



SAMSUNG RENEWABLE ENERGY INC.



WELCOME

Grand Renewable Energy Park

Public Meeting

Cayuga Kinsmen Community Centre
5:00pm – 8:00pm





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Thank you for coming. A number of comments and questions were submitted before, during and after our first public meeting in July 2010. We have answered many of your questions and incorporated many your comments into the Draft REA Reports and have endeavored to include responses to the key comments and questions in these display boards.

Please feel free to review the material and approach project staff members if you have any questions.





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Purpose of the Public Meeting

- Present the findings of the Draft REA Reports and demonstrate how public comments have been addressed within the Draft REA Reports.
- Update you on the status of the Project.
- To answer questions regarding the Draft REA Reports and the Project in general.
- To collect your input regarding the Project and present it to the regulatory agencies.





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Who are we?

Samsung C & T, Korea Electric Power Corporation (KEPCO) and Pattern Energy plan to build and operate the world's largest renewable energy cluster in Ontario.

Samsung C&T Corporation (Investment Group and Engineering and Construction Group) was founded in 1938 and is the Mother company of the SAMSUNG Group. Samsung Renewable Energy Inc., affiliate of Samsung C&T Corporation will develop, build and operate the Wind and Solar Power Cluster here in the County of Haldimand with it's partners.

Our partner is: Pattern Energy

Pattern Energy is one of North American's leading independent wind and transmission company. Pattern Energy's goal is to provide their customers with clean, renewable energy, which they seek to achieve by developing, constructing, owning and operating projects.

Samsung Renewable Energy Inc. and Pattern Energy have retained Stantec Consulting Ltd. to undertake the REA process for the Project. Stantec provides professional consulting services in planning, engineering, architecture, interior design, landscape architecture, surveying, environmental sciences, project management, and project economics for infrastructure and facilities projects.





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Project Overview

Wind Energy

- 67 wind turbines and a name plate capacity of 148.6 MW.
- Turbines will be located a minimum of 550 m from non-participating receptors.

Solar Energy

- Approximately 425,000 solar photovoltaic panels and a name plate capacity of 100 MW.
- Solar photovoltaic panels will be mounted on ground-based racking systems.
- Located on approximately 900 acres of land.

Turbine Description – Siemens SWT-2.3	
Cut-in wind speed (m/s)	3-5
Cut-out wind speed (m/s)	25
Number of rotor blades	3 (49 m long)
Rotor diameter (m)	101
Rotor speed (rpm)	6-16
Hub height (m)	100
Tip height (m)	149

Common Elements

- Project will also include electrical collection lines, an approximate 20 km long 230 kV transmission line, an electrical substation, operations and maintenance building, two transition stations, interconnect station, and other ancillary facilities such as access roads.





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Building the Economy

Key Questions: How many jobs will be created for the Project? What are the benefits to Haldimand County?

Creates Jobs

- The Project will create local jobs and economic development from construction and operation activities. On average, it is expected that up to 305 persons may be directly employed during the construction period.
- During operations, it is expected that up to 12 operation and maintenance staff would be employed to maintain and operate the Project.

Supports Farmers

- Lease payments for farmers and landowners would benefit the local agricultural industry and promote economic stability in the region.

Enhances Community

- The Project would provide taxes to support local services and continue to position the County as a leader in green energy.
- Renewable energy projects can be marketed as a tourism feature which can result in additional economic benefits to the County.

Samsung Renewable Energy Inc. and its partners are constructing four manufacturing facilities to produce wind towers (Windsor) and blades (Tillsonburg), as well as solar modules (London) and inverters (Toronto) for their projects in Ontario. These facilities will also export Ontario-made products around the world - placing Ontario at the forefront of the global shift to clean power. Samsung Renewable Energy Inc. and its partners will create 16,000 direct and indirect jobs as a result of their investment





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Grand Renewable Energy Park



Creating a Layout

Question: What factors are considered for determining a layout?

Numerous factors are considered when determining a project layout including:

- regulatory requirements (i.e. setbacks and sound modeling);
- natural and socio-economic features;
- archaeological and heritage features;
- and,
- and land options (i.e. land that has been leased to Samsung for project development).

- One of the most significant factors is the minimum 550 m setback from turbines to non-participating receptors.



Feature	Setback Distance	Study Alternative When Within Setback
Non-participating receptor	550 m (from turbine base)	An Environmental Noise Impact Assessment will be completed for the Project according to MOE Noise Guidelines.
Public road right-of-way and railway right-of-way	Turbine blade length + 10 m (from turbine base)	N/A
Property line	Turbine height (excluding blades) (from turbine base)	Does not apply to parcels of land if the abutting parcel of land is a participant in the Project or if it is demonstrated that the wind turbine will not result in adverse impacts on nearby business, infrastructure, properties or land use activities.
Provincially significant southern wetland	120 m	Development not permitted within feature. Development and site alteration may be possible within setback area; EIS required.
Provincially significant ANSI (Earth Science)	50 m	Development and site alteration may be possible within natural feature and setback area; EIS required.
Provincially significant ANSI (Life Science)	120 m	
Significant valleyland	120 m	
Significant woodland	120 m	
Significant wildlife habitat	120 m	
Lake	120 m from the average annual high water mark	Development and site alteration may be possible within setback area; additional report required. No turbine, solar panel or transformer located within a lake or within 30 m of the average annual high water mark.
Permanent or intermittent stream	120 m from the average annual high water mark	Development and site alteration may be possible within setback area; additional report required. No turbine, solar panel or transformer located within a permanent or intermittent stream or within 30 m of the average annual high water mark.
Seepage area	120 m	Development and site alteration may be possible within setback area; additional report required. No turbine, solar panel or transformer located within 30 m of a seepage area.





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Transmission Line and Collector Lines

Question: Will the transmission line be overhead or underground and how does the power get from the Project to the grid?

Transmission Line:

- A 20 km long overhead 230 kV transmission line will connect the power generated by the wind and solar generation equipment to the Ontario electricity grid that is accessible at a location south of Hagersville, Ontario.
- The transmission line will be located along Haldimand Road 20 within the municipal road right-of-way.
- At a location just east of Nelles Corners (intersection of Haldimand Rd 20 and Highway 3), the overhead transmission line will make a transition to underground cable (~700 m).
- Samsung Renewable Energy Inc. will be the owner of the transmission line.

Collector Lines:

- Power will be collected via the use of underground cables on private land and via overhead pole line and/or buried line within municipal road right-of-ways.
- Along public roads: Approximately 82 km of new overhead and/or underground 34.5 kV collector lines.
- Along turbine access roads: Approximately 48 km of new underground collector lines.





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Project Construction

- Project construction is planned for the fourth quarter of 2012 to March 2014.
- Generally, the areas that would be directly impacted during construction are:
 - **Turbine locations:** Concrete foundations buried to a depth of up to approximately 2.4 m and approximately 16.7 m wide. Land base is approximately 0.02 hectares per turbine foundation.
 - **Crane pads:** Measuring approximately 20 m x 40 m adjacent to turbine locations.
 - **Solar panel locations:** Each rack of panels is fixed position, facing south and angled 28 - 35 degrees to the horizon.
 - **Access roads:** A total of approximately 85 km of access roads will be required.
 - **Collector lines:** A total of approximately 130 km of collector lines will be required (48 km underground and 82 km aboveground and/or underground).
 - **Transmission line:** Approximately 20 km of 230 kV transmission line will be required.
 - **Collector substation:** Built to accumulate the power from the wind and solar equipment. The collector substation will be within the solar lands.
 - **Operations and maintenance building:** Constructed opposite the solar farm land area. The building will be a prefabricated structure.





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Operation and Maintenance and Decommissioning the Project

Question: What happens after 20 years? Do the components stay or is Samsung required to clean up the sites?

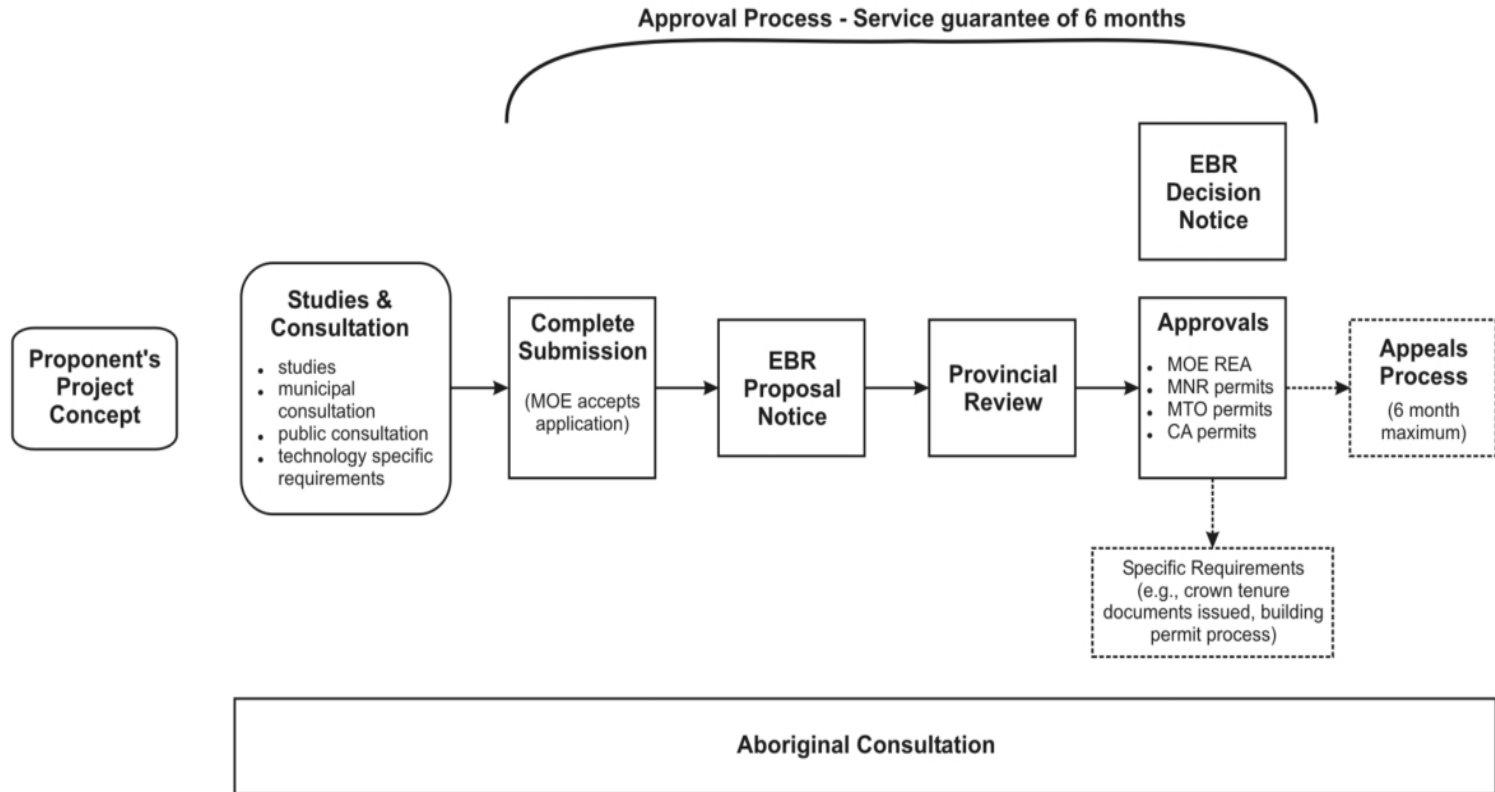
- The Project will be operated and maintained by Samsung Renewable Energy Inc. with a specialized Operation and Maintenance Contractor performing specific maintenance tasks.
- An on-line system would monitor the project 24 hours a day to identify any potential problems so that proactive inspection and maintenance can be undertaken.
- An Emergency Response and Communications Plan will be developed prior to operation.
- Project components are expected to be in service for the 20 year term of the power supply agreement between Samsung Renewable Energy Inc. and the Ontario Power Authority.
- Following the term of the agreement, a decision would be made regarding whether to extend the life of the facility or to decommission.
- Decommissioning would entail the removal of Project components and restoring the land to an acceptable condition for its intended use.
- Samsung Renewable Energy Inc. is responsible for all aspects of the decommissioning of the Project including the associated costs. As part of the Option and Lease contract, each land owner will be given a bond that covers the removal of infrastructure on their lands, if and only if the owner of the wind farm is insolvent.





Renewable Energy Approval Process – An Overview

- We are completing the detailed studies, analysis and work required to obtain a Renewable Energy Approval (REA) for the Project.





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REA & Project Schedule Overview

Notice of Proposal to Engage in a Renewable Energy Project and Notice of Public Open House Distribution – June

Draft Project Description Report made available – June

Public Meeting No. 1 – July

Community Newsletter – December

Draft REA Reports and Municipal Consultation Form provided to County - February

Draft Project Summary Report provided to Aboriginal communities

Draft REA Reports made available for public review - July

Notice of Public Meeting No. 2 distributed– July

Public Meeting No. 2 – September

Final day for public to provide comments on Draft REA Reports to be included as part of the REA Consultation Report – **September 29**

Submission of REA application to the MOE - October

30-day Environmental Registry public review period – Date determined by MOE

Anticipated REA Approval

Project Construction Commences – Fourth quarter

Commercial Operation - March

Decommissioning or Repowering – after approximately 20-25 years

2010

2011

We are here

2012

2012

2014

2034

Draft REA Studies Completed

Final REA Studies Completed

If Project Approved

Ongoing consultation with government agencies and local community members, Aboriginal communities, and the County.





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Other Required Approvals

- Additional approval and permitting requirements from agencies such as the Ministry of Natural Resources, Ministry of Culture, and the Grand River Conservation Authority will also be obtained prior to Project construction. Some of the key permits required include the following:

Permit	Status
Aeronautical Clearance (lighting, radar)	In progress
System Impact Assessment / Customer Impact Assessment	Complete
Works within Conservation Authority Regulated Areas	In progress
Electrical Safety Authority Inspection	Will be obtained following construction
Leave to Construct	In progress
Generator's Licence	To be applied for
Transportation Permits (oversize load, change on access)	In progress
Municipal Permits (e.g. transportation plan, right-of-way agreement, building permits, pre-condition survey)	Negotiations in progress with Haldimand County





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Wildlife and Vegetation

Key Questions: Will birds and bats be harmed? How much forest will be removed?

Field surveys included:

- Vegetation community assessment and vascular plant survey;
- Woodland and valleyland assessments;
- Wetland verification and delineation;
- Wildlife surveys (birds, bats, amphibians, reptiles) and habitat assessment; and
- Threatened and endangered species surveys.

Key Findings of the Natural Heritage Assessment:

- No rare species of vegetation are to be removed as part of the Project.
- All components of the Project (turbines, access roads, substation etc.) are located outside of all wetland boundaries.
- Proposed clearing will result in the removal of 1.72 ha of plantation.
- Most North American wind projects have reported bird mortality levels that authorities agree is not concerning at the population level.
- The number of birds killed by wind turbines is substantially lower than that from other human sources of mortality.
- Bat mortality rates at wind facilities are highly variable among regions. Some species of migratory bats are particularly vulnerable, and mortality peaks during the late summer and early fall migration.

MNR's has prescriptive guidelines for post-construction monitoring of bird and bat mortality, including thresholds. Mandatory mitigation is required for facilities that exceed thresholds which may include temporary turbine shutdown.





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Protecting the Environment

Key Question: Will Samsung monitor the effects of the Project and what happens if impacts are experienced?

Construction and post-construction monitoring will be conducted to confirm the accuracy of predicted effects as well as to monitor the effects to other natural features and will include:

- Erosion and sediment control measures, especially near watercourses and wetlands;
- Dust suppression;
- Water wells (if required);
- Regular inspections during bedrock excavations;
- Monitoring following the unlikely event of contamination from an accidental spill or leak;
- Noise abatement devices on construction and support equipment;
- Re-vegetation measures;
- Soil rehabilitation;
- Forest breeding bird and breeding amphibian disturbance studies; and
- Bird and bat mortality studies.

In the event that mortality thresholds are exceeded (bird and bat), contingency plans must be initiated which includes operational controls such as temporary turbine shutdown.





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Cultural and Archaeological Heritage Resources

The following reports were completed to identify and assess potential impacts to cultural and archaeological heritage resources near the Project Location:

- Stage I and II Archaeological Assessments (Stage III and IV Assessments are on-going);
- Heritage Impact Assessment; and
- Protected Properties Assessment

Key Findings of these reports are:

- The Project Location demonstrated the potential for the presence of significant and intact archaeological resources.
- 128 archaeological sites were located within or adjacent to the Project Location.
- 609 potential built heritage resources and 36 cultural heritage landscapes were identified within or adjacent to the general Project area. 10 designated properties were found in the general Project area.
- Archaeological resources located during the course of on-site archaeological assessments will be documented and/or removed (as appropriate) from the Project Location prior to construction in accordance with Ministry of Tourism and Culture guidelines. There are no anticipated significant effects to known archaeological resources during the construction of the Project.
- Project related works such as construction activities will avoid the built heritage and cultural resources and protected properties and resources where possible, thus no there are no anticipated significant effects to these features.





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Environmental Sound

Key Questions: How noisy are the turbines? Do the solar panel transformers generate sound?

- A Noise Assessment Report has been completed for the Project to ensure it complies with the Ontario Ministry of the Environment's (MOE) regulatory requirements.
- Mechanical and aerodynamic sound would be emitted from the wind turbines and their associated transformers. Additional sound will be generated by the collector substation.
- The solar panels themselves do not generate sound; however the transformers will generate sound.
- Current MOE regulations require a turbine to be 550 m or greater if needed to achieve a maximum of 40 dBA from a non-participating landowner's home.

Key Findings of the Noise Assessment Report:

- All receptors were considered "Class 3 – Rural" to ensure the most stringent noise limits were applied to the Project.
- **The Noise Assessment Report concluded that sound to be produced by the Project was found to be within the limits established by the MOE at all noise receptors.**





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Ensuring Health and Safety

Key Questions: *What are the effects from the high voltage transmission line?*

Construction & Decommissioning:

- Mitigation measures include implementing transportation planning and safety measures during construction, and controlling land access to the construction sites to minimize the potential for public health and safety concerns.
- A detailed Traffic Management Plan and Health and Safety/Emergency Response Plan will be prepared and implemented by the Construction Contractor.

Operation

- With the implementation of appropriate operations protocols and routine maintenance there is minimal increased or new risk to public health and safety from the operation of the Project and transmission line.
- The operation of the solar panels does not pose a threat to human and environmental health and safety.
- For public safety reasons, a fence will be installed around the entire perimeter of the solar farm to prevent unauthorized access to the solar panel area.
- There is insufficient evidence linking EMF to any human health effects such as cancer.





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Wind Turbines and Human Health

Key Questions: I have read that turbines make people sick, are health studies being conducted?

In “The Potential Health Impact of Wind Turbines” (May 2010), Ontario’s Chief Medical Officer of Health 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 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, there is no scientific evidence to date that vibration from low frequency wind turbine noise causes adverse health effects.





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How It Looks

Key Questions: What are the visual impacts of the turbines and solar farm? Can the solar farm be treed to mitigate visual impacts?

- The solar component will include approximately 425,000 solar panels. Samsung Renewable Energy Inc. is proposing to minimize the visual effects of the solar farm around its perimeter through the use of a 6 m wide berm.



BERM CONSTRUCTED TO MITIGATE VIEW



VANTAGE POINT KEY MAP



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Grand Renewable Energy Park

VISUAL SIMULATION

FIGURE NO. March 15, 2011

6.0

Vantage Point 2

FILE: 161010625_cavage_vissim.indd	PROJECT NUMBER: 161010625
REV NO. 0	DRAWN BY: DL
SHEET NO. 6 OF 9	





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How It Looks

The Project's wind turbines are 100 m tall (149 m at tip height) with 49 m long blades.



View from Hald-Dunn Townline at St. John's Anglican Church, facing east





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Community and Capability

Key Questions: What are the effects on agriculture and recreational opportunities? What are the impacts on property values from both wind and solar development?

Farming

- Normal farming practices are permitted adjacent to project infrastructure, however sensitive project components will be fenced for safety reasons (e.g., solar panels).
- Samsung Renewable Energy Inc. may plant a vegetated understory of native grassland species beneath the solar panels to prevent soil erosion and provide dust control.
- Following decommissioning, agricultural areas will be restored such that normal farming practices may resume.

Recreational Uses

- Hunting and other recreational uses will be permitted on lands occupied by the wind component of the Project (not withstanding private property restrictions). These uses will not be permitted on the solar lands due to public safety concerns.

Property Values

- Samsung Renewable Energy Inc. acknowledges public comments and experiences related to potential property value impacts. There is no available evidence to-date (via systematic reviews of property value impacts including those within Ontario) which links the location of a turbine or solar farm with impacts on property values.
- “In the study area, where wind farms were clearly visible, there was no empirical evidence to indicate that rural residential properties realized lower sale prices than similar residential properties within the same area that were outside of the viewshed of a wind turbine.” *Canning, G. and L.G. Simmons. February 2010. Wind Energy Study Effect on Real Estate Values in the Municipality of Chatham-Kent. Prepared for the Canadian Wind Energy Association.*





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We want to continue to hear from you!

- We encourage you to share your comments about the Project with us by completing a feedback form. Feedback forms are available at the registration table.
- Stantec must receive all comments pertaining to the Draft REA Reports by the **end of day, September 29, 2011** to be included in the Project's Consultation Report that will be submitted to the MOE as part of the REA application.
- You can contact the study team by:
- Email: GrandRenewable@SamsungRenewableEnergy.ca
- Phone: 1-877-536-6050 (toll free)
- Mail:

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You may also visit us on the project website at www.SamsungRenewableEnergy.ca .
Copies of the display boards from this meeting and the Draft REA Reports are available on the website.

