PROJECT DESCRIPTION REPORT (PDR)

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

9 August, 2010
Revised – 31 October 2012

Section 1 – General Project Information and Contacts

Project Name [3.1]	**Penn Energy - Ridgefield**
Project Description [3.3]	8,000 kW Solar PV Renewable Energy Generation Facility ("REGF")
Project Location [3.2]	59 Kennedy Bay Road, Dunsford (Fenelon Township) City of Kawartha Lakes, Ontario, K0M 1L0
OPA FIT Application Nos.	FIT-FITFRZ1
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 Authorizations Required?

Conservation Authority (CA) [3.5]	No. Kawartha Region Conservation Authority (KRCA) was consulted and presented no permitting requirements for the project. *See Section 4 for more details.*
Ministry of Natural Resources (MNR) [3.5]	Confirmation obtained; a Natural Heritage Assessment and Environmental Impact Study were submitted to MNR Peterborough District. These reports were confirmed by MNR. *See Section 4 for more details.*
Ministry of Tourism & Culture (MTC) [3.5]	Concurrence obtained. . The Archaeological Assessment performed by Northeastern Archaeological Associates Limited recommended that the development property be cleared for development. MTC confirmed these findings. As supplemental report was submitted to add an area to the cleared property and also received concurrence from MTC. *See Section 4 for more details.*
Ministry of Transportation (MTO) [3.5]	The property does not abut an MTO-jurisdiction roadway.
Federal Involvement: [3.6]	
Canadian Environmental	No federal authority is the proponent of the project or providing financial

Assessment Agency (CEAA)	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) *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)*	No. There are no water bodies located within the project location or within 120m.
Environment Canada *Migratory Birds and/or Habitat*	No negative impact to migratory birds and/or their habitat is anticipated. *See Section 4 for more details.*
Parks Canada *Federal Lands owned by Parks Canada*	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) *Funding assistance*	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] *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]	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 8 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. The AC power flows through one or more ***transformers*** to increase its voltage to match the local electricity distribution system (typically 44 kV or 27.6 kV). 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.
Associated Facilities/Equipment [4.1]	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.

Project Activities: [4.2]	
Describe any regulated activities (construction, installation, use, operation, changing and retiring)	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, that a solar farm ever existed would remain.)
Describe facility phases and timing / scheduling of each phase (e.g. time of year, frequency and duration)	Entire REGF will be constructed & installed in one phase; anticipated duration is approximately 6 months and will likely commence in Spring or Summer.
Identify the nature of any solid, liquid or gaseous wastes, air and noise emissions likely to be generated; describe plans to manage any wastes	No solid, liquid, gaseous wastes or air emissions will be generated by the REGF. Minimal noise will be emitted from electrical conversion equipment (inverters and transformers), and an acoustic assessment will be conducted according to REA requirements in O.Reg. 359/09.
Describe disposal procedures for any toxic or hazardous materials to be used or byproducts to be generated	No toxic or hazardous materials will be used or generated, so disposal procedures are unnecessary.
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	Penn will utilize an existing well onsite for water necessary during construction activity and equipment cleaning. Use is not expected to exceed 30,240 litres per day at a seldom reached peak usage level. According to a Hydrogeological Impact Statement prepared by Levac Robichaud Leclerc Associates Ltd, dated February 2012, "the proposed water taking operation described above is expected to have no significant impacts on the local hydrogeological regime, including interference with neighbouring wells (dug or drilled), and land uses as well as any local surface water features.".
Land Ownership [4.4]	REGF site is privately owned (no Crown or Federal lands involved)
Legal description [4.4]	E ½ LT 5 CON 10 FENELON EXCEPT PT 1, 57R5407; S/T INTEREST IN R310903; KAWARTHA LAKES

Section 4 – Potential (Negative) Environmental Effects

Cultural Heritage & Archeological (MTC) [5.1]	The REGF is not located on a "protected property" as described in the Table to Section 19 of O. Reg. 359/09. There are no known archeological or heritage resources at the REGF site, and REGF does not appear to abut any "protected properties.". These archaeological findings have been submitted to the MTC who concurred with the findings. Both archeological and built heritage findings will be included in the complete REA application to the Ministry of the Environment.
Natural Heritage (MNR) [5.2] *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*	REGF is not located within 120m of a Provincial Park or Conservation Reserve; City of Kawartha Lake's Township's 2010 draft Official Plan indicates a rural land use designation. REGF is not within 50m of ANSI-earth science. Natural features found onsite by an NHA report and Environmental Impact Study completed by Bowfin Environmental Consulting. found one possible natural feature within the project location and three significant natural features within 120m. Within the project location is possible Reptile Hibernacula (to be confirmed by 2013 surveys). Within 120m are generalized significant wildlife habitat along the north, east and west, wetlands to the north and east and woodlands to the north, east and west. Possible turtle nesting and wintering and amphibian breeding habitat are also located within 120m. Mitigation measures to avoid impact to these features are details in the Environmental Impact Study, Construction Plan Report and Design and Operations Report (Environmental Effects Monitoring Plan). Additional surveys to confirm absence/presence of reptile hibernacula, turtle wintering and nesting and amphibian breeding habitat (woodland) will be confirmed by 2013 surveys.
Water Bodies (CA, MNR) [5.3]	A water assessment has been prepared by Bowfin Environmental. There are no features meeting the definition of water bodies located on or within 120m of the project location. There are no lake trout lakes on or within 300m of the project location. A Water Bodies Report is not required.
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 will be studied in accordance with O.Reg. 359/09. It is anticipated that the prescribed noise limits will be adhered to via careful siting of the suspect equipment adequately distanced from any receptors.

Land Uses [5.6] (past & present; onsite & nearby)	To the North is Snug Harbor Road and across the street from the road is undeveloped forested land. To the east is Kennedy Bay road. To the west and south are a small number of home with mostly undeveloped grass lands. The current site has been used in the past, for haying and cattle grazing.
Provincial & Local Infrastructure [5.6]	No negative environmental effect is anticipated on provincial and local services and infrastructure. The REGF will likely require no new utility 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 fences 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 benefits 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] *(Greenbelt, Oak Ridge Moraine, Niagara Escarpment, Lake Simcoe Watershed)*	Not Applicable, since project is not within any known PPA.

Section 5 – Project Location Map *(attached)*