



PROJECT DESCRIPTION REPORT (PDR)

[The numbers in brackets refer to sub-sections of Technical Guide to Renewable Energy Approvals (2011)]

*9 September 2010
Last Revised 11 December, 2013*

Section 1 – General Project Information and Contacts

| | |
|---------------------------|--|
| Project Name [3.1] | Penn Energy – Brantgate |
| Project Description [3.3] | 8,000 kW Solar PV Renewable Energy Generation Facility (“REGF”) |
| Project Location [3.2] | 153 Bishopsgate Road, Burford Township, Brant County, Ontario N0E 1R0 |
| OPA FIT Application Nos. | FIT-FCELIHJ |
| Applicant [3.1] | Penn Energy Renewables, Ltd. 1 Yonge Street, Suite 1801, Toronto, ON M5E 1W7 |
| Project Contact [3.4] | Max Frable - max@pennenergyrenewables.com 620 Righters Ferry Road, Bala Cynwyd, PA, USA 19004 Office: 610-668-0300 Fax: 610-668-0365 |

Section 2 – Are Any Related Permits/Authorizations Required?

| | |
|---|--|
| Conservation Authority (CA) [3.5] | Not Required: As part of the Natural Heritage Assessment (NHA), Penn has consulted with Grand River Conservation Authority (GRCA) and Lower Point Region Conservation Authority (LPRCA). Jurisdiction is limited to interference with water courses of which there are none located within the Project Location or adjacent lands. <i>See Section 4 for more details.</i> |
| Ministry of Natural Resources (MNR) [3.5] | Received: A Natural Heritage Assessment prepared by Savanta, Inc. with the finding that “there are no natural features within the Project Location nor the Adjacent Lands.” The Ministry of Natural Resources, Guelph District, has confirmed the NHA findings. <i>See Section 4 for more details.</i> |
| Ministry of Tourism & Culture (MTC) [3.5] | Received: A Stage 1-2 Archaeological Assessment, prepared by Northeastern Archaeological Associates, Ltd., was submitted to the Ministry of Tourism & Culture who concurred with the recommendation for clearance of the development site. <i>See Section 4 for more details.</i> |
| Ministry of Transportation (MTO) [3.5] | None; the property does not abut an MTO-jurisdiction roadway. |

| | |
|---|--|
| Federal Involvement: [3.6] | |
| Canadian Environmental Assessment Agency (CEAA) | No federal authority is the proponent of the project or providing financial assistance to the proponent; no federal lands are being sold, leased or otherwise disposed; no requirement for a federal permit, license or other approval is anticipated. |
| Pending or Decided Federal Environmental Assessments (EA) | No known Federal EA regimes exist related to this site. |
| Fisheries & Oceans Canada (DFO) <i>Fish and Fish Habitat impacts requiring review beyond local CA; Fisheries Act authorization; or under jurisdiction of Canadian Environmental Assessment Act (CEAA), or Species at Risk Act (SARA)</i> | Not Required - A Water Assessment has been prepared by Savanta, Inc. There are no water bodies within the Project Location or an adjacent property. |
| Environment Canada <i>Migratory Birds and/or Habitat</i> | The majority of this site was used for farming ginseng. The balance of the site, the southern portion, is open fields that, according to the NHA records Review and Site Investigation, do not constitute significant wildlife habitat. Guelph District MNR office confirmed these findings. <i>See Section 4 for more details.</i> |
| Parks Canada <i>Federal Lands owned by Parks Canada</i> | The REGF does not occur on or over federal land owned by Parks Canada. It does not appear that there are any national parks, reserves, historic sites, historic canals or national marine conservation areas nearby that will be negatively impacted by the REGF. |
| Natural Resources Canada (NRCan) <i>Funding assistance</i> | No funding is being sought from NRCan for this project. |

Section 3 – Specific Project Information

| | |
|---|--|
| Facility Class [3.3] | Class 3 Solar PV (Ground-mounted, >10 kW) |
| Nameplate Capacity [4.1] | 8,000 kW (AC, peak) |
| Energy/Fuel Sources [3.3] | The Sun (No fuel or raw material is required; no by-products, waste or pollution are generated during the process.) |
| Electricity Generation Components [4.1] <i>Since supplier contracts remain to be finalized, this information is subject to change. We anticipate components will not substantially differ from those listed herein. [1 mW (AC) = approx. 5,500 panels]</i> | A single photovoltaic (PV) module is approximately 1m x 1.65m and consists of numerous crystalline-silicon cells arranged in a grid and laminated between electrodes and enclosed within a glass and aluminum frame. Modules are grouped into arrays which are aligned in east-west rows; the rows are separated by access aisles, approximately 5 meters in width. The array field (“project area”) for this site will consist of approximately 44,000 PV modules and will include 5 or more modular collection houses that will contain inverters and transformers. Power generated by PV modules is low-voltage, direct current (DC) and will be collected and converted into alternating current (AC) by inverters located inside the collection houses throughout the array field. Metering and safety equipment is required and allows the distribution/transmission operators to remotely control the power grid interconnection to ensure safe and reliable operation – especially during power outages and disruptions. |

| | |
|--|--|
| <p>Associated Facilities/Equipment [4.1]</p> | <p>The entire project area will be enclosed with a security/safety fence; a perimeter driveway will be located adjacent to (inside) the fence; additional driveways will pass through the array field and provide access to the collection houses. Electrical collection and distribution lines will consist of underground and/or overhead lines and will connect to the power grid at a nearby distribution line. No new utility services are anticipated at this time.</p> |
| <p>Project Activities: [4.2]</p> | |
| <p>Describe any regulated activities (construction, installation, use, operation, changing and retiring)</p> | <p>The solar module arrays will be mounted on a series of metal framing elements that are sloped (facing south) to optimize exposure to the sun (maximum height is approximately 4 meters above the ground). The foundation system consists of similar framing elements that are driven, screwed, or cored-and-grouted into the ground (depending upon existing soil conditions). As mentioned above, a driveway surrounds the project area and provides access throughout the array field and to all the collection houses. (Only minor re-grading is anticipated.) Indigenous grasses/groundcover will grow beneath and between the rows of solar arrays, which will minimize erosion and enhance infiltration of precipitation into the soil. Because there are gaps between the modules as well as wide spacing between the arrays, little (if any) impact to the existing natural storm-water drainage is anticipated. Besides construction of driveways, installation of panels, framing, foundations and the collection houses, the remaining work is mostly electrical (collection lines, inverters, transformers, etc.). Once construction & installation is complete (including testing and commercial operation initiation), regular light maintenance is required. Site visits will be conducted for minor site maintenance and inspection of electrical and non-electrical components. Additional visits will occur as necessary (e.g. to replace panels, wiring or other components). One extremely beneficial characteristic of this project is the installed components have almost no long-term or permanent impact on the site. In fact, they can all be removed after the solar panels have fulfilled their life-expectancy (20-30 years) and the site can virtually be returned to its natural state – very much as it exists today. This means the site could again be utilized for agricultural purposes or any other use deemed appropriate at that time. Very little evidence, if any, would exist of the solar farm at the end of the project’s life.</p> |
| <p>Describe facility phases and timing / scheduling of each phase (e.g. time of year, frequency and duration)</p> | <p>Entire REGF will be constructed & installed in one phase; anticipated duration is approximately 6 months and will likely commence in Spring or Summer.</p> |
| <p>Identify the nature of any solid, liquid or gaseous wastes, air and noise emissions likely to be generated; describe plans to manage any wastes</p> | <p>No solid, liquid or gaseous wastes, nor air emissions will be generated by the REGF. Minimal noise will be emitted from electrical conversion equipment (inverters and transformers), and an acoustic assessment has been conducted according to REA requirements in O.Reg. 359/09.</p> |
| <p>Describe disposal procedures for any toxic or hazardous materials to be used or byproducts to be generated</p> | <p>No toxic or hazardous materials will be used or generated, so disposal procedures are unnecessary.</p> |

| | |
|---|--|
| Describe sewage and stormwater management | No sewage will be generated. The project will have only minimal impacts to the site and therefore minimal impacts upon the flow of stormwater. The solar arrays can usually follow existing grades. The only point of contact between each array of solar panels and the earth are the posts upon which the arrays are mounted. Other site improvements are minimal (collection house foundation pads, service driveway, etc.). There should be virtually no change to the way that water flows on the site.) |
| Describe any water-taking activity | None anticipated. |
| Land Ownership [4.4] | REGF site is privately owned (no Crown or Federal lands involved) |
| Legal description [4.4] | PT LT 1-2 CON 11 BURFORD AS IN A513133 EXCEPT PTS 1 TO 14 2R5872 S/T A513133; S/T A29369, T/W A515190,S/T BU29033; County of Brant |

Project Location Map [4.3] – See Exhibit A attached hereto.

Section 4 – Potential (Negative) Environmental Effects

| | |
|--|--|
| Cultural Heritage & Archeological (MTC) [5.1] | In respect of Protected Properties, Unterman McPhail Associates (UMA) of Toronto, ON has screened the property and verified that the proposed project is not located on nor does it abut any protected properties as described in Column 1 of the Table to section 19 of O.Reg. 359/09. UMA also verified there are no other heritage resources at the project location (in addition to defined protected properties). A Stage 1 and 2 Archaeological Assessment Report was prepared by Northeastern Archaeological Associates of Port Hope, ON. A small number of European artifact fragments we found in an area near the existing house and the project was subsequently modified to avoid this area. Four isolated chert flakes and one base were found in separate locations onsite but did not result in the recovery of sufficient material to be considered a site, nor to proceed to Stage 3 assessment. MTC issued concurrence with these findings on September 25, 2012. |
| Natural Heritage (MNR) [5.2] <i>Woodlots, valleylands, wildlife habitat, provincial parks, conservation areas & reserves, flora/fauna species of concern & habitat, protected natural areas (e.g. ANSI), and locally important or valued ecosystems or vegetation...within 300m of RE project</i> | The REGF is not located within 120m of a Provincial Park or Conservation Reserve, nor is it within 50m of an ANSI-earth science. A Natural Heritage Assessment (NHA) as prescribed by O.Reg. 359/09 has been prepared by Savanta, Inc finding no natural features within the Project Location nor within a 120m boundary. The NHA reports' findings have been confirmed by the MNR. No negative environmental impacts pursuant to O.Reg 359/09 are anticipated. |
| Water Bodies (CA, MNR) [5.3] | A Water Assessment has been prepared by Savanta, Inc. There are no water bodies within the Project Location or an adjacent property. |
| Air, Odour, Dust [5.4] | No odors or dust emissions are produced from the solar power generation process. |
| Noise [5.5] | Minimal sound is emitted by the solar power generation process. The panels, racking and wiring – which comprise the majority of the REGF – produce virtually no sound. The inverter and transformer, however, do produce some noise – which has been studied in accordance with O.Reg. 359/09. The prescribed noise limits will be adhered to via careful positioning of the suspect equipment, adequately distanced from any receptors. |
| Land Uses [5.6] (past & present; onsite & nearby) | According to the current zoning bylaw, this parcel is zoned “Extractive Industrial” but it has been farmed for ginseng following the abandonment of extraction activities. It is surrounded by agriculturally zoned land that is currently being used for various farming operations, except for land to the north of this site that is |

| | |
|---|---|
| | being used for aggregate purposes (also zoned Extractive Industrial). |
| Provincial & Local Infrastructure [5.6] | No negative environmental effect is anticipated on provincial and local services and infrastructure. The REGF requires no public water, sewer or gas services. While there will be a temporary increase of truck traffic on local roads during the few months of construction, there will be almost no traffic generated by this REGF once construction is complete |
| Livestock Impacts [5.6] | Per Ontario Energy Board standards, the project perimeter will be fenced, limiting potential for livestock to enter the facility |
| Public Health & Safety [5.8] | No negative environmental effect on public health and safety is anticipated. In fact, there are numerous <u>benefits</u> provided by generating solar power , which is why the provincial government is encouraging it. The facility will be surrounded by a fence for safety and security. |
| Provincial Plan Areas [5.9] <i>(Greenbelt, Oak Ridge Moraine, Niagara Escarpment, Lake Simcoe Watershed)</i> | Not Applicable, since the project is not within any known PPA. |

Exhibit A – Project Location Map [4.3]



DRAFT –15 October, 2012

PENN ENERGY RENEWABLES, LTD.