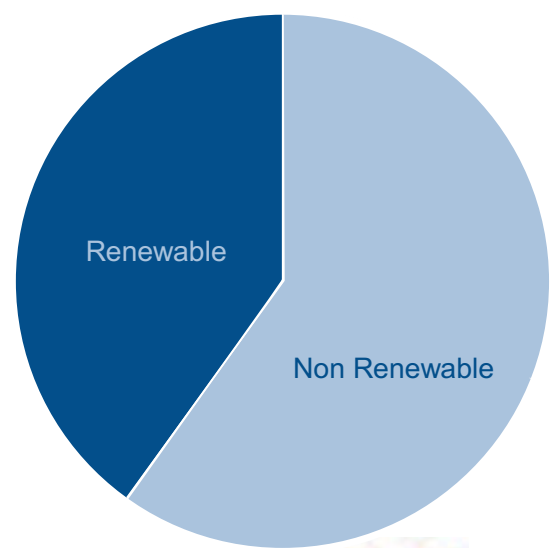
Ontario Installed Supply Capacity\*  
**2009**



Ontario Supply Mix\*\*  
**2012**



Projected Ontario Installed Supply Capacity\*  
**2014**



\* From OPA 15899\_Ontarios\_Renewable\_Energy\_Feed-In\_Tariff\_Program.pdf  
 \*\* based on IESO January 31, 2012 Supply Mix



## Community Benefits

- Job creation
- New local investment
- Secondary source of income for farmers and landowners
- Additional tax payments to local municipalities (for a 100 MW project approximately \$175,000/yr)
- Small project footprint
- Provide a new supply of safe, clean and reliable electricity
- Helps meet Ontario's commitment to renewable energy and phasing out of coal-fired power plants to reduce healthcare costs



*Within the Suncor Cedar Point Wind Power Project Boundary*





## Health and Wind Power

Public health and safety will be considered during all stages of the Project

- Many studies have been conducted world-wide to examine the relationship between wind turbines and possible human health effects
- In Ontario “Ontario doctors, nurses, and other health professionals support energy conservation combined with wind and solar power – to help us move away from coal”

Ontario College of Family Physicians, Registered Nurses Association of Ontario, Canadian Association of Physicians for the Environment, Physicians for Global Survival, the Asthma Society of Canada, and the Lung Association

- In “The Potential Health Impact of Wind Turbines” (May 2010), Ontario's Chief Medical Officer of Health recently examined the scientific literature related to wind turbines and public health, considering potential effects, such as dizziness, headaches, and sleep disturbance. The report concluded that:
  - *“...the scientific evidence available to date does not demonstrate a direct causal link between wind turbine noise and adverse health effects*

*The sound level from wind turbines at common residential setbacks is not sufficient to cause hearing impairment or other direct health effects, although some people may find it annoying”*

- The report also concluded that low frequency sound and infrasound from current generation upwind model turbines are well below the pressure sound levels at which known health effects occur. Further, the report states that there is no scientific evidence to date that vibration from low frequency wind turbine noise causes adverse health effects
- Overall, health and medical agencies agree that sound from wind turbines is not loud enough to cause hearing impairment and is not causally related to adverse effects\*
- Scientists and medical experts around the world continue to publish research in this area. Through our health consultants, Suncor Energy is committed to keeping informed on this issue

\*e.g., Chatham-Kent Public Health Unit, 2008; Minnesota Department of Health, 2009; Australian Government, National Health and Medical Research Council, 2010; Australian Government, 2011, Massachusetts Department of Environmental Protection (MassDEP) and Massachusetts Department of Public Health (MDPH), 2012

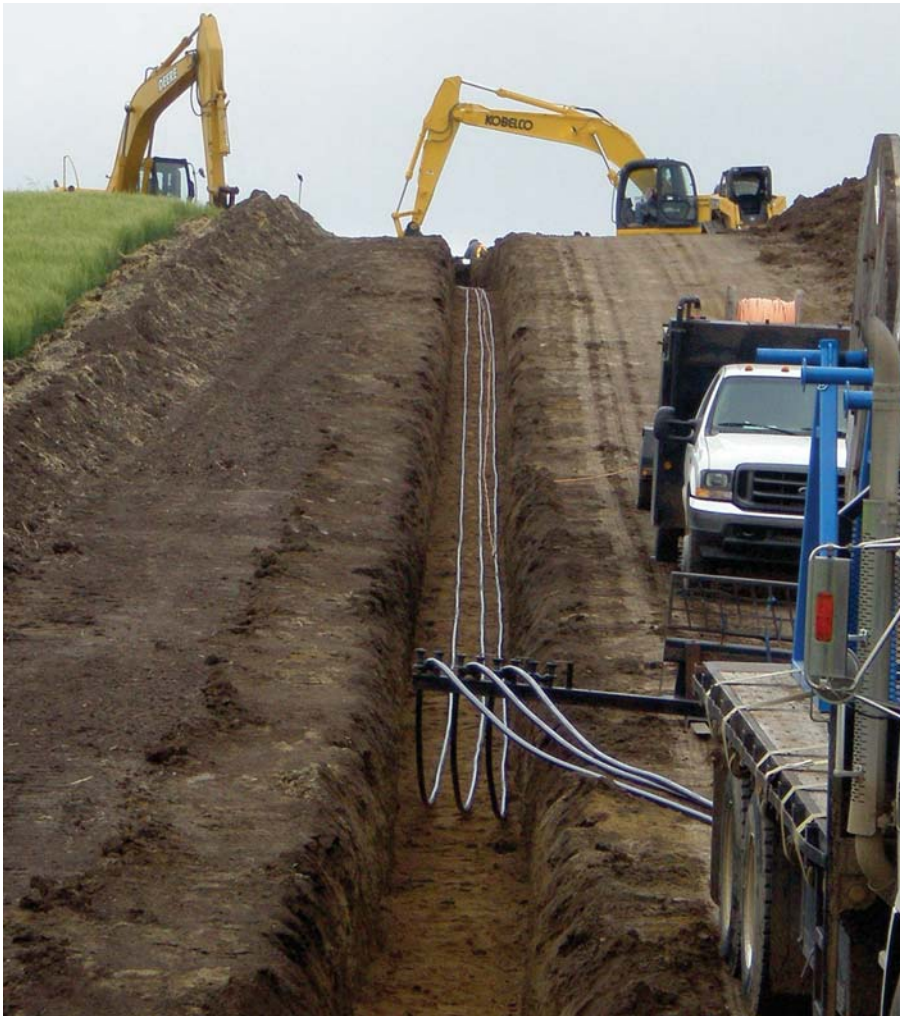








## Construction at Suncor's Wintering Hills Wind Power Project







## **Construction at Suncor's Wintering Hills Wind Power Project**









## Questions and Answers from Public Meetings

During our first Public Meetings we received many comments relating to the Project. Each of these comments were taken into consideration while developing the Draft Site Plan. A response document to public comments is available on the project website ([www.suncor.com/cedarpointwind](http://www.suncor.com/cedarpointwind)) and is also available at the front desk.

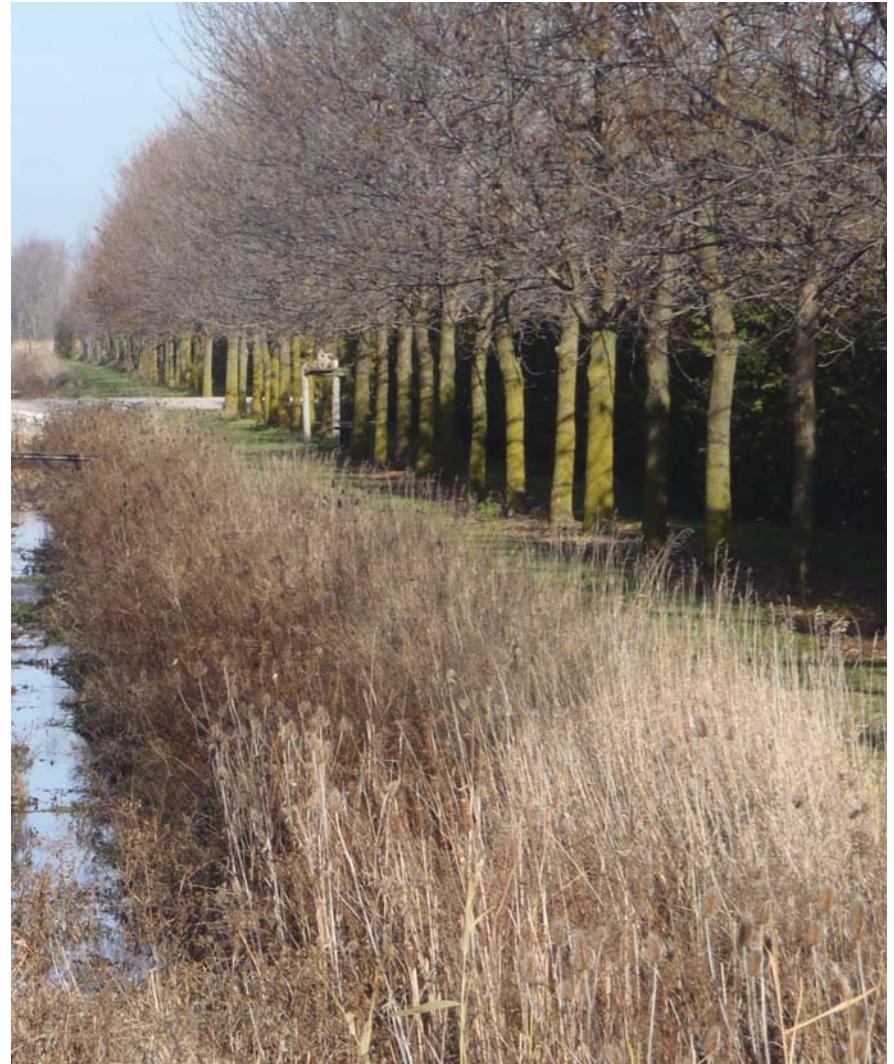
***In order for comments to be documented as part of the REA consultation record, all comments must be received no later than April 5, 2013.***



Within the Suncor Cedar Point Wind Power Project Boundary

## How to have your Questions Answered:

- Ask the Project Team
- Fill out a Comment Card and hand it in or mail it back a postage paid postcard
- Take time to read the information panels around the room
- Review the Studies and Reports available on the tables and on the Project Website
- Visit the Project Website:  
[www.suncor.com/cedarpointwind](http://www.suncor.com/cedarpointwind)
- Send us an email: [cedarpoint@suncor.com](mailto:cedarpoint@suncor.com)
- Give us a call: 1-866-344-0178
- Mail us a letter: Suncor Energy  
P.O. Box 2844, 150 6th Ave SW  
Calgary, AB  
Canada, T2P 3E3



*Within the Suncor Cedar Point Wind Power Project Boundary*



