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**Renewable Energy Approval (REA)
 Project Description Report
 s. 13 (Table 1, Item 10) of Ontario Regulation 359/09**

Project Description Report (PDR)

[The numbers in brackets refer to sub-sections of "Technical Bulletin One" PIBS 7436e.]

April 19, 2010

(Revised July 5, 2011)

Section 1 – General Project Information and Contacts

Project Names [3.1]	Penn Energy – Edwardsburgh_Morrisburg-1 Penn Energy – Edwardsburgh_Morrisburg-1 (i-1)
Project Description [3.1]	10 MW Solar PV Renewable Energy Generation Facility ("REGF"); 9,333 kW base with additional 667 kW incremental application pending with OPA
Project Location [3.1]	NW-corner of Country Rd. 2 (King St.) and Newport Drive (estimated address: 3400 CR-2 or 2 Newport Drive); Edwardsburgh/Cardinal, County of Leeds and Grenville, ON, K0E 1T0
OPA FIT Application Nos.	FIT-F46NQGB (base) and FIT-F5B62XM (incremental)
Applicant [3.2]	Penn Energy Renewables, Ltd. 1 Yonge Street, Suite 1801, Toronto, ON M5E 1W7
Project Contact [3.2]	Max Frable Max@PennEnergyRenewables.com Penn Real Estate Group, Ltd. 620 Righters Ferry Road, Bala Cynwyd, PA, USA 19004 Office: 610-668-0300 x1007 Fax: 610-668-0365

Section 2 – Are Any Related Authorizations Required?

Conservation Authority (CA) [3.3]	No. The South Nation Conservation Authority reviewed the proposed REGF site and concluded that the subject parcel is not within their Regulated Area. Bowfin Environmental Consulting of Cornwall, ON has confirmed there are no water bodies in or within 120m of the project location and that no fish or fish habitat will be impacted by this project.
Ministry of Natural Resources (MNR) [3.3]	No. MNR's Kemptville District Manager has confirmed the findings of the Natural Heritage Assessment and Environmental Impact Study Report prepared by Bowfin Environmental Consulting of Cornwall, ON. <i>See Section 4 for more details.</i>
Ministry of Tourism & Culture (MTC) [3.3]	No. The MTC has reviewed the Stage 1 and 2 Archaeological Assessment Report prepared by Northeastern Archaeological Associates of Port Hope, ON. An Archaeology Review Officer has stated that the MTC believes this assessment complies with the Ontario Heritage Act and that the Ministry is satisfied with the recommendations included therein. 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).
Ministry of Transportation (MTO) [3.3]	No. The MTO Corridor Management Planner for this area has confirmed “the subject site is outside of the MTO permit control area, and as such the Ministry has no concerns with this project.”
Federal Involvement: [3.4]	
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 necessary.
Pending or Decided Federal Environmental Assessments (EA)	There are no known Federal EA regimes 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>	No. The South Nation Conservation Authority reviewed the proposed REGF site and concluded that it contains no Fish Habitat water bodies. Bowfin Environmental Consulting of Cornwall, ON has confirmed there are no water bodies in or within 120m of the project location and that no fish or fish habitat will be impacted by this project.
Environment Canada <i>Migratory Birds and/or Habitat</i>	No. Bowfin Environmental Consulting of Cornwall, ON has confirmed this project will have no negative impacts to migratory birds and/or their habitat.
Parks Canada <i>Federal Lands owned by Parks Canada</i>	This REGF does not occur on or over federal land owned by Parks Canada. Although two National Historic Sites are nearby (Battle of the Windmill NHS and Fort Wellington NHS), Underman McPhail Associates of Toronto, ON has verified that the REGF will have no negative impact on them or any other national parks, reserves, historic sites, historic canals or national marine conservation areas.
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 [4.3]	Class 3 Solar PV (Ground-mounted, >10 kW)
Nameplate Capacity [4.5]	10,000 kW (AC) total (9,333 kW plus 667 kW incremental)
Energy/Fuel Sources [4.1]	the Sun (No fuel or raw material is required; no by-products, waste or pollution are generated during the process.)
Electricity Generation Components [4.2] <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.5,800 panels]</i>	A single photovoltaic (PV) module is approximately 1m x 1.5m or 1m x 2m 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 (each with 8-24 modules) which are aligned in long rows; the rows are separated by access aisles, approximately 6m in width. The array field (“project area”) for this site will consist of approximately 41,850-54,000 PV modules and will include 10-15 collection houses (small modular structures that 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 an inverter . The AC power flows through one or more transformers to increase its voltage to match the 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 [4.2]	<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.</p> <p>Collection and distribution lines (i.e. “transmission”) will consist of underground and/or overhead lines and will connect to the power grid at a nearby distribution line.</p> <p>No office buildings are proposed; neither natural gas nor sanitary sewer service are required; no water crossings are anticipated.</p>
Project Activities: [4.4]	
Describe any regulated activities (construction, installation, use, operation, changing and retiring)	<p>The solar module arrays will be mounted on a series of metal framing elements that are sloped (facing south) to maximize exposure to the sun (maximum height is approximately 4 meters above the ground). The foundation system consists of similar framing elements that are pile-driven, screwed, or cored-and-grouted into the ground (depending upon existing soil conditions). As mentioned above, a network of driveways surrounds the project area and provides access throughout the array field and to all the collection houses. (Only minor re-grading is anticipated.)</p> <p>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 arrays, rain and snow-melt passes through between the arrays. Therefore little, if any, impact to the existing natural storm-water drainage is anticipated.</p> <p>Besides construction of driveways, installation of panels, framing, foundations and the collection houses, the remaining work is mostly electrical (collection lines, inverters, transformers, etc.).</p> <p>Once construction & installation is complete (including testing and commercial operation initiation), very little maintenance is required. The site will normally be uninhabited. Occasional 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).</p> <p>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 be returned to its current state – very much as it exists today. This means the site could be utilized for any use deemed appropriate at that time. (Very little evidence, if any, that a solar farm ever existed would remain.)</p>
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 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 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. Rain and snow-melt will be absorbed into topsoil at or near location it reaches the ground – very similarly to existing, undeveloped



	conditions; the exception is along interior driveways which will be constructed with pervious materials (e.g. gravel, aggregate, dirt) but will require minimal compaction for occasional vehicular traffic.
Describe any water-taking activity	Use of on-site well water for periodic cleaning of modules.

Section 4 – Potential (Negative) Environmental Effects

Land Ownership [4.6]	REGF site is privately owned (no Crown or Federal lands involved)
Legal description [4.6]	Concession 1, (part) Lot 34
Cultural Heritage & Archeological (MTC) [4.7.1]	None. 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). Additionally, the MTC has reviewed the Stage 1 and 2 Archaeological Assessment Report prepared by Northeastern Archaeological Associates of Port Hope, ON. An Archaeology Review Officer has stated that the MTC believes this assessment complies with the Ontario Heritage Act and that the Ministry is satisfied with the recommendations included therein.
Natural Heritage (MNR) [4.7.2] <i>Significant woodlands, valleylands, wildlife habitat, wetlands, 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 120m of the project location</i>	REGF is not located within 120m of a Provincial Park or Conservation Reserve nor within 50m of ANSI-earth science. According to the Natural Heritage Assessment and Environmental Impact Study Report prepared by Bowfin Environmental Consulting of Cornwall, ON (and confirmed by MNR’s Kemptville District Manager): <i>“The proposed project is located within an area that was once used as grazing lands. Site investigations found that the habitats consisted of fallow fields, windrows, plantations, deciduous thickets, woodlands and forests and all well as three small (non-significant) wetlands. The only confirmed significant natural features are significant woodlands and wildlife movement corridor. While the significant woodland is located within the project study area, following re-design of the site plan and the use of properly implemented mitigation measures there are no anticipated measurable negative impacts to these features. The wildlife movement corridor is located 110 m from the REGF project location and is not anticipated to be impacted by any of the phases of this project. Since no significant natural feature will be measurably impacted, no monitoring plan is recommended.</i> It also notes: <i>“The initial concept plan included the removal of the woodland on the north end of the study area, which would have resulted in the loss of 4.6 ha of interior habitat from the eastern patch. By leaving the northern section of the woodland untouched, impacts to the eastern patch of the interior habitat will now be avoided. Furthermore, based on comments received from OMNR, the wayside pit is now being avoided which eliminates indirect impacts to the adjacent woodlands.</i>
Water Bodies (CA, MNR) [4.7.3]	Bowfin Environmental Consulting of Cornwall, ON conducted a Water Assessment and has confirmed through records review and site investigations that there are no water bodies in or within 120m of the project location, nor any lake trout lakes within 300m of the project location.



Air, Odour, Dust [4.7.4]	No odors or dust emissions are produced by solar power generation equipment.
Noise [4.7.5]	Minimal sound is emitted by the solar power generation process. The panels, racking and wiring – which comprise the majority of the REGF components – produce virtually no sound. The inverter and transformer, however, do produce some noise. This equipment was studied in accordance with O.Reg. 359/09 and by HGC Engineering of Mississauga, ON. Their acoustic assessment report was prepared according to Appendix A of the MOE’s “Basic Comprehensive Certificates of Approval (Air) – User Guide”, dated April 2004 and is submitted herewith. As evidenced in the report, 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 [4.7.6] (past & present; onsite & nearby)	No negative effects on the current land use or resource availability are anticipated. The proposed REGF site is undeveloped and currently under-utilized. It has, however, been used for livestock grazing in the past. Almost all adjacent land is also undeveloped, except for parcels along CR-2 (King St.) where there is an ethanol plant, a recycling center, a truck depot, a port, a salt storage facility, and a handful of residences between CR-2 and river. With the exception of the northern-most corner (along the CNR railway), almost the entire site has been cleared in the past, and sparse forest resources (of questionable value) remain. The previous landowner removed some aggregate material from a small portion of site.
Record of Site Condition [4.7.6] (any potential for existing contamination?)	There is no expectation that the site is contaminated, and the need to obtain a Record of Site Condition (RSC) is not anticipated. Based upon a comprehensive Title Search and review of a Custom Environmental Risk Information Report by EcoLog ERIS Ltd. of Toronto, ON, no potential for existing contamination has been identified.
Provincial & Local Infrastructure [4.7.7]	No negative environmental effect is anticipated on provincial and local services and infrastructure. This site is located within the township’s Economic Enterprise Policy Area (zoned for industrial, intensive commercial, etc. uses), and the REGF requires no sewer or gas services. County Rd. 2, which serves this EE zone, is already well-travelled by large trucks serving the Port of Prescott (grain elevator, salt, and aggregates) as well as a multitude of existing industrial neighbors – including the recycling center, an expanding ethanol plant, and a few manufacturing facilities. While there will be a temporary increase of truck traffic on CR-2 during the few months of construction, it will be relatively minor – compared to existing traffic – and there will be almost no traffic generated by this REGF once construction is complete.
Public Health & Safety [4.7.8]	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 [4.7.9] (Greenbelt, Oak Ridge Moraine, Niagara Escarpment, Lake Simcoe Watershed)	Not Applicable, since the project is not within a PPA.

Section 5 – Project Location Map *(following page)*



