



# CanadianSolar

## Glenarm Solar Project

Renewable Energy Approval Application

Decommissioning Plan Report

July 2012



GL Garrad Hassan





**GLENARM SOLAR PROJECT**  
**RENEWABLE ENERGY APPROVAL**  
**APPLICATION**  
**DECOMMISSIONING PLAN REPORT**

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**TABLE OF CONTENTS**

<b>1</b>	<b>PREAMBLE</b>	<b>1</b>
<b>2</b>	<b>DECOMMISSIONING</b>	<b>2</b>
2.1	Decommissioning during Construction or Operations (Abandonment of Project)	2
2.2	Decommissioning after Ceasing Operation	2
2.3	Procedures for Dismantling and Demolishing	3
2.3.1	Above-Ground Structure Decommissioning	3
2.3.2	Below-ground Structure Decommissioning	3
2.3.3	Equipment Dismantling and Removal	4
<b>3</b>	<b>SITE RESTORATION</b>	<b>5</b>
<b>4</b>	<b>ENVIRONMENTAL EFFECTS – STATEMENT ON IMPACTS</b>	<b>6</b>
<b>5</b>	<b>EMERGENCY RESPONSE AND COMMUNICATIONS PLANS</b>	<b>6</b>
<b>6</b>	<b>PUBLIC, MUNICIPAL AND ABORIGINAL COMMUNITY NOTIFICATION</b>	<b>7</b>
<b>7</b>	<b>OTHER APPROVALS</b>	<b>7</b>
<b>8</b>	<b>SUMMARY</b>	<b>8</b>
<b>9</b>	<b>REFERENCES</b>	<b>9</b>

## 1 PREAMBLE

SkyPower Glenarm LP is proposing to develop the Glenarm Solar Project which is subject to *Ontario Regulation 359/09* (Renewable Energy Approval (REA) [1] under Part V.0.1 of the *Ontario Environmental Protection Act* (EPA)) and *Regulation 521/10* [2]. SkyPower Glenarm LP has received a contract from the Ontario Power Authority (OPA) for the purchase of electricity generated by photovoltaic solar panels through the Province’s Feed-in Tariff (FIT) Program. Canadian Solar Solutions Inc. is managing and coordinating the approvals process for SkyPower Glenarm LP. The Project is seeking a Renewable Energy Approval from the Ontario Ministry of the Environment (MOE).

This Decommissioning Plan Report has been prepared in accordance with Table 1 of *Ontario Regulation 359/09* and the MOE’s “Technical Guide to Renewable Energy Approvals” (July 2011) [3].

## 2 DECOMMISSIONING

The Decommissioning Plan Report provides an overview of all the activities during the Decommissioning Phase of the Project, as well as activities related to the restoration of land and water and managing excess materials and waste. The following decommissioning plan will be implemented in the event that the Glenarm Solar Project is abandoned during construction or at the end of the Project's lifespan. Most of the materials in a solar power project are reusable or recyclable, and some equipment may have manufacturer take-back and/or recycling requirements. Through the Decommissioning Phase of the Project, the site will be returned to a suitable state for future use. The future use is anticipated to be similar to its present state; unused agricultural land. Materials such as the steel for racking and copper from the electrical infrastructure will be removed and recycled. The photovoltaic panels will be removed and either returned through manufacturer recycling protocols or refurbished and recycled if possible. Any remaining materials will be removed and disposed of at an appropriate location off site.

### 2.1 Decommissioning during Construction or Operations (Abandonment of Project)

It is extremely unlikely that the Project would be dismantled during construction or operations. In the event that the Project is abandoned during construction or during operations the dismantling of components in place and restoration of lands to pre-construction conditions will follow the same procedure as for the decommissioning at the end of Project life.

Dismantling activities would follow the following procedures:

- Notification to relevant agencies that the Project is halted and that the decommissioning plan will be implemented;
- Dismantle photovoltaic modules and support racks, using conventional construction equipment and trucks for hauling the parts off the premises;
- Remove the top 1 m of any foundations (as a minimum);
- Underground electrical lines shall be cut and the ends buried to approximately 1 m below grade, and left in place. These lines are inert and will have no negative impacts on the environment, soil or arboreal practices;
- Remove substation, if already installed; and
- Redistribute any remaining soil in excavated or cleared areas, re-seed exposed soils as necessary.

### 2.2 Decommissioning after Ceasing Operation

At the end of the Project's life, decommissioning will require dismantling of the components making up the solar energy facility. Components that will be dismantled or removed according to the decommissioning report include:

- Photovoltaic modules, panels and wiring;
- Racking systems and support structures;
- Inverters, transformers and generators;

- Concrete foundations (down to 1 m below grade);
- Temporary office trailers, if any;
- Transformer and overhead electrical network and electrical poles; and
- Safety fences.

## **2.3 Procedures for Dismantling and Demolishing**

### **2.3.1 Above-Ground Structure Decommissioning**

Decommissioning of the above-ground structures can be summarized as follows:

- The solar energy facility shall be disconnected from the utility power grid;
- Photovoltaic modules shall be disconnected from the site electrical network and removed from the support racks; PV modules shall be returned to the manufacturer, re-used, recycled, or safely disposed offsite;
- The racking systems shall be dismantled and re-used, recycled or safely disposed of offsite;
- Above-ground lines and poles that are not owned by Hydro One will be removed and will be filled with clean fill;
- Components from the communication tower shall be removed and re-used, recycled, or safely disposed offsite;
- Inverter, generators and transformers shall be disconnected and removed; these components shall be sent back to the manufacturer, re-used, recycled, or safely disposed offsite; and
- The transformer shall be decommissioned in an appropriate manner and in accordance with current standards and best practices, and demolished.

### **2.3.2 Below-ground Structure Decommissioning**

The below-ground decommissioning of the Project can be summarized as follows:

- Underground electrical lines shall be cut and the ends buried to approximately 1 m below grade, and left in place. These lines are inert and will have no negative impacts on the environment, soil or arboreal practices; and
- Underground infrastructure and protective electrical structures involving concrete – such as concrete electrical shelters and concrete pad foundations for inverters and transformers – shall be removed to a minimum depth of 1 m and the area which is affected shall be backfilled as necessary. Concrete deeper than 1 m may be left in place. Waste concrete shall be recycled offsite by a concrete recycler or crushed onsite and used as fill material.

### **2.3.3 Equipment Dismantling and Removal**

This Decommissioning Plan assumes that the area will be re-converted to unused land, and thus the plan provides for the restoration of the areas used for the solar energy facility to return to their pre-Project conditions or to a state that is similar to its previous use.

The decommissioning will also weigh the different options and proceed with dismantling in a way that is safe, beneficial to the environment, and beneficial to the landowner.

If the facility is to be decommissioned and the solar energy facility is to be removed, the impacts will be similar to the Construction Phase, but in reverse sequence. For a detailed understanding of the construction activities, refer to the Construction Plan Report provided in this REA Application.

The components of the solar energy facility will be dismantled and removed by licensed subcontractors using similar techniques as those employed during the construction of the Project. Conventional construction equipment will be used to dismantle the components and the materials will be recycled or re-used, where possible, or disposed of offsite at an approved and appropriate facility in accordance with provincial waste management regulations. Any wastes generated will be disposed of according to provincial waste management regulations.

### 3 SITE RESTORATION

After the decommissioning process is completed, the land will be returned to their former condition or future anticipated use. Restoration of lands is planned for the areas impacted by the location of photovoltaic modules, inverters, transformers, access roads, and laydown areas. It is expected that some soil disturbance will occur during decommissioning of the solar facility. This is likely to occur during removal and transportation of above and below-ground infrastructure and components. Disturbance may include mixing of soil profiles (topsoil and subsoil), compaction, rutting, erosion, and decrease of soil fertility

Once all infrastructure and components have been removed from the site, protection from erosion, improving soil fertility and soil structure will become the primary concern and the choice of crops should reflect these concerns. It is recommended that the rehabilitated lands be seeded with a legume-grass mixture for at least one to two years following decommissioning. Once this has been established, over time, the area will re-vegetate naturally to restore the site to pre-constructions conditions.

#### **4 ENVIRONMENTAL EFFECTS – STATEMENT ON IMPACTS**

Many of the expected activities and equipment utilized during the initial construction of the Project are similar to those performed/used during decommissioning. Licensed contractors will be required to have an Environmental Management Plan (EMP) in place to ensure that natural features are protected during construction/decommissioning. Some of the key elements that are expected in the contractor's EMP include:

- Refueling and spill management for on-site equipment including spill kits, absorbent pads and safe refueling practices;
- Temporarily fenced areas around valued environmental features such as wetlands and water bodies, and exclusion of decommissioning works within these fenced areas;
- Storm water management especially in areas of disturbed soils such as silt fences, screening dams, and monitoring;
- Whenever feasible, construction activities during the Decommissioning Phase to take place during periods when the ground surface is best able to support construction equipment; and
- Replacement of topsoil stored onsite and re-vegetation of areas that were temporarily cleared where possible with native seed mixtures or with a mix of species similar to those on adjacent lands, in order to restore affected lands to their previous condition.

Please refer to the Construction Plan Report for the complete statement on impacts, as the environmental effects during decommissioning are similar to those during construction.

#### **5 EMERGENCY RESPONSE AND COMMUNICATIONS PLANS**

The Emergency Response and Communications Plans for Decommissioning are the same as the procedures found in more detail in the Design and Operations Report. Refer to section 7 of the Design and Operations Report for further detail.

## 6 PUBLIC, MUNICIPAL AND ABORIGINAL COMMUNITY NOTIFICATION

Decommissioning activities may require notification to stakeholders given their potential to increase traffic, noise, and general disturbance. In the eventuality of the decommissioning of the Project, Canadian Solar Solutions Inc. will update the list of stakeholders from the area to ensure that all new stakeholders are considered and are notified of the decommissioning activities. Local and provincial agencies will also be advised to discuss potential approvals required to engage in such activities. In accordance with the requirements of the REA, the stakeholder update would occur approximately 6 months prior to the start of the decommissioning activities.

## 7 OTHER APPROVALS

It is expected that decommissioning activities will require certain permits, similar to those required for construction, given the use of heavy machinery, trucks and oversized loads, and the potential for impacting the surrounding environment. Authorisations by the following agencies or entities may be required:

- City of Kawartha Lakes, Ontario;
- Kawartha Conservation Authority and/or Lake Simcoe Region Conservation Authority (if potential disturbance to watercourses);
- Ministry of Natural Resources; and
- Ministry of Environment.

Applications for the required approvals will be prepared prior to decommissioning and per the current regulations in place.

## 8 SUMMARY

This Decommissioning Plan Report has been prepared in accordance with regulatory requirements subject to *Ontario Regulation 359/09* (Renewable Energy Approval (REA)) under Part V.0.1 of the *Ontario Environmental Protection Act* (EPA).

This report has provided procedures for decommissioning during construction and after ceasing operations. These procedures include above and below-ground decommissioning and equipment dismantling and removal.

Sections discussing emergency response, communications plans, and public, municipal and aboriginal community notification have also been included herein.

## 9 REFERENCES

- [1] *Ontario Regulation 359/09*, made under the *Environmental Protection Act*, Renewable Energy Approvals under Part 1.0 of the Act.
- [2] *Ontario Regulation 521/10*, made under the *Environmental Protection Act*, Renewable Energy Approvals under Part 1.0 of the Act.
- [3] Technical Guide to Renewable Energy Approvals, Ontario Ministry of the Environment, July 2011.