



Welcome to the

Nanticoke Solar Project

Final Public Meeting





Purpose and Objectives

Welcome to the final Public Meeting for the Nanticoke Solar Project's Renewable Energy Approval process.

- The purpose of this Public Meeting is to:
 - Understand how solar photovoltaic (PV) systems work;
 - Obtain an overview of the Renewable Energy Approval (REA) process;
 - Understand the proposed project;
 - Obtain an overview and summary of the studies which have been undertaken and the major findings; and,
 - Provide comments, questions, and concerns about the proposed project and draft project reports.

There are representatives from Nanticoke Solar LP and Arcadis (project consultants) available to discuss the project here today with you.

Please ask questions and provide us with comments. We also encourage you to complete a comment sheet before leaving.

Please Sign In





Background

- The IESO awarded a Large Renewable Procurement (LRP I) Contract to Nanticoke Solar LP to develop and operate a **44 MW ground-mounted solar (MOECC Class 3)** project consisting of the installation of solar photovoltaic (PV) panels on 4 parcels of land.
 - Nanticoke Solar LP and IESO executed a 20-year contract.
 - The Milestone Commercial Operation Date (MCOB) is **March 2019**.
 - **As such, the Project needs to complete the Renewable Energy Approval (REA) process and receive a REA from the Ontario Ministry of the Environment and Climate Change.**

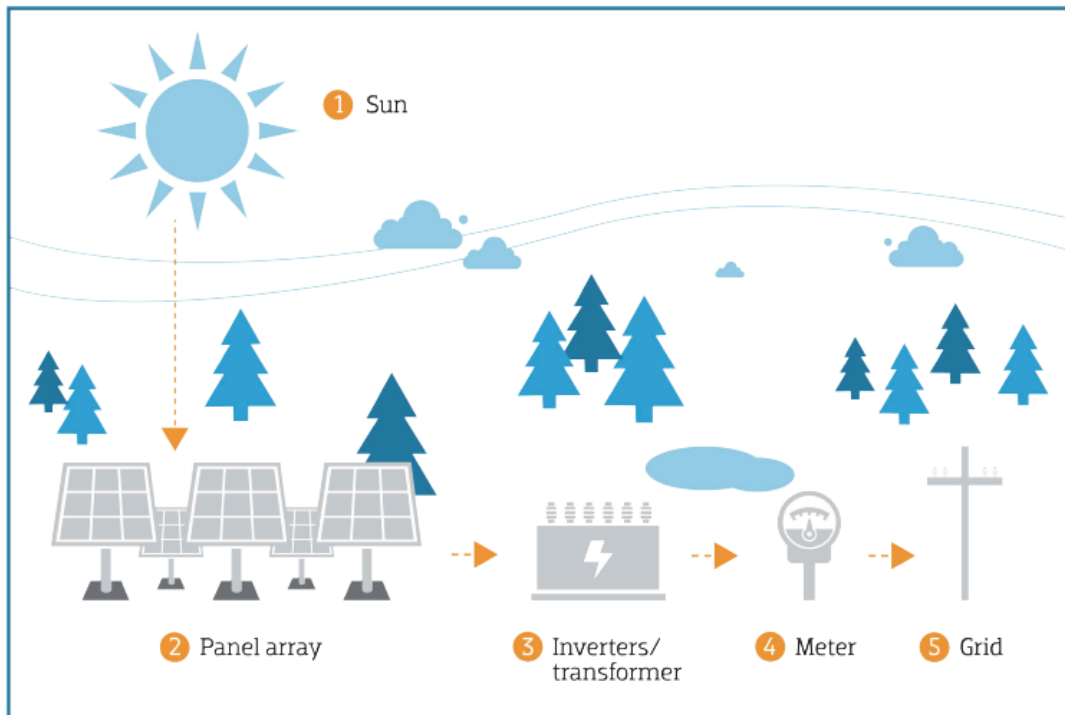
- Nanticoke Solar LP, is a partnership between:
 - Ontario Power Generation Inc.
 - Six Nations Development Corporation

- Public consultation is an integral part of the REA process.
- This is the final public meeting/open house that will be held during the REA process to present project information, updates, and findings.
- We encourage feedback and comments as these provide input to assist the project team in making decisions throughout the REA process.

Project Site Plan



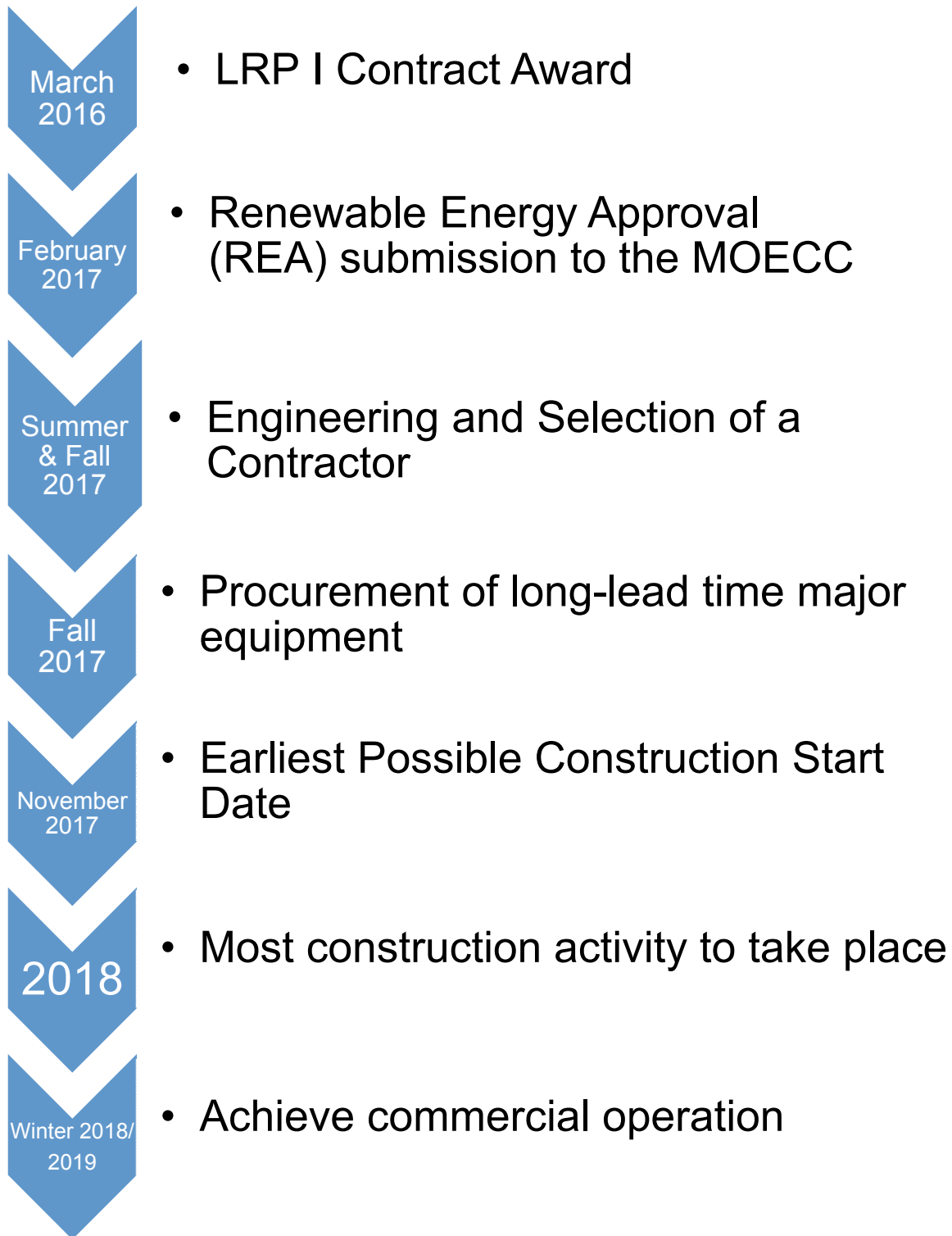
How Does Solar Power Work?



- **Photovoltaic (or PV)** systems use cells to convert solar radiation into electricity. The cell consists of one or two layers of a semi-conducting material (such as silicon). When light shines on the cell it creates an electric field across the layers, causing electricity to flow.
- PV systems produce **direct current (DC)** electricity, which must be 'inverted' to **alternating current (AC)** and stepped-up before it can be delivered to the electricity grid.
- A PV system does not need bright sunlight in order to operate, it can generate electricity even on cloudy days, and performs even better at low temperatures.
 - The technology is well-suited to Ontario's climate.
- Major Equipment for the Nanticoke Solar Project Includes:
 - Solar Photovoltaic (PV) Panels
 - Fixed Racking Systems, or tracker
 - Piles (helical or driven)
 - Electrical Inverters
 - Cabling
 - Transformer Station
 - Other Related Electrical Equipment



Key Project Milestones and Schedule





Renewable Energy Approval (REA) Tasks

- The REA provides a standardized approvals regime for proposed renewable energy projects as outlined in the **Technical Guide to Renewable Energy Approvals (REA)** under *O.Reg. 359/09*
- The Nanticoke Solar REA submission to the MOECC is scheduled for Q1 2017.
- Activities going forward include:
 - Draft REA Reports currently available for review by public
 - Consultation (Aboriginal, Public, Municipal, and Agencies) - ongoing
 - Final Public Information Session: February 2nd, 2017

REA Task	Date
Public Meeting #1	June 3, 2015
Public, Municipal and Aboriginal Consultation	Ongoing
LRP I Contract Awarded	March 2016
Environmental and Technical Studies	Fall 2015 to Fall 2016
Develop and Publish Draft REA Reports	November 2016
Public Meeting #2	February 2, 2017
Finalize REA Reports & Design, Submit REA to MOECC	February 2017
MOECC Review	6 months
REA Approval and Potential Construction Start	November 2017



REA Report Information

- The REA Process requires the following main reports to be generated:
 - Project Description Report
 - Construction Plan Report
 - Design and Operations Report
 - Decommissioning Plan Report

- These reports generally:
 - Describe the Project and all of its associated activities
 - Describe how potential environmental effects are mitigated and monitored.

- The 4 main reports are supplemented by a wide variety of other more detailed technical studies and reports:
 - Stormwater
 - Natural Heritage
 - Water Body Assessment
 - Noise
 - Archaeology
 - Cultural Heritage

- All reports have been made available to municipalities, Aboriginal communities, and the public for viewing in November 2016.

- All reports are available on the Project website:
www.nanticokesolar.com/rea-documents/



Project Location





Natural Heritage Studies

- A records review of existing natural heritage information and documents was conducted.
- A preliminary site assessment was completed to screen for woodlands, wetlands, watercourses, wildlife habitat, and other natural heritage features.
- A site plan was developed once setbacks for natural features were established.
- The primary source of mitigation is avoidance of natural features.
- The Project Location was developed around natural features – This minimized negative effects to the natural features.
- The MNRF and Long Point Conservation Authority (LPRCA) were consulted for natural heritage file data.



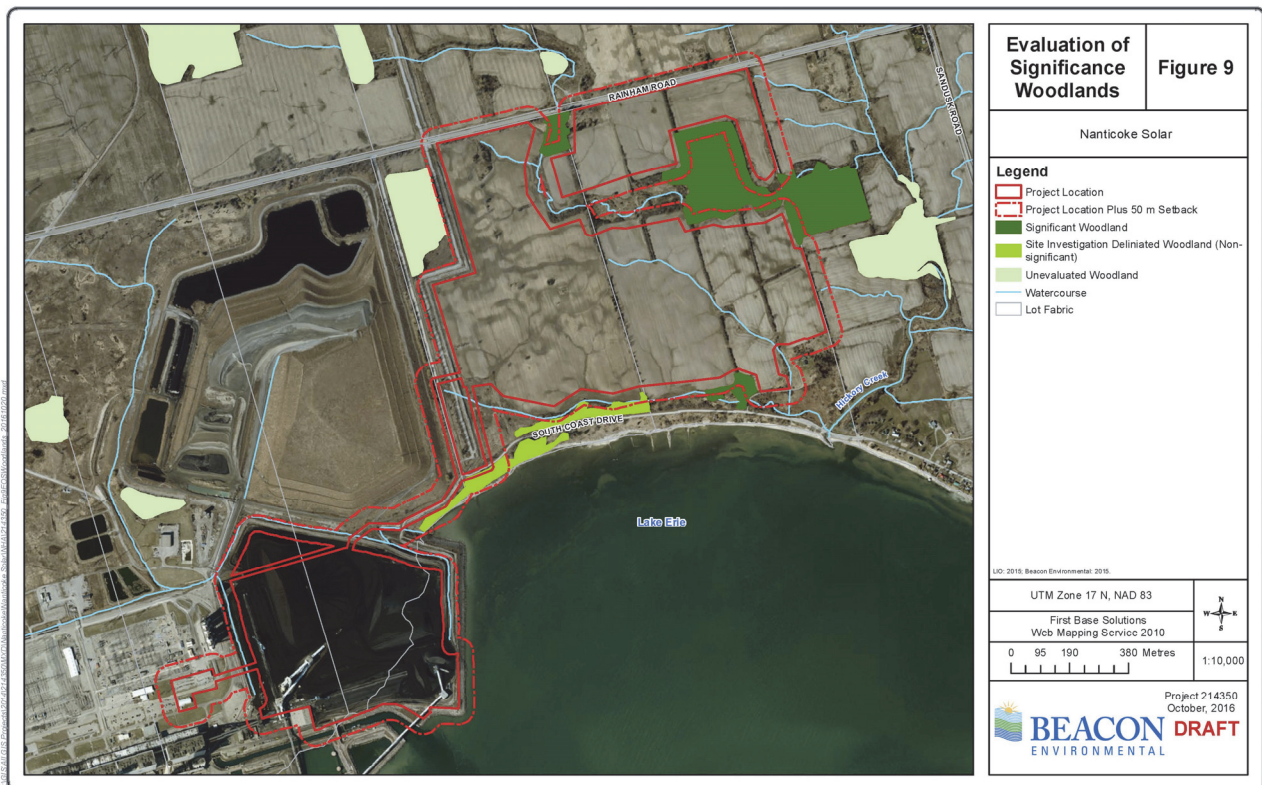
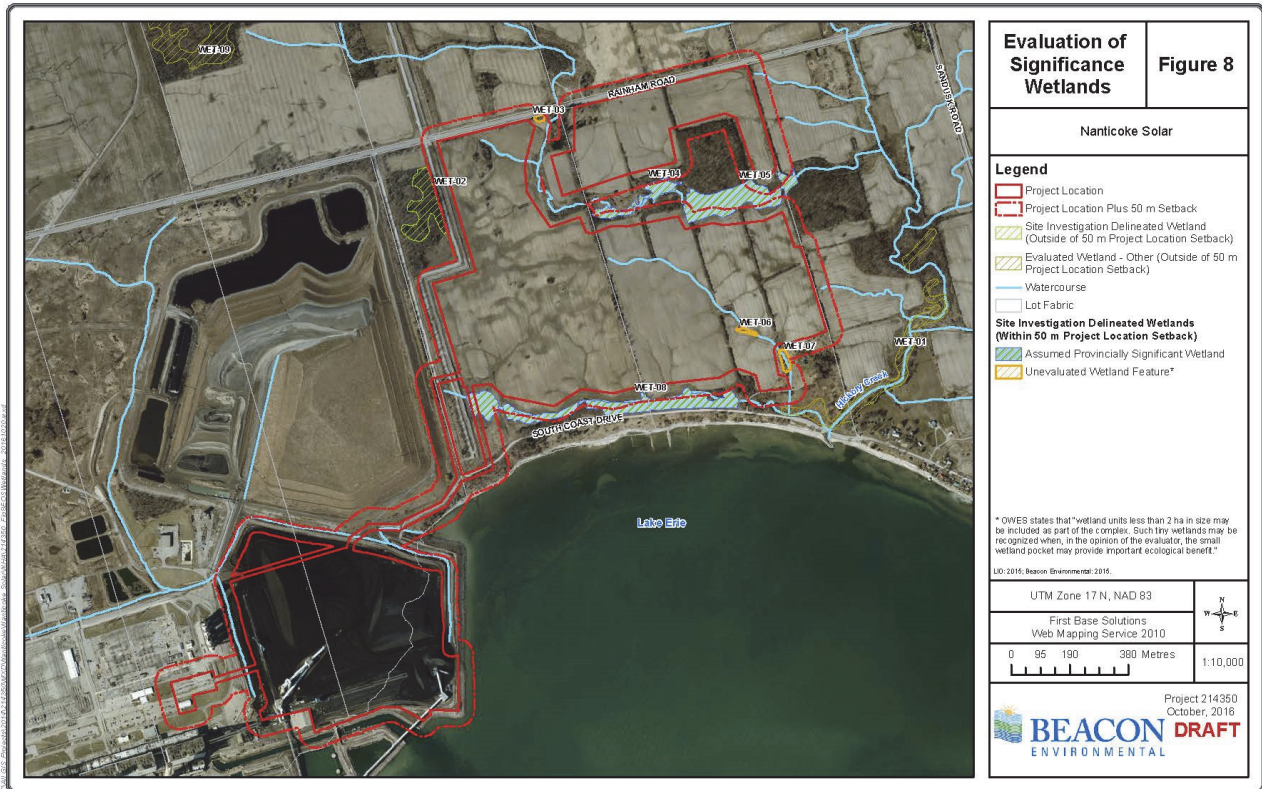
Seasonal field investigations completed to confirm the presences of natural heritage features identified during the Records Review include:

- Winter Wildlife
- Breeding Amphibian Surveys
- Breeding Bird Surveys
- Ecological Land Classification, Vegetation Inventory & Wetland Delineation / Evaluation
- Woodland Evaluation
- Aquatic Habitat Assessment
- Fish Community Sampling
- Feature Staking



Natural Heritage & Water Bodies

Key Site Features and Setbacks





Natural Heritage Results

Terrestrial

- Five woodlands have been identified within the Study Area and they will all be retained
- Two are considered significant woodlands under REA
- Woodland boundaries are being adjusted based on recent stakings plus buffer
- Planted prairie area includes planted rare species and habitat for endangered species

Watercourses

- Permanent tributary to Hickory Creek
 - Waterbody under REA
 - Protected with buffer
- Several ephemeral drainage features and swales
 - Do not meet the definition of a Waterbody under REA

Wetlands

- Wetland habitats that were identified within the Study Area included:
 - Meadow Marsh;
 - Thicket Swamp; and,
 - Deciduous Swamp
- Wetland boundaries are being adjusted based on stakings
- Most are within other features and will be retained with required buffers

Fisheries

- Hickory Creek tributary provides direct, permanent fish habitat
- Four fish species identified
 - Creek Chub
 - Blacknose Dace
 - White Sucker
 - Banded Killifish
- No Species At Risk (SAR) fish





Natural Heritage Results

Candidate Significant Wildlife Habitat

- Planted Prairie
- Species of Special Concern associated with the planted prairie (Nodding Wild Onion, Pale-Purple Coneflower, Prairie Dock and Tall Coreopsis; Significant Wildlife Habitat)

Generalized Candidate Significant Wildlife Habitat

- Bat Maternity Colonies. Could be present within areas being protected – woodland
- Habitat for Special Concern and Rare Wildlife Species:
 - Woodland Plants (Halberd-leaved Smartweed, Hirsute Sedge, and Weak Stellate Sedge);
 - Bird Species of Special Concern (Eastern Wood-Pewee, Peregrine Falcon and Redheaded Woodpecker);
 - Reptiles and Amphibians of Special Concern (Eastern Ribbonsnake, Jefferson/ Blue-Spotted Salamander Complex and Snapping Turtle); and,
 - Woodland Vole.

Endangered Species Act (ESA)

- Bobolink (Threatened) – breeding within planted prairie area/ Cultural Meadow, subject to compensation under ESA
- Bobolink compensation habitat replacement land secured in Sarnia in accordance with the Regulation
- A notice of approval filed and approved by MNRF under O.Reg 242/08 to address the loss of Bobolink habitat
- Removal of the habitat occurred in Fall 2016, outside of the breeding bird season



Bobolink



Natural Heritage Assessment & Environmental Impact Study: Conclusions

- Results of Records Review, Site Investigation and Evaluation of Significance as well as the Environmental Impact Study (EIS) detail potential negative effects and appropriate mitigation measures for avoiding negative effects.
- An EIS report was completed to mitigate potential negative environmental effects to the following significant natural features located in and within 50 m of the Project Location:
 - Three wetlands (WET-04, 05, and 08);
 - Two woodlands (WOD-03, and 04);
 - Planted Tallgrass Prairie;
 - Planted Species of Special Concern (Nodding Wild Onion, Pale-Purple Coneflower, Prairie Dock and Tall Coreopsis), which are all associated with the Planted Prairie Feature; and,
 - Generalized Candidate Significant Wildlife including:
 - ▶ Bat Maternity Colonies;
 - ▶ Species of Special Concern – Woodland Plants (Harlberd-leaved Smartweed, Hirsute Sedge and Weak Stellate Sedge);
 - ▶ Bird Species of Special Concern (Eastern Wood-Pewee, Peregrine Falcon and Redheaded Woodpecker);
 - ▶ Reptiles and Amphibians of Special Concern (Eastern Ribbonsnake, Jefferson / Blue-Spotted Salamander Complex and Snapping Turtle); and,
 - ▶ Woodland Vole.
- Mitigation measures identified within the EIS will be reviewed and appropriately implemented to reduce or eliminate the potential for negative effects to wetlands, woodlands, and Generalized Candidate Significant Wildlife Habitat.

Woodland Vole





Water Body Assessment: Conclusions

- There are no aquatic environmental constraints to the project associated with the nearshore or shoreline of Lake Erie within 120 m of the site.
- Standard mitigation measures will be reviewed and appropriately implemented to reduce or eliminate the potential for negative effects to watercourses and waterbodies.
- All mitigation measures will be included in the Environmental Management Plan for the site.





Archaeology & Cultural Heritage: Conclusions

- **Nanticoke Solar Stages of Archaeological Assessment:**
 - The completed Stage 2 archaeological assessment resulted in the recovery of 827 individual artifacts from a total of 60 Archaeological Locations.
 - The 60 Archaeological Locations consisted of a mixture of Isolated Findspots, Informal Archaeological Sites and Archaeological Sites.
 - The Study Area has produced archaeological evidence dating from the Paleo-Indian Period (10,700 BP) up until the 19th century.
 - A total of 7 Archaeological Locations will require further investigations via Stage 3 Archaeological Assessment.
- It is expected that Stage 4 Archaeological Mitigation will be required for some of the archaeological sites subject to Stage 3 assessment.
- Draft **Archaeological Assessment Report** has been submitted to the Ministry of Tourism, Culture, and Sport (MTCS) for review, and is currently being reviewed.



- Draft **Cultural Heritage Assessment Report** was completed and submitted to the MTCS, and is currently being reviewed.
- The East, Central, and West Parcels **do not have local or provincial cultural heritage value or interest.**
- No Protected Properties were identified on or adjacent to the Project Location.
- Lot 7, Concession 1 is designated as a National Historic Site of Canada, for the historical event and the location of the Battle of Nanticoke.
- Potential cultural heritage resources were evaluated against Ontario Regulation 9/06 *Criteria for Determining Cultural Heritage Value or Interest under the Ontario Heritage Act.*
- One potential cultural heritage resource was identified adjacent to the Project Location. This property is not designated under the *Ontario Heritage Act* or included as a non-designated property on the Municipal Heritage Register.
- A portion of the Proposed Project is located on the Nanticoke Generating Station lands (coal yard) which has been identified as having local cultural heritage value or interest.
- No negative impacts have been identified on any cultural heritage resources or heritage attributes.



Stormwater

- Proposed Conceptual Storm Water Management (CSWM) plan will utilize existing stormwater drainage patterns to minimize downstream impacts.
- Since solar panels do not increase impervious area of the land surface, minimal changes to the quantity and quality of the stormwater runoff anticipated.
- Impervious areas for the proposed development (i.e. gravel access roads) account for less than 1.5% of project area.

Former Coal Pile CSWM Plan

- Will utilize existing stormwater management (SWM) system consisting of catch basins, culverts, ditches and lagoons.
- No anticipated increase in stormwater runoff expected.

East, West and Central Parcel Lands CSWM Plan

- Existing drainage patterns, grades, final discharge points will be maintained, where possible.
- Minor alterations to site grading can be implemented to mitigate flooding.
- Development area will be covered with grass to promote treatment and infiltration.
- Minimal changes in stormwater runoff expected.

Stormwater

Pre-Construction



LEGEND:

- Project Location / Site Boundary
- Watercourse
- Flow Direction
- ID Area Sub-Basin ID and Area
- Sub-Basin Delineation
- ★ Outlet

SCALE: 0 100 200 meters

REFERENCE: 1. Produced by ARCADIS under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2015.
2. Spatial referencing UTM NAD 83.

**NANTICOKE SOLAR LP
NANTICOKE SOLAR PROJECT
NANTICOKE, ONTARIO
Pre-Development Sub-Basins
and Drainage Patterns**

CREATED BY: HS	CHECKED BY:	FIGURE NO: 1
DATE: 27 Oct 2016	PROJECT No: 39100	

Post-Construction



LEGEND:

- Project Location / Site Boundary
- Watercourse
- Flow Direction
- ID Area Sub-Basin ID and Area
- Sub-Basin Delineation
- ★ Outlet

SCALE: 0 100 200 meters

REFERENCE: 1. Produced by ARCADIS under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2015.
2. Spatial referencing UTM NAD 83.

**NANTICOKE SOLAR LP
NANTICOKE SOLAR PROJECT
NANTICOKE, ONTARIO
Proposed Post-Development
Sub-Basins and Drainage Patterns
For East, West and Central Parcel Lands**

CREATED BY: HS	CHECKED BY: ZM	FIGURE NO: 1
DATE: 27 Oct 2016	PROJECT No: 39100	

Stormwater: Preliminary Erosion and Sediment Control Plan

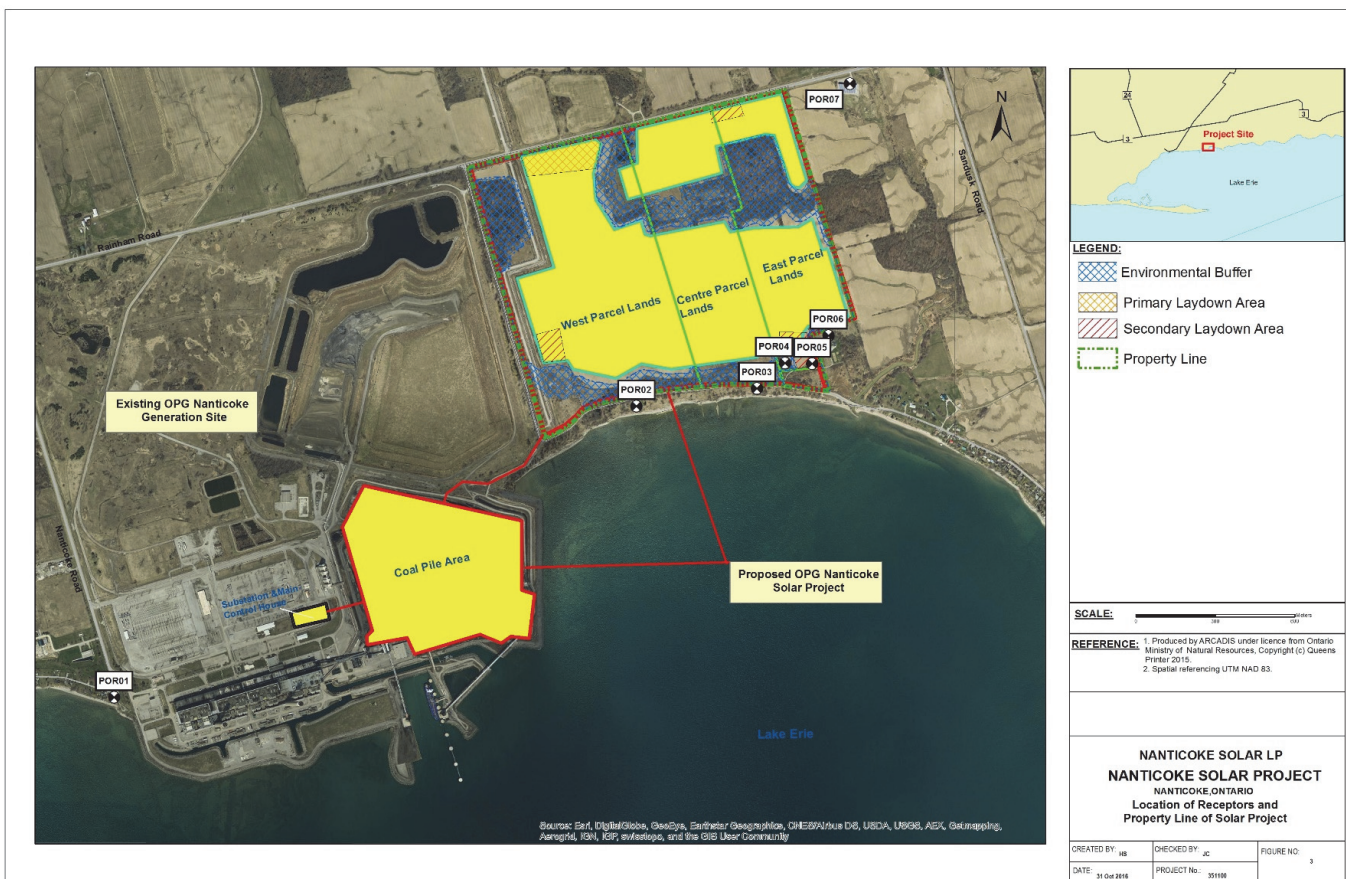


Erosion and Sediment Control

- Temporary erosion and sediment (E&S) control measures will be implemented during the construction phase.
 - Installation of mud mats at construction entrances.
 - Installation of silt fencing.
 - Other erosion and sediment control measures will be added as required.
- Once construction phase is completed and the vegetation has grown within the proposed development area, the temporary measures will be removed and vegetation will provide long-term E&S control.

Noise

- Transformers and inverters emit low levels of noise when in operation. This study evaluated the predicted levels of noise emitted from these components and the potential effects, if any, on neighbouring points of reception.
 - 7 points of reception (PORs) were identified as being representative of the most sensitive PORs within 1 km distance from the site. Vacant lots were also included as PORs.
- Ambient noise levels near the PORs are Class 3 (rural area) in accordance with MOECC's Noise Pollution Control (NPC) publication NPC-300.
- For the acoustic assessment, PORs with the predictable worst-case noise impacts were considered.
- Applicable sound level limit at the receptor: 40 dBA during the nighttime period from 7 PM to 7 AM (outlined in *Technical Guide to Renewable Energy Approvals* by MOECC).
- Conclusion:** Acoustic modelling has determined that:
 - All scenarios modelled will comply with MOECC NPC-300 and the Haldimand County Noise Control By-Law 1098/10.*





Noise Level Scale (dBA)

LOUDNESS COMPARISON CHART (dBA)

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 1000 ft	110	Rock Band
Gas Lawn Mower at 3 ft	100	
	90	Food Blender at 3 ft
Diesel Truck at 50 ft at 50 mph	80	Garbage Disposal at 3 ft
Noisy Urban Area, Daytime		Vacuum Cleaner at 10 ft
Gas Lawn Mower at 100 ft	70	Normal Speech at 3 ft
Commercial Area		
Heavy Traffic at 300 ft	60	Large Business Office
Quiet Urban, Daytime	50	Dishwasher Next Room
Quiet Urban, Nighttime		Babbling Brook, Refrigerator Hum
Quiet Suburban, Nighttime	40	
	30	Library
Quiet Rural, Nighttime		Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

An increase of 3 dBA is barely perceptible to the human ear.

Noise: Option 1 – Case 1 and 2



LEGEND:

- +
-
- ZONE A
- ZONE B
- ZONE C
- Property Line

Sound Level (dBA)

- 40 dBA
- 45 dBA
- 50 dBA
- 55 dBA
- 60 dBA
- 65 dBA
- 70 dBA

SCALE: 0 100 200 300 400 500 600

REFERENCE:

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- Spatial referencing UTM NAD 83.

NANTICOKE SOLAR LP
NANTICOKE SOLAR PROJECT
 NANTICOKE, ONTARIO
 Contour Plot of Nighttime Operation at 1.5m high (Option 1 – Case 1)

CREATED BY: HB CHECKED BY: JC FIGURE NO: 74
 DATE: 11 Nov 2016 PROJECT No: 35190



LEGEND:

- +
-
- ZONE A
- ZONE B
- ZONE C
- Property Line

Sound Level (dBA)

- 40 dBA
- 45 dBA
- 50 dBA
- 55 dBA
- 60 dBA
- 65 dBA
- 70 dBA

SCALE: 0 100 200 300 400 500 600

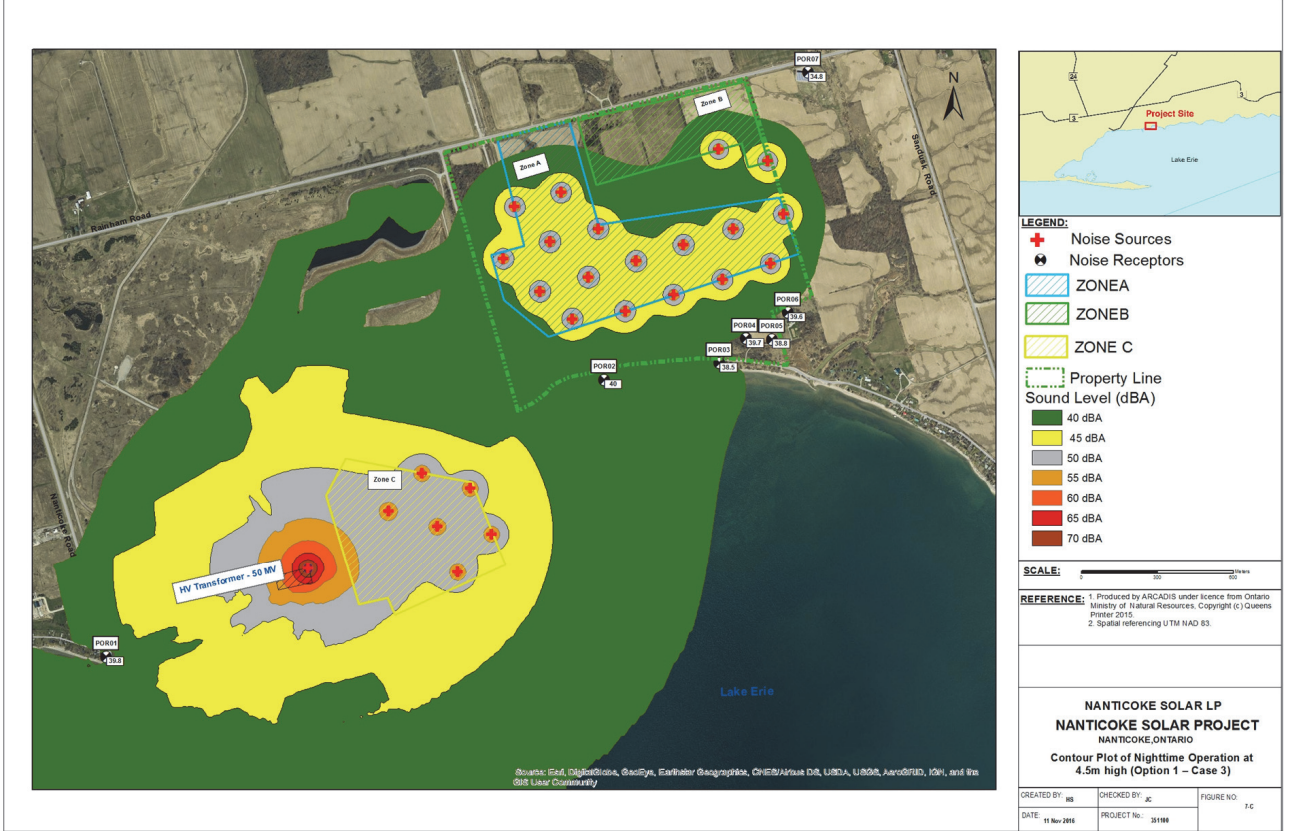
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NANTICOKE SOLAR LP
NANTICOKE SOLAR PROJECT
 NANTICOKE, ONTARIO
 Contour Plot of Nighttime Operation at 1.5m high (Option 1 – Case 2)

CREATED BY: HB CHECKED BY: JC FIGURE NO: 74
 DATE: 11 Nov 2016 PROJECT No: 35190

Noise: Option 1 – Case 3 and 4





Construction and Decommissioning

Construction

- Solar sites will be managed during construction to ensure:
 - Proper stormwater management
 - Prevent erosion and sediment movement
 - Traffic management
 - Compliance with noise limits

Roads

- We are currently working with the municipality on a road use plan.
- Municipal and provincial roads will be used for transportation of equipment.
- Any road damage will be repaired.
- Equipment will be delivered by truck as needed throughout the construction phase and stored at temporary storage areas on site.

Dust

- Dust will be managed by enforcing speed limits within the site during construction and the use of water to suppress dust, if required.
- During operations, grass will be used to aid in dust suppression.

Decommissioning

- The Project is expected to be operational for 20+ years.
- It may be determined that the project is still viable and equipment may be refurbished or replaced.

Equipment Dismantling and Removal

- In the case of the West, Centre and East Parcels, if desired by the property owners, the lands will be restored to their pre- construction state (agricultural land use for the West and East Parcels, and fallow for the Centre parcel, or as may be appropriate at that time). In the case of the Coal Yard, the land will not be returned to its former use as a coal pile.

Land Restoration

- In the case of the West, Centre and East Parcels, once the equipment has been removed, the land will be restored to its previous uses.
- This will be accomplished by removing part of the foundation and granular material from roadways and culverts (if installed).
- Land use will be restored (if necessary) using subsoils and topsoil. If there is insufficient material onsite, topsoil and/or subsoil will be imported from a source acceptable to the landowner.



General Conclusions

- Proposed project is located on lands that are suitable for solar development
- Key environmental features and functions of existing lands will be protected
- Compensation habitat secured to replace Bobolink habitat
- Good use of the former Nanticoke GS property for both construction and operations
- Potentially some construction stage environmental effects – but are manageable
- Mitigation measures identified within EIS will be reviewed and appropriately implemented to reduce or eliminate the potential for negative effects to wetlands, woodlands, and Generalized Candidate Significant Wildlife Habitat
- Standard mitigation measures will be reviewed and appropriately implemented to reduce or eliminate the potential for negative effects to watercourses and waterbodies
- None to minimal stormwater runoff is expected and erosion and sediment control measures will be put in place
- Noise levels will comply with MOECC noise requirements





Next Steps

After this Public Meeting, the following will take place:

1. All comments received will be incorporated into the Consultation Report.
2. A Renewable Energy Approval application will be submitted to the MOECC in February 2017.
3. Complete engineering design and layout.
4. Start construction (if the REA is granted).

Thank you for attending!

Please feel free to ask any questions and fill out a comment sheet before you leave.

Planned submission of REA reports is mid-February 2017.

All comments received today will be reflected in the Final Consultation Report.

The project team will continue to answer questions on an ongoing basis.



Project information is available at www.nanticokesolar.com

Project E-mail: info@nanticokesolar.com