

Striving for a Renewable World

E: ltaher@greewoodinfra.com
P: 1 (519) 498-3267



GREENWOOD
SUSTAINABLE INFRASTRUCTURE

Decommissioning Plan

Lethbridge Solar GP Ltd.
Springbrook Solar Project

1.0 Introduction

1.1 Company Background

Lethbridge Solar GP Ltd. (Lethbridge Solar), a subsidiary of Greenwood Sustainable Infrastructure Management Inc., is a Canadian renewable energy developer specializing in mid-sized utility scale solar, wind, and energy storage projects. The privately held corporation has headquarters in Baden, Ontario, Canada.

With over 14 years of experience, Lethbridge Solar has significant renewable energy knowledge and expertise, ranging in scope from early-stage development through to construction and commercial operation of over 150 megawatts (MW AC) of solar, wind, and energy storage power projects and currently operates over 45 MW AC of assets in Canada.

As Lethbridge Solar emerged from the vision of two farmers, their knowledge, value, and unique understanding of the lay of the land has been embedded into the internal workings of the company and its employees. Lethbridge Solar has always put a strong emphasis on being unrivalled in its stewardship of the land and will continue to do so wherever it operates.

1.2 Project Overview

Over the past several years, the proposed Springbrook Solar Project (the Project) has been under development by Lethbridge Solar, in partnership with the Red Deer Regional Airport and Red Deer County. The Project is proposed in Red Deer County, southwest of Red Deer, Alberta, and adjacent to the Red Deer Regional Airport approximately 1.8 km from the settlement of Springbrook.

The table below (Table 1) provides a summary of the Project Details.

Table 1: Springbrook Solar Project Details

| | |
|----------------------------|---|
| Project Location | Red Deer County at the southeast corner of Township Rd 374 and Range Rd 281 (C&E Trail) |
| Project Size | Up to 20 MW AC |
| Project Coordinates | 52°11'47.058" N, 113°53'49.848" W (Centre of Site) |
| Project Technology | Single Axis Tracker panels with Bi-Facial solar photovoltaic (PV) modules that are no higher than 2.7 m |
| Project Area | 91.7 acres |
| Interconnection | FortisAlberta Distribution Grid |

| | |
|--------------------------------------|---|
| Legal Subdivision Description | Land covering NW, NE, and SE quarters of Section 23, Township 37, Range 28, west of the Fourth Meridian |
|--------------------------------------|---|

The Site Plan below (Figure 1), depicts the final proposed footprint of the Project. The 91.7 acre Project site is proposed to be located at the southeast corner of Township Rd 374 and Range Rd 281 (C&E Trail). The Project will require approximately 46,000 Bi-Facial solar PV modules, up to 84 inverters, and 8 transformers all enclosed in 4.4 km of perimeter fencing that will be at least 2.1 m in height. The ground mount solar photovoltaic facility will have a generation capacity of up to 20 MW AC.



Figure 1: Springbrook Solar Project Site Plan

1.3 Decommissioning Plan Requirements

This Decommissioning Plan (the Plan) has been prepared in accordance with the Alberta Utilities Commission (AUC) Rule 007 - *Applications for Power Plants, Substations, Transmission Lines, Industrial*

System Designations, Hydro Developments and Gas Utility Pipelines and the *Conservation and Reclamation Directive for Renewable Energy Operations* (C&R Directive, AEP 2018).

The Project will be designed and constructed to operate for 35 years, at which time the facility will acquire necessary permits and approvals to either be retrofitted and continue operations, or, be decommissioned. The Plan outlines the activities planned during the decommissioning phase intended at the end of the Project life. It also discusses how Lethbridge Solar will financially prepare for this phase of the Project.

It is Lethbridge Solar's objective to adhere to the best practices and procedures outlined by the Province of Alberta throughout the decommissioning process. The Project will be de-energized, uninstalled, and dismantled from the Project surface area and all equipment components will be disposed of in an environmentally and ethically conscious manner. Where able, Project materials will be safely transported to the appropriate facilities to be recycled and reused for future industrial purposes.

All required permits and necessary approvals at the time of decommissioning will be obtained from the appropriate regulatory and government bodies. Notification to the landowners, local municipality, and stakeholders will also be given in advance of the commencement of the decommissioning process.

2.0 Decommissioning Activities

2.1 Pre-Dismantling Activities

Prior to engaging in any decommissioning works, Lethbridge Solar will develop a Decommissioning Plan in accordance with any provincial requirements applicable at the time of decommissioning. The remainder of this Plan addresses general decommissioning activities as they are envisioned at this time. At the end of the Project's useful life, it will first be de-energized and isolated from all external electrical lines.

Prior to any dismantling or removal of equipment, the construction laydown area will be delineated and may be of similar dimensions as during the construction phase. This would require expansion of any parking/laydown area that was retained for the operation phase. All decommissioning activities would be conducted within the designated Project Location; this includes ensuring that vehicles and personnel stay within the demarcated areas.

Temporary erosion and sedimentation control measures will be implemented during the decommissioning phase of the Project. These measures will be enacted with consideration of industry best management practices and will be determined by a qualified environmental professional prior to decommissioning.

2.2 Equipment Dismantling

The following sections describe the process that will be undertaken to remove the various Project components. For any remaining infrastructure left in place, Lethbridge Solar commits to:

- Demonstrate that remaining infrastructure will not result in an adverse effect and is stable, non-hazardous, and non-erosive
- Provide justification as to why the infrastructure is being left in place
- Provide written confirmation of acceptance by the landowner

2.2.1 Solar Panels

The system will be brought off-line with each of the recombiners at the inverter stations being electrically opened prior to disconnecting any panels. After a voltage and current check to ensure that the equipment is no longer generating electricity, each panel within the checked block will be disconnected from the electrical system and unfastened from the racking system. The panels will be removed in such a way as to not break any continuous ground that may be necessary to maintain a safe work environment. After removal of the panel from the rack, it will be packaged for transportation off-site.

2.2.2 Racking Systems

The fixed racks that support the solar panels will be disassembled using standard hand tools, possibly assisted by a small portable crane. Underground support structures (piles or screws), if used, would be removed using mechanical equipment up to a depth of 1.2 meters. Racking systems and support structures will be transported off-site.

2.2.3 Electrical Equipment and Collector System

Electrical equipment, including inverter and equipment at the transformer substation will be disconnected, dismantled, and removed from the site. Inspection of the equipment will be conducted throughout the decommissioning process to ensure no oil leaks are caused. In the case of an accidental oil leak, appropriate spill response protocol would be undertaken.

Electrical collection cabling (AC and DC) and data cabling throughout the site may be removed up to 1 meter in depth and transported off-site, depending on landowner preference at the time.

The overhead distribution line and interconnection infrastructure including all Lethbridge Solar owned and controlled infrastructure on site and in the municipal road allowance will be removed. Infrastructure installed by FortisAlberta within the road right of way will be the responsibility of FortisAlberta and will be at their discretion for removal.

2.2.4 Foundations

The concrete foundation for the transformer substation will be broken up mechanically using equipment such as a backhoe-hydraulic hammer/shovel, jackhammer, or similar. Concrete debris, granular and geotextile materials would be removed from the site by dump truck. Any concrete infrastructure will be removed to a minimum depth of 1.2 meters.

2.2.5 Access Roads, Transformer Substation Yard, and Construction Laydown Area

The graveled access roads, transformer substation yard, and parking/staging areas would be removed, including any geotextile material beneath the graveled areas. All granular and geotextile materials would be removed from the site by dump truck. The exception to removal would be upon specific written request from the landowner to leave all or a portion of these facilities in place for future use by the landowner.

2.2.6 Other Components

Removal of all other facility components from the site will be completed unless retained by request of the landowner, including fencing. The perimeter fence will be dismantled and removed after all major components including PV modules, racking structures, and foundations have been removed. The site access road will be the final component of the facility removed.

2.3 Site Rehabilitation/Restoration

The land hosting the Project is anticipated to be restored to a pre-construction state. Agricultural lands that have become compacted due to facility operation or decommissioning activities, such as access roads, would be decompacted using chisel ploughing and/or subsoiling, as determined by a qualified environmental professional and landowner.

Topsoil would be re-graded or added to similar depth as surrounding areas, where necessary. If necessary and approved by the landowner, imported topsoil may be added and would be of the same or similar soil type and texture as pre-construction conditions and/or adjacent lands and would be inspected and/or tested prior to importation to prevent transmission of agricultural pests to the property.

The site would be re-graded to original contours and surface drainage patterns, if requested by the landowner. Areas of exposed soil would be seeded with an appropriate seed mixture in consultation with the landowner, to prevent soil erosion until the landowner returns the site to active agricultural use.

2.4 Managing Excess Materials and Waste

During dismantling and demolition of the Project, Lethbridge Solar will follow the principles of the 3Rs hierarchy and include the reduction of the amount of waste generated, reuse of materials, and recycling of any materials that cannot be reused. All wastes would be managed in accordance with applicable laws or relevant regulations and specifications in effect at that time.

Typical waste materials and modes of disposal, recycling or reuse are presented in the table below.

Table 2: Mode of Component Disposal Details

| Component | Mode of Disposal |
|---|--|
| Concrete Foundations | Reuse/resale of inverter station concrete pads, or crush and recycle as granular material |
| Solar Panels | Reuse/resale for use at a different location, or recycle glass, silicon, and aluminum frames |
| Cabling | Recycle or resale |
| Transformers, Inverters, and other Equipment | Reuse/salvage/resale for use at a different location, or recycle |
| Prefabricated Housing | Reuse/resale for use at a different location |
| Granular Materials | Reuse/resale for use at a different location, or dispose in landfill |
| Oils/Lubricants | Recycle through reprocessing |
| Hazardous Materials | Dispose through licensed hauler |
| Geotextile Materials | Dispose in landfill |
| Miscellaneous Non-recyclable Materials | Dispose in landfill |

Major pieces of equipment may be recyclable or reusable. The galvanized steel or aluminum racks may be recycled. Electrical equipment could either be salvaged for reuse or recycled. Components, such as the cabling, would have a high resale value due to copper and aluminum content. Concrete from foundations and pads could be crushed and recycled as granular fill material. Spent oils, if any, could be recovered for recycling through existing oil reprocessing companies.

As much of the facility would consist of reusable or recyclable materials, there would be minimal residual waste for disposal as a result of decommissioning the facility. Small amounts of registerable waste materials would be managed in accordance with applicable legislation. Residual non-hazardous wastes would be disposed of at a licensed landfill in operation at the time of decommissioning.

2.5 Post-Decommissioning Monitoring

Potential soil problem areas including trench subsidence, soil erosion, and/or stoniness would be noted. As per the requirements of the C&R Directive, vegetation assessments will be conducted for four growing seasons following the completion of reclamation. If negative impacts are noted during monitoring activities, appropriate remediation measures would be implemented as necessary, and additional follow-up monitoring would be conducted, as determined by a qualified environmental professional.

3.0 Preparing for Costs of Decommissioning

The costs associated with decommissioning activities will be the responsibility of Lethbridge Solar or the owner of the Project at the time of decommissioning. The cost of decommissioning includes costs associated with:

- Labour
- Equipment & Machinery
- Erosion & Sedimentation Control
- Waste Removal
- Landfill Fees

The cost of decommissioning a solar project can be estimated based on today's available information and engineering and demolition experience with solar and other power projects. Based on today's solar industry, Lethbridge Solar's engineers estimate that the cost to decommission the Project will be \$650,000 CAD in 2021 dollars. Up to 100% of this cost could be covered by the salvage value of the useful components such as aluminum, copper, and the solar panels themselves. Lethbridge Solar conservatively estimates that 50% of this cost will be covered by the salvage value of the components. The remaining \$325,000 will be covered by funds saved in a Reserve Account over the last 10 years of operations. Specifically, in the Project's operational years 26 to 35, Lethbridge Solar will begin directing a portion of revenue annually into a specific Reserve Account. The amount contributed annually will be one tenth of the remaining decommissioning costs. This will amount to an annual contribution of \$32,500 per year for 10 years such that the value of funds in year 35 of operations is adequate to cover the expected surplus decommissioning cost.

To account for inflation, changes in industry, and changes in waste/recycling technology, Lethbridge Solar commits in year 31 of operations to engage a qualified independent third-party engineer to prepare a detailed Decommissioning Scope and Cost Estimate Report (the Report). The purpose of the Report will be to quantify the true decommissioning costs and salvage value and confirm whether the Reserve Account will be adequately funded at the end of the Project Life in year 35. The Report will be shared with Red Deer County and the Red Deer Regional Airport. Lethbridge Solar will subsequently issue a memorandum confirming whether the Reserve Account is adequate and confirm whether less or additional funds will be set aside through the remaining five years of Project life.