

# RE BREEN 2 SOLAR PROJECT

Decommissioning Plan Report

August 19, 2011

RECURRENT  
ENERGY





**RE BREEN 2 ULC**

## **Decommissioning Plan Report**

**DEVELOPED WITH TECHNICAL SUPPORT  
PROVIDED BY WARDROP ENGINEERING**

### **RE Breen 2 Solar Project**

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## 1.0 INTRODUCTION

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RE Breen 2 (the “Project”) is made by RE Breen 2 ULC. The RE Breen 2 property consists a parcel of agricultural land totalling approximately 32 hectares located about 8.5 km southwest of Ingersoll, at 6955 Hamilton Road, Putnam, in Township of Thames Centre, County of Middlesex, Province of Ontario (as shown on Figure 1.1). The project will occupy approximately 19.5 hectares of the site in order to avoid Class 1 and 2 agricultural lands.

The Project will consist of solar photovoltaic panels that generate direct current (DC) electricity when exposed to sunlight. This project will use 230W – 280W crystalline photovoltaic modules to form the solar panel arrays. The panels will be stationary, arranged in rows mounted off the ground with a fixed tilt angle to the south to catch the sun’s rays. Electricity generated by the rows of panels is collected through underground cabling by inverter/transformer pairs which convert the DC electricity to alternating current (AC). The AC current then continues from the inverters through underground cabling to a single main facility substation. At this substation, the main power transformer increases the voltage to the level of voltage of the electricity distribution grid. The power passes through protective relays (SEL - 351) and fault - breaking switches before being delivered to Hydro One’s electrical network. The total installed capacity of the Project is 10 MW AC.

This Decommissioning Plan provides decommissioning details for the RE Breen 2 facility at the cease of operations, or if the facility is abandoned before completion. The area is currently farm land and the intent of the decommissioning process will be to return the location to as close to the baseline conditions established in 2009 as possible.

This decommissioning plan has been prepared in accordance with the March 1, 2010 draft of *Technical bulletin four: Guidance for preparing the Decommissioning Plan Report as part of an application under O.Reg.359/09 PIBS 7439e*.

**Figure 1.1 Site Location Map**



## 2.0 DECOMMISSIONING PLAN

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### 2.1 DECOMMISSIONING REQUIREMENTS AND PROCESS DESCRIPTION

All decommissioning and restoration activities will adhere to the requirements of appropriate governing authorities, and will be in accordance with all applicable federal, provincial, and local permitting. The decommissioning plan will take place upon normal ceasing of operation activities or upon abandonment. The decommissioning and restoration process comprises removal of above ground structures; removal of below ground structures; and restoration of topsoil, re-vegetation and seeding. A detailed description of this process follows.

#### 2.1.1 *TEMPORARY EROSION CONTROL*

Temporary erosion and sedimentation control best management practices (BMP) will be used during the decommissioning phase of the project. The BMPs will be inspected on a regular basis to ensure their function.

#### 2.1.2 *REMOVAL OF ABOVE GROUND ELECTRICAL EQUIPMENT*

This includes the above ground electrical wiring, the equipment on the inverter pads and the interconnection transformer pad and associated equipment. The initial step is to de-energize the complete system and complete a lock out/tag out of all external electrical lines feeding into or out of the solar facility. The electrical components comprising the inverter pad(s) and interconnection transformer pad will be salvaged and placed in appropriate shipping containers and secured in a truck transport trailer for shipment to the next location where it will be reused. The equipment on the inverter pads includes inverters, combiners, low voltage switch gear and medium voltage transformers. The equipment on the interconnection transformer pad includes medium and high voltage switchgear and high voltage transformer(s). All of this is modular and each unit is bolted to a concrete pad and covered by a steel open sided awning. The concrete pad and steel awning are addressed in a later section.

#### 2.1.3 *REMOVAL OF SOLAR PANEL MODULES*

The 10 MW solar facility will have approximately 44,000 solar modules. Each module is approximately 2000 mm long by 950 mm wide by 50 mm thick and weighs 26 kg. The electrical connectors to each panel will be unfastened along with the combiner boxes (250 in total) and disconnect switches (93 in total) and the bolts and fasteners attaching each module to the racks will be removed. The module will be removed

from the rack, placed in secure transport crates and placed into a trailer for storage for ultimate transportation to another facility. The bolts and reusable fasteners will be saved for reuse, if possible.

#### 2.1.4 *REMOVAL OF RACKS AND SUPPORT STRUCTURES*

Once the solar modules have been removed, the racks will be disassembled and the structures supporting the racks will be removed. These components will be scraped and sold for salvage value. Since the racks are bolted, disassembly involves removing the bolts and stacking the rack components for salvage. Extraction of in-ground support structures will require a track hoe or equivalent piece of machinery to pull them out vertically. The structures will be coated with soil which will be removed by mechanical means and washing, if necessary. It is anticipated that structures will be fully removed from the ground. In the event that a structure breaks off below 1.2 m (4 feet) below the ground surface, the remaining section will be left in place. If the structure breaks off in the upper 1.2 m (4 feet) of soil, it will be excavated and removed. Rock anchors cannot be removed in their entirety, but decommissioning activities will reduce all aboveground materials to grade.

#### 2.1.5 *REMOVAL OF SITE INFRASTRUCTURE*

This work consists of removing all remaining balance of plant (BOP) components. These include roads, fences, awnings, concrete pads that supported the inverters, transformers and related equipment, and the underground electrical wiring. The aggregate road surfaces will be stripped along with underlying geotextile fabric if used on site. These materials will be trucked to a landfill. All drainage structures including rip-rap, etc., will be removed and backfilled with clean, compatible subgrade material. All roads and other areas compacted during original construction or by equipment used in the decommissioning, shall be tilled in a manner adequate to restore the sub-grade material to the proper density and depth consistent with the surrounding fields. Low areas will be filled with clean, compatible sub-grade material. After property sub-grade depth is established, topsoil will be placed to a depth and density consistent with the surrounding field.

All fences and gates will be maintained at all times until the road removal process is complete and the area is ready to be demobilized. The fence and gate shall be removed and all materials recycled to the greatest extent possible. The culvert crossing will be removed if requested by the landowner and approved by the applicable roads authority. The area will be thoroughly cleaned and all debris removed.

No concrete or other materials in the upper 0.9 m (36 inches) not native to the site will remain. No attempt to reuse or salvage these items will be made. Any surface laid or shallow buried underground copper wiring will be removed and will be salvaged and sold for scrap value.

## 3.0 SITE RESTORATION

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Following removal of all solar equipment and BOP items, the site will be rehabilitated in accordance with the lease agreement with the landowner, subject to guidelines of local and provincial authorities. The geotechnical work planned as part of the construction process will determine the exact procedure for site rehabilitation. Where practical, topsoil on site will be removed and stockpiled in order to avoid compaction for decommissioning activities. Next, the site will be deep chiseled to a depth of at least 0.5 m (18 inches) to remove the compaction resulting from the original construction, O&M activities and from the decommissioning. After chiseling, compost will be applied and the topsoil spread and then the entire site will be tilled to further loosen the soil and blend in the compost. If the geotechnical conditions of the site are such that the overburden is very thin, or there is exposed rock, topsoil removal and chiseling to a depth of 0.5 m (18 inches) may not be practical.

As a final step, an appropriate seed mixture will be broadcast or drilled across the site and a weed-free mulch spread will be crimped in to stabilize the soil until germination takes place and the young plants are established to facilitate moisture retention in the soil which, helps improve germination and survival of the seedlings.

Most of the construction and restoration activities will be in agricultural areas which will require maintaining existing drainage and hydrologic conditions in the area.

Temporary erosion and sedimentation control BMPs will be removed once the seed has sprouted and grown to stabilize the conditions adequately.

## 4.0 COMMUNICATION AND EMERGENCY RESPONSE PLAN

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### 4.1 GENERAL

During construction, operation and decommission activities at the facility, a sign with emergency instructions will be posted at the site including contact information.

- Emergency Instructions
  - Dial 911 for all emergencies
  - Dial RE Breen 2 ULC contact
- Medical Aid Facilities
  - Alexandra Hospital, 29 Noxon Street, Ingersoll, ON N5C 1B8, Administrative telephone number (519) 485-1700
- Fire Services
  - 110 Mutual Street, Ingersoll ON N5C 1Z7, Administrative telephone number (519) 485-3910 8:30 AM to 4:30 PM
- Police Services
  - Ontario Provincial Police, Oxford Detachment, 110 Mutual Street, Ingersoll ON N5C 1Z7, Administrative telephone number (519) 485-6554 7:30 AM to 4:30 PM.

### 4.2 GENERAL INQUIRIES

The public and other organizations will be able to contact RE Breen 2 ULC regarding general non-emergency issues. A contact number and website will be posted at the site. All inquires will be directed to a company official who can respond to the questions or comments. Inquiries may be addressed by discussion internally and where required, local authorities may be contacted. A written and/or verbal response will be communicated to the concerned individual or party. All correspondence will be recorded and saved electronically in a database and will include name, address and telephone number of individual; time and date of contact and proposed actions to be taken to resolve any issues and possibly prevent reoccurrence.

### 4.3 EMERGENCIES: GENERAL

A detailed Emergency Response Plan will be prepared in consultation with local municipal authorities and emergency response agencies prior to the start of any decommissioning activity being performed at the site. The plan will be communicated and available to all site personnel. The plan will include:

- Communication procedures including the identification of a primary and secondary crisis manager to serve as the company spokesperson in the event of an emergency;
- Listing of site personnel trained in first aid/CPR;
- Emergency & evacuation procedures for each type of emergency (fire, personal injury, spill);
- Emergency phone numbers (as detailed below); and
- Name and directions to nearest hospital or medical aid facility.

All emergencies will be documented by the Primary Emergency Contact and saved in an electronic file.

### 4.4 EMERGENCY SCENARIO: FIRE

Prior to the commencement of construction, a fire response plan will be implemented. This will include the notification of appropriate emergency personnel, including the Thames Centre Fire Department, if a fire occurs at the site.

### 4.5 EMERGENCY SCENARIO: SPILLS

Spills of operating fluids (gasoline, diesel fuel, lubricants) are possible from construction equipment and maintenance equipment and vehicles.

Spills of transformer insulating oils are possible. The main tanks of the power transformers at the station facility will be filled with insulating oil. Oil levels in the transformers are remotely monitored. Monthly maintenance routines include a check of the level of transformer oil in each transformer, and an inspection of the transformer for leaks.

#### 4.5.1 *REPORTABLE SPILLS*

Spills are defined as a discharge of a pollutant into the natural environment, from out of a structure, vehicle or other container, and which is abnormal in quantity or quality in light of all the circumstances of the discharge and which may cause an adverse

effect resulting directly or indirectly from human activities (Environmental Protection Act, R.S.O. 1990 Part X).

Reportable spills include:

1. Discharge of a pollutant into the natural environment.
2. Discharge likely to cause adverse effects.
3. Discharge not contained by secondary containment.
4. Discharge >100 litres of vehicle operation fluids.
5. Discharge >100 litres of mineral oil from electrical equipment
6. Any discharge (including those exempted in d and e) that enter water or drainage structures (ditches, maintenance holes, etc.).
7. Any discharges that contain more than 1.0 gram of PCBs (>50ppm) or any discharge with unknown but potential PCB content.
8. Spills of airborne pollutants or emissions of smoke including gases, vapours, particulate, uncontained dust emissions from blasting, etc.

#### 4.5.2 *INTERNAL NOTIFICATIONS*

The Primary Crisis Manager will record all the pertinent information regarding the spill in a Spill Incident Report. The Secondary Crisis manager will be informed of the spill, and be given a copy of the Spill Incident Report.

#### 4.5.3 *EXTERNAL NOTIFICATIONS*

The Response Supervisor or designate must notify the following responders:

<b>Agency</b>	<b>Contact Numbers</b>
Ministry of the Environment Spills Action Centre (SAC)	1-800-268-6060 (24 hours)
Thames Centre Fire Department	911
Middlesex OPP	911

Where readily ascertainable, also contact any third party owner of or person having control of the pollutant (if applicable). For spills that enter the storm and/or sanitary sewer system, or that occur within the boundaries of a municipal township, contact the local municipality.

<b>Agency</b>	<b>Contact Numbers</b>
Municipality of Thames Centre	(519) 268-7334
County of Middlesex	(519) 434-7321

The nearest hospital or medical aid facility to the RE Breen 2 site is the Alexandra Hospital in Ingersoll, which is approximately 10 km to the northeast of the site.

#### 4.5.4 *SPILL INCIDENT REPORT*

When reporting a spill to any government agency, the following information should be given:

- What was spilled?
- How much was spilled?
- Where is the spill?
- What was done to contain and clean up the spill?
- Who (i.e. what company) do you represent?
- Where are you?

The following Spill Incident Report will be used to record spills.

<b>Spill Incident Report</b>			
<b>Location:</b> _____	<b>Date:</b>	____ / ____ / ____	
		Year                  Month                  Day	
	<b>Time:</b>	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	
<b>Reported by Whom:</b> _____			
<b>Reported Internally to:</b> _____	<b>Date:</b>	____ / ____ / ____	
		Year                  Month                  Day	
	<b>Time:</b>	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	
<b>Incident description</b>	_____		
	_____		
	_____		
	_____		
<b>Material Spilled/Released:</b> _____	<b>Duration:</b>	_____	
<b>Estimated Quantity</b>	_____		
<b>Immediate Cause</b>	_____		
	_____		
	_____		
<b>Additional Equipment or Agency Employed:</b>	_____		
<b>Immediate Actions:</b>	_____		
	_____		
	_____		
	_____		
<b>Weather Conditions:</b>	_____		
<b>Time Normal Conditions Restored:</b>	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<b>Date:</b>	____ / ____ / ____
			Year                  Month                  Day
<b>Reported to (MOE, etc.):</b>	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<b>Date:</b>	____ / ____ / ____
			Year                  Month                  Day

