KS Canada 1 Ltd

Applications for Power Plants, Substations, Transmission Lines, and Industrial System Designations – Oyen, AB

August 5th, 2016

Document Title: **Oyen Solar Park AUC Application**

Project Name: **Oyen Solar Park**

Project Location: **Oyen Town, Special Areas #3, AB**

Prepared By: **KS Canada 1 Ltd. Copyright © 2016**

Kronos Solar Projects GmbH · Petersplatz 10 · 80331 Munich · Germany · Managing Director: Dr. Alexander Arcache Tel. +49 (0) 89 8905 708-17 Fax +49 (0) 89 255513 1051 Email: contact@kronos-solar.de Web: www.kronos-solar.de Konto: 400 301 800 · Bankleitzahl: 70070024 · Deutsche Bank · HRB 194883 · Local Court Munich

CONTENTS

Executive Summary

KS Canada 1 Ltd (hereinafter called “KS” and included in **Appendix A**), a 100% subsidiary of Kronos Solar Projects GmbH (hereafter Kronos Solar), acting on its own behalf and with the support of our environmental consultants, Arcadis Canada Inc, applies to the Alberta Utilities Commission (hereinafter called “AUC”) for approval of this solar park project based on the requirements included in Rule 007 AUC Applications for power plants, to allow construction to commence by 2019.

Kronos Solar is a global photovoltaic (PV) park developer, with head offices based in Munich, Germany. Kronos Solar has significant experience in the design, planning, development, construction and maintenance of PV parks for both, roof-top applications and large-scale ground-mounted systems. As a comprehensive global PV developer, Kronos Solar operates alongside the complete value chain from the identification of suitable sites, to the delivery of turnkey ready PV parks. In this context, we bring both, the technical expertise and the financial means to the table, to bring things to life.

1. Introduction

I. The site locality and suitability

The site is located in T0J 2J0. It is situated north of the town of Oyen. The site consists of lower grades of farmland. Several factors make the site unique in its setup and it is extremely well suited for the development of a PV Park, which are:

- Visually it is nicely separated from large parts of the adjacent environment, not creating an intrusion to the landscape
- There is a direct electricity connection to the ATCO Power Network, which will be connected to the substation directly to the south of the site
- The site composition (ground, soil, slope, etc.) fit in accordance with the specific requirements of PV parks
- The majority of the field is clear and as such, the use for a PV park will not require major modifications of the site, such as removal of buildings and or plants. Any plants and trees bordering the site will remain intact
- There are no specific site designations within the proposed site, such as ecology, tree, and archeology issues
- There are no rights of way across the proposed site
- The ecological impact on the site will be minimal, as indicated by licensed biologists

II. Environmental effects

There will be very little environmental impact during the construction of the PV Park and almost none during its 25 years of operation. Based on our experience in diligent construction approach, we will select means of construction, which keep potential environmental effects during construction to a minimum. This will include the application of solar panel mounting systems, which are pile-driven and do not need require concrete block stabilizers. Once the site is constructed, there will be no environmental effects, such as noise, traffic and pollution.

- **Emission and Climate effects**

Solar power replaces energy from fossil energy sources and delivers an important contribution for the reduction and avoidance of CO2. The energy balance of park is positive already after 2 years. The operational PV Park clearly causes no emissions.

- **Nature and grazing ground conservation**

The site will become a natural habitat for small species. With only about a third of the site covered by solar panels, the soil and its natural habitat will remain completely intact and the grounds will remain agricultural (grass). In addition, the positioning of the solar panel rows allows for a buffer of 5 to 10 metres in between the rows, and as such, we intend to graze the grounds with animals, such as sheep.

- **Soil Conservation**

There will be practically no sealing of the grounds during or after the construction of the solar park. A regeneration of the earth will naturally occur by not using the soil as farm land for a period of 20 to 25 years. Furthermore, there will be no danger of erosion or contamination by pesticides, biocides or excessive soil conditioning.

- **Water Pollution Control**

The PV Park will not cause any input of nitrate, pesticides and biocides into the ground water. The PV Park will not have an impact on the water storage volume on the site.

- **Landscape effects of the PV Park**

As presented in the section on site locality and suitability, the landscape element is one of the key supporting elements for this site. Overall, no significant landscape effects are caused by the proposed development and with further buffering of some small areas around the site, we can assure that the site will not be negatively visible to its surroundings.

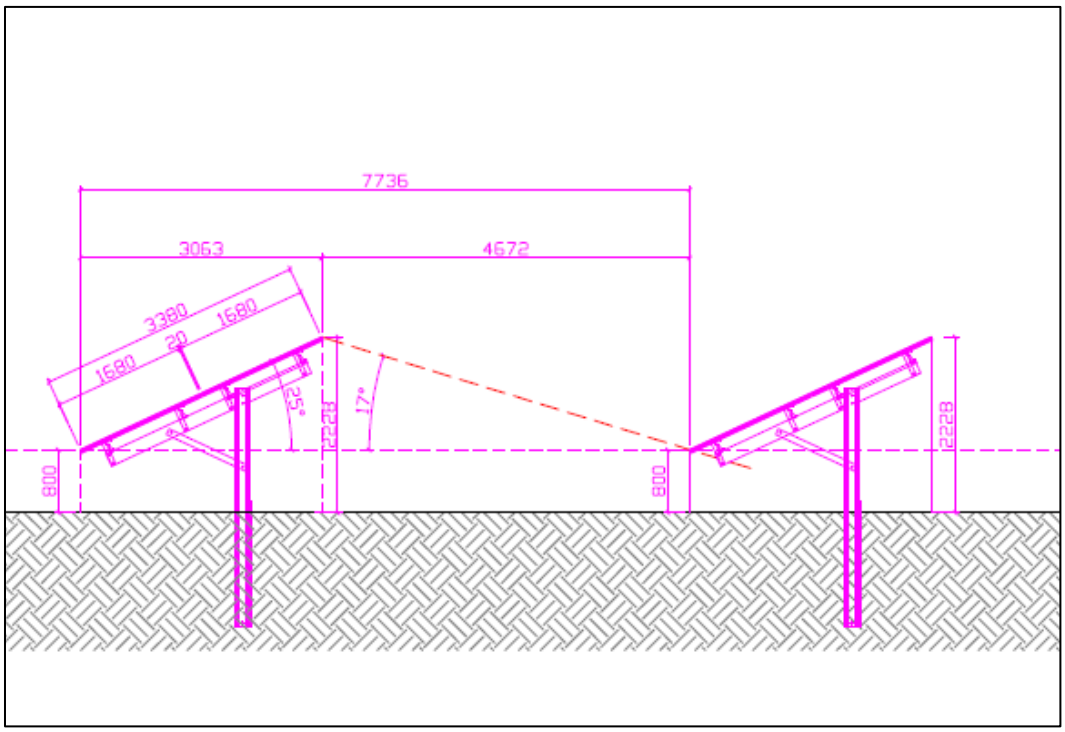
- **Cultural Heritage / Archaeology**

Based on the survey conducted by licensed archaeologists, there will be no negative impact on cultural heritage and archaeology.

III. Technical Information on the proposed PV park

- **PV park construction**

For the construction of the solar park, a pile driven steel sub construction will be used that causes minimal sealing of the surface and is fully removable after the period of operation.



Picture: Example of a common steel sub construction used in Germany, UK, and Spain.

The construction fulfills all static requirements, as it is fully flexible in all dimensions of the tables, as well as in the number of mounted modules. Typically the modules will be mounted in 2 to 4 rows on a table in an angle between 20 and 30 degrees. A table is usually between 10 to 50 metres in length, depending on the requirements and the shape of the site. The lowest point of the table will be 80 cm above the ground and its highest point will have a maximum height of 3 metres. Please note, all of these characteristics can alter and will be subject to consultation in the process of planning.

Picture: lower border of module table 80 cm above the ground

The entire park is typically designed in rows of module tables, which are situated from east to the west. The module surfaces are oriented towards South so that it can capture the maximum radiation yield.

Picture: Module rows oriented towards South

In between the individual rows, there is a buffer of 5 to 10 metres to avoid shade from the adjacent rows and to also allow for grazing. Typically, 35% the site surface will be covered by module tables.

The modules on a the mounted systems are connected in module strings and the module strings are connected to inverters to convert the DC produced by the PV modules into AC, which then allows for the electricity to feed into the grid. Usually central inverters with a capacity of 1 MWp are used. Generally, for each set of two inverters, you will require one transformer to reach the voltage level of the closest grid access point (25 kV).

Picture: 1 MWp central inverter of the global market leader SMA

Alternatively, it is possible to locate the two inverters and transformer in a separate pre-fabricated box.

Picture: Typical 20 kV / 400 V transformer station used in Germany

Picture: Typical fencing placed around the solar park

- **Ongoing Operations**

Once the PV Park is constructed, the park requires minimal maintenance efforts. Experience has shown that the modules are sufficiently cleaned by the rain and the monitoring of its performance is conducted remotely, via-satellite. The PV Park will only be accessed for repairs (approx. 4 times per year) and maintenance (grazing).

Picture: Sheep grazing in a German PV park

IV. Aspired planning application

The proposed PV Park can be seen marked in red in **Appendix B**. We seek full planning permission for approximately a 21 hectare Photovoltaic Park along with complementary equipment and the projected generation is 9.9 MW.

V. Mitigation measures

The environmental report will, if at all applicable, identify possible and adequate mitigation measures for eliminating or reducing the impacts caused by the development of the PV Park.

2. Applications for Power Plants, Substations, Transmission Lines, and Industrial System Designations

This rule as amended was approved by the Alberta Utilities Commission/Commission on January 26, 2016 and is effective February 1, 2016.

PP1) Identify the sections of the Hydro and Electric Energy Act under which the application is made.

Section 11 applies to this effect: Approval of a power plant: "*No person shall construct or operate a power plant unless the Commission, by order, has approved the construction and operation of the power plant*."

PP2) Identify any other acts, for example, Environmental Protection and Enhancement Act (EPE Act) that may affect the project.

None identified. Under the Environmental Protection and Enhancement Act (EPEA), we do not require further assessment for this proposal.

The EPEA Activities Designation Regulation defines a power plant as "*A plant that produces steam or thermal electric power and has a related production output of greater than one megawatt*". As the proposed 9.9 MW solar plant involves power production used photovoltaic cells only, an EPEA approval would not be required. This was confirmed by Susan McIntosh as well, Industrial Approvals Team Lead of Environment and Parks Operations Division in the South Saskatchewan Region (Tel: 403-381-5325, Susan.mcintosh@gov.ab.ca) in our first contact:

Susan McIntosh (ESRD) <Susan.McIntosh@gov.ab.ca>

RE: EPEA and Water Act- Solar park project in Alberta

From: Susan McIntosh (ESRD) [mailto:Susan.McIntosh@gov.ab.ca]
Sent: Donnerstag, 21. April 2016 18:01
To: amanda.barderas@kronos-solar.com
Cc: Corinne Kristensen <Corinne.Kristensen@gov.ab.ca>; Mohammad Shoaib <mohammad.shoaib@gov.ab.ca>
Subject: FW: EPEA and Water Act- Solar park project in Alberta

Hello Amanda,
Corinne Kristensen, the Designated Director under the *Environmental Protection and Enhancement Act* (EPEA), is the decision maker regarding the need for further assessment of a discretionary activity (12 MW solar park). You will need to provide her with additional detail regarding the solar park, including the legal land description, process details (see below), etc.

The EPEA *Activities Designation Regulation* defines a power plant as " . . . a plant that produces steam or thermal electric power and has a related production output of greater than one megawatt . . ." If the proposed 12 MW solar plant involves power production used photovoltaic (PV) cells only, an EPEA approval would not be required (even if > 1 MW). However, if the project involves capturing solar energy to produce steam to drive a turbine (solar thermal), and the plant is > 1MW, further review of the project may be needed.

PP3) State the approvals that are being applied for from the Commission and provide a draft of the approval being requested.

Application for approval to construct and operate a power plant in Oyen, Alberta. Our proposal is to develop the following facility on the site: 9.9 Megawatt (MW) photovoltaic solar power generation plant.

The Oyen Solar Park is a solar generation project proposed to be developed on approximately 21 hectares (ha) of land and its footprint is located 1km northeast of Oyen, Alberta and its land description is SW ¼ of Section 2, Township 28, Range 4, W4M (depicted on the attached site plan in **Appendix B**)

PP4) Provide a list of existing approvals for facilities directly affected by this project, if any.

None existing.

PP5) Provide details and outcome of consultation with local jurisdictions (e.g., municipal districts, counties).

Please refer to the ***Public Consultation Report*** attached for full details of the consultation process and results.

A public consultation meeting was held on July 25th 2016 with the attendance of members of the Town of Oyen and Special Areas #3. The meeting notice and project information was posted in and around the town of Oyen and sent by post mail one month prior to the meeting to all residents, occupants and landowners within 1,500 metres of the site. In addition, telephone calls to residents, occupants and landowners were made one month prior to the meeting.

The meeting event was also placed in the most read local newspaper, “Oyen Echo”, on July 5th and was published for 14 days. It was also advertised in the radio of Olds. Concerned residents were given several opportunities to discuss their concerns in face to face meetings, telephone conversations and by email.

The project details were presented to both Special Areas #3 and the residents of the community. No issues or complaints for this renewable energy project were communicated.

PP6) Provide a list of parties that may be affected by the project, confirm that these parties have no concerns regarding the application, and indicate which other agreements are necessary to carry out the project.

Please refer to the ***Public Consultation Report*** attached for full details of the consultation process and results.

The list of residents within 1,500 metres of the project is provided in Appendix H of the Public Consultation Report. These parties were consulted as per the public consultation process. All questions were addressed and there were no outstanding complaints or questions.

PP7) For wind power plants, provide a copy of approval from Transport Canada for any structures 20 metres (m) or taller and an evaluation from NAV Canada.

Not applicable.

PP8) For wind power plants, provide a copy of an assessment from Environment Canada regarding the potential for interference with weather radars. For assessments in which Environment Canada has identified the potential for significant interference with a weather radar, also provide a copy of a mitigation agreement to be concluded with Environment Canada prior to operation of the wind power plant. No wind power plant will be permitted within a five-kilometre radius, or as otherwise agreed to by Environment Canada, of a federal weather radar station due to the significant interference to Environment Canada's ability to accurately forecast the weather.

Not applicable.

PP9) Provide a copy of the approval from Alberta Transportation if a wind power plant that is within 300 m of a numbered highway is being applied for.

Not applicable.

PP10) Confirm that an application to AEP has been made, if applicable, and list all other government departments and agencies from which approval is required. For all power plant applications, a local AEP wildlife biologist must be consulted unless the project is located within an urban area with no nearby wildlife habitat. The Commission requires a sign-off from AEP prior to processing any new wind power or solar power applications.

Based on the PP2 clarification, no AEP application was required.

All other government departments and agencies from which approval is required are listed below:

i. Alberta Environment and Parks: The Alberta Environment and Parks Agency has assessed the project and determined that no environmental impact assessment is required. Please find included in **Appendix C** the letter of assessment from Alberta Environment and the key contacts. While no further studies were required by Alberta our environmental consultants prepared Migratory Bird Surveys and Phase 1 Environmental Site Assessment, included in **Appendix C** and detailed in PP17 and PP18. We have also submitted our reports and letter of assessment to Pervez Sunderani, EPEA Team Leader in Red Deer North Saskatchewan Region for his consideration. Scott Stevens, Senior Wildlife Biologist from Environment and Parks, approved our environmental reports and

suggested a further assessment in the fall season. Once completed, we will submit the additional survey to AEP for final approval.

ii. Canadian Environmental Assessment Agency: The Canadian Environmental Assessment Agency has assessed the project and determined that no environmental impact assessment is required. See **Appendix D** for the letter from the Canadian Agency.

iii. First Nations and Alberta Government Aboriginal Relations: Please refer to Participant Involvement Program Report. No consultation is required. See **Appendix E**.

PP11) With respect to new facilities or alterations, that may have archaeological or historical impacts, confirm that a Historical Resources Act clearance has been obtained or is being applied for. If a historical or archaeological impact assessment is required, briefly describe any historical or archaeological sites close to the power plant site. Please ensure that any summary provided protects the confidential location of any historical resources.

A Historic Resources Act Clearance application was submitted on 29th June, 2016. Discussions with the Government of Alberta, Culture and Community Services as well as a review of the list of historical resources indicated that there are no historical resources on the site. A letter confirming Historical Resources Act clearance was provided by the Government of Alberta and can be seen in **Appendix F**.

PP12) Provide the ISO assigned asset identification code, if available.

To be determined.

PP13) Provide the legal description of the proposed power plant site (Legal Subdivision [LSD], Section, Township, Range, Meridian) and connection point, if applicable.

The Oyen Solar Park is a solar generation project proposed to be developed on approximately 21 hectares (ha) of agricultural land and its footprint is located 1km northeast of Oyen, Alberta and its land description is SW ¼ of Section 2, Township 28, Range 4, W4M. The Central GPS Coordinates are 51.214854 N; -110.275815 W.

The solar panels, racking and inverters/transformers will be located on the location listed above. It is expected that the grid interconnection equipment and site controller will be located on 51.214329 N; -110.281314 W.

Please refer to **Appendix B**, for the connection point map or substation and site location.

PP14) For wind power plant applications, provide the longitude and latitude coordinates for the center of each structure supporting a wind-powered generator. If after approval is granted, the location of any supporting structure has to be relocated more than 50 m from the coordinates stated in the application, the power plant proponent must re-apply to the Commission for approval to relocate the structure prior to construction. For movement less than 50 metres, the applicant is not required to reapply unless there is an adverse impact on the permissible sound level or wildlife setback distances.

Not applicable.

PP15) Describe the number of generating units and the total capacity (kilovolt Ampère [kVA], or megavolt Ampère [MVA]) for the project.

The solar facility generation units are the following:

- Total capacity 9.9 MVA
- 16 – 630 kVA Inverters with reduced output of 619 kVA each
- 8 LV/MV transformers with a capacity of 1,238 kVA each
- 41,360 photovoltaic solar panels, 270W each, total capacity 9.9 MVA

PP16) Describe the existing environmental and land use conditions on the project site, and discuss potential siting and land use issues. Also, describe the regional setting of the development including regional land use plans in force (e.g., the Lower Athabasca Regional Plan). If applicable, include maps showing important environmental features and sensitive areas on or near the project site.

This response has been provided by **Arcadis Canada Inc.:**
7326 10th Street NE, Suite 320
Calgary, AB Canada T2E 8W1

The Site is approximately 1 km north of the Town of Oyen. The 21hectare proposed site is currently grassland. Historically, the Site has been used exclusively for agricultural purposes. The surrounding properties are also currently used and have historically been used for agricultural purposes. The Site is relatively flat with very little relief. There are no wetlands within 300 metres of the Site. There are currently no structures or improvements of any kind on the Site. There have never been any structures, buildings, or other improvements on the Site. There has been some historic Oil and Gas exploration in the area.

No Potential Contaminants of Concern have been identified on the Site. There was a historic Highway Maintenance Yard with salinity contamination that is currently being risk-managed by others. The Maintenance Yard is in close proximity (within 500 m) of the Site. Salt contamination of the Site via migration of salt in groundwater is not

precluded. The construction and operation of the proposed solar farm on the Site will not be affected by groundwater contamination, if it exists.

The impact of the proposed solar farm on the physical environment has been evaluated and is considered negligible or insignificant for all environmental components, including traffic, noise, light, air quality, and surface and groundwater quality:

i. Oyen Solar Park Phase 1 Environmental Site Assessment and Evaluation: Please refer to **Appendix C** for details (including a Migratory bird survey). In regards to the surface water there are no natural water bodies or water wells on the site and the nearest is identified within 300 m of the Site. ERIS performed a search through the Alberta Oil and Gas Wells database and identified an oil and gas well within 300 meters of the Site's boundaries. The license belongs to American Trading and Production Corporation. The well has been abandoned, and received a reclamation certificate. As a result, it is unlikely that any contaminants of concern impacted the Site. No activities or emissions from the site will affect these water bodies or the well.
A spring passage migration survey for birds has been completed, and a desktop search for historical Environmentally Sensitive Areas (ESA) has been carried out. Government databases have been searched to determine if any species of special management concern could potentially occur in the area of the Site. Some bird species observed during the surveys are listed under Alberta Wild Species General Status Listing (2010), five have been assigned a designation by COSEWIC (2016), and three are Schedule 1 SARA species (Government of Canada 2016). A search of the provincial Fisheries & Wildlife Management Information System (FWMIS) identified three wildlife species within 2km of the Project footprint. A preliminary report is provided in **Appendix C**. The report recommends various strategies to mitigate potential impacts to wildlife species during construction and operation of the proposed solar farm. Scott Stevens, whom is the Senior Wildlife Biologist for Alberta Environment and Parks has reviewed the report and recommendations and concurred that they are appropriate given the information available. A second passage migration count is planned for the fall of 2016.

ii. Oyen Solar Park Construction Traffic Management Plan: Please refer to **Appendix G** for details. The solar facility will generate near zero emissions, complying with Alberta emission guidelines.
No new access roads will be required and existing service roads will be used on the site. Minimal site levelling is expected. The entire site is fairly flat, with minimal difference in elevation. The solar panel racks will be

mounted using screw pile technology. A wire mesh fencing will be constructed on the site perimeter, for public safety and security and will be approximately 2 meters in height. The fencing will require approximately 620 posts to be installed.
Please find the description of the project components and structures in PP28. The photovoltaic panels will be mounted in racks with a maximum height of 3 meters. The visibility of the project would be minimal. The views from Highway 41 and road 280 are negligible.
The traffic route during the construction phase avoids entering into the town of Oyen.

iii. Oyen Solar Park Environmental Protection Noise Assessment: Noise levels from the Solar Park are minimal. The noise levels at receptors are assessed to be well with the requirements AUC Rule 012. Please see **Appendix H** for the complete assessment.

iv. Oyen NAV Canada: Please see **Appendix I** for the complete application on June 26th, 2016. Nav Canada is a privately run, not-for-profit corporation that owns and operates Canada's civil air navigation system. It was established in accordance with the Civil Air Navigation Services Commercialization Act. We are waiting for their assessment as within 3 km from the Oyen Solar Park, the Oyen Municipal Airport is located. No issues are foreseen and we will provide their NAV Canada's feedback as soon as it is received.

v. Special Area 3: The Site is located within Special Area 3 of the Special Areas Municipality, which is a rural municipality in Southeastern Alberta. It is administered by the Special Municipalities Board. The Board has been contacted regarding the development proposed for the Site and has no specific concerns.

PP17) At a level of detail commensurate with the size and type of potential effect(s) of the project, complete and submit an environmental evaluation of the project and provide a sign-off from AEP addressing the environmental aspects of the project that AEP is satisfied with. An environmental evaluation describes and predicts a project's effects on the environment before the project is actually carried out, and the measures to avoid or mitigate the project's predicted adverse environmental effects and any monitoring proposed to evaluate the efficacy of those measures. The purpose of an environmental evaluation is to ensure that enough information is provided by the applicant to inform the public and government agencies about the applicant's understanding of the consequences of its project, and to help the AUC determine if the project is in the public interest. The environmental

evaluation should be conducted or overseen by an individual or individuals who possess appropriate environmental experience related to the type and scale of development. An environmental evaluation should:

- **Describe the present (pre-project) environmental conditions in the local study area**
- **Identify and describe the project activities and infrastructure that may adversely affect the environment**
- **Identify what specific ecosystem components (i.e., terrain and soils, surface water bodies and hydrology, groundwater, wetlands, vegetation species and communities, wildlife species and habitat, aquatic species and habitat, air quality and environmentally sensitive areas) within the local study area may be adversely affected by the project**
- **Describe the potential adverse effects of the project on the ecosystem components during the life of the project**
- **Describe the mitigation measures the applicant proposes to implement**
- **During the life of the project to reduce these potential adverse effects**
- **Describe the predicted residual adverse effects of the project and their**
- **Significance after implementation of the proposed mitigation**
- **Describe any monitoring activities the applicant proposes to implement during the life of the project to verify the effectiveness of the proposed mitigation**
- **Describe the methodology used to identify, evaluate and rate the adverse environmental effects and determine their significance, along with an explanation of the scientific rationale for choosing this methodology**

If the power plant project requires preparation of a federal environmental assessment report or a provincial environmental impact assessment report, then that report should be submitted as an appendix to the application as required by PP38, and a separate environmental evaluation report satisfying the requirements of PP17 need not be prepared for the project. In such cases, the federal environmental assessment or the provincial environmental impact assessment report is sufficient to also satisfy the environmental requirements outlined in PP17.

Please refer to **Appendix C** for details of the Phase I Environmental Assessment.

To describe the pre-project environmental conditions in the local study area, the Site is approximately 1 km north of the Town of Oyen. It is 21 hectares in size and is currently grassland. Historically, the Site has been used exclusively for agricultural purposes. The surrounding properties are also currently used and have historically been used for agricultural purposes. The Site is relatively flat with very little relief. There are no wetlands within 300 metres of the Site. There are currently no

structures or improvements of any kind on the Site. There never been any structures, buildings, or other improvements on the Site. There has been some historic Oil and Gas exploration in the area. No Potential Contaminants of Concern have been identified on the Site.

In regards the project activities and infrastructure that may adversely affect the environment, the proposed solar farm is comprised of rows of photovoltaic solar panels elevated 0.8 to 3 metres above on tables. Inverters and transformers are incorporated into the farm to convert DC to AC and to adjust the voltage to line voltage.

The environmental effects of the farm on the Site are provided in the below table. Refer to the report in **Appendix C** for more detailed information:

No.	Item	Description / Proposed Mitigation
Construction		
1	Generation of Dust from construction vehicles	Surface wetting of roadways as required to control dust for 16 weeks during the construction phase and for approximately 8 weeks during the decommissioning phase.
2	Noise generated from construction vehicles	Not considered a significant issue to humans based on proximity to nearest residences and relatively low noise levels from proposed construction equipment and techniques.
3	Increased traffic load	A Construction Traffic Management Plan has been prepared and indicates that 400 vehicles will arrive at site over the 16 week construction phase to deliver equipment, materials, and personnel. The Plan routes all traffic to avoid the Town of Oyen. Other mitigation actions are also proposed. Based on the mitigation actions, traffic load is not considered a significant issue based on total number of vehicles, trips required, and relatively short duration of construction activities.
4	Soil/Groundwater Quality	No liquids will be brought on-site in amounts sufficient to jeopardize soil/groundwater quality. Construction vehicles will be in good condition with no engine oil or hydraulic leaks. Accidental spills or leaks will be cleaned up immediately.
Post-Construction		
5	Noise	Noise emissions from the facility are limited to noise generated from the inverters, which generate a sound pressure of 24.4 dB (A) at 150 m distance. This noise level is very low and is well below allowable noise levels in rural environments.

6	Light	The facility does not generate light, other than minor security lighting during periods of darkness. Light impacts are considered negligible.
7	Traffic	The facility is typically visited once per quarter for visual inspection and maintenance. Traffic impacts are considered insignificant.
8	Soil/Groundwater Quality	The facility components do not leach or release materials into the environment in amounts sufficient for soil or groundwater impact. Liquids on the facility are limited to dielectric fluids in sealed transformers which are equipped with integrated spill containment.
9	Surface Water Quality	There are no surface water bodies or sensitive ecosystems identified with 300 m of the Site. As such, Impact to surface water and sensitive ecosystems are not relevant to this undertaking.
	Air Quality	The proposed facility has negligible air emissions. Impacts to air quality from the facility are insignificant.
10	Groundwater Quantity	The proposed facility does not change the current surface material or change the surface water infiltration rates, or otherwise divert water off the site to other areas. The impact of the facility is limited to the minor redirection of rainwater that falls on the panels and runs off the lower panel edge. Facility impacts to groundwater quantity are negligible.
Pre-existing Conditions		
8	Potential Salt Impacts to Groundwater/Soil	Potential groundwater impacts on the Site originating from an off-site source (a historic highway maintenance yard on a nearby site) are the responsibility of other parties to address. Regardless, the construction and operation of the proposed solar farm will not be effected by salt impact to groundwater beneath the Site if an impact exists.
9	Ecological	A spring passage migration survey for birds has been completed, and a desktop search for historical Environmentally Sensitive Areas (ESA) has been carried out. Government databases have been searched to determine if any species of special management concern could potentially occur in the area of the Site. Some bird species observed during the surveys are listed under Alberta Wild Species General Status Listing (2010), five have been assigned a designation by COSEWIC (2016), and three are Schedule 1 SARA species (Government of Canada 2016). A search of the provincial Fisheries & Wildlife Management Information System (FWMIS) identified three wildlife species within 2km of the Project footprint. Strategies to mitigate potential impacts to wildlife species during construction and operation of the solar farm are proposed in Appendix C. AEP has reviewed the report and proposed

		mitigation strategies and concurred that they are appropriate given the information available. A second passage migration count is planned for the fall of 2016.

PP18) If the project site occurs within the plan boundaries of a regional land use plan in force:

i. Confirm that the proposed project is being developed in accordance with the applicable regional land use plan.

ii. Confirm if the proposed project is in a conservation area or provincial recreation area established in the applicable regional land use plan. Provide submissions describing how the activity may be considered incidental to a previously approved activity.

iii. Indicate what, if any, management frameworks in place under the applicable regional land use plan are applicable to the project, the reason why any management frameworks are not applicable to the project and summarize discussions held with AESRD and any other government department required to be consulted under the management frameworks regarding the project and its impacts in terms of the management frameworks. Include details on any actions or mitigation measures recommended as a result of the discussions and describe how these actions or mitigation measures will be incorporated into the project.

Not applicable, as there is no specific regional land use plan for this specific area. In the Special Areas the Land Use Order District is Agricultural.

PP19) Describe the participant involvement information.

Please Refer to the **Participant Involvement Program Report** for Oyen for details.

The purpose of this public consultation is that effective communications takes place among all stakeholders (residents, landowners, local authorities, agencies, government and all other related stakeholders) so that concerns may be raised, properly addressed and resolved. To determine the land-based interest holders, KS conducted contact with stakeholders, such as occupants, residents and landowners, within 1,500 metre radius of the Oyen Solar Park, as per point Five of PIP Guideline outlines for Power Plant developments generating all one to ten megawatts.

KS held a project team meeting to determine the best methods to communicate and consult with the identified stakeholders which were strongly encouraged to participate in ongoing issue identification, problem solving and planning. The Participant Involvement Program Report for Oyen provides a comprehensive overview on our

public consultation process, including all relevant emails and contact details. No issues or complaints for this renewable energy project were communicated.

Comprehensive project-specific information was developed and made available to all stakeholders included in the PIP. Distribution of project-specific information to stakeholders included, but is not limited to; newspaper public notice, event posters, phone calls, social media and postal mail. The following details are included in our project-specific information **(Appendix A - Participant Involvement Program Report for Oyen**):

• Applicant name and contact numbers for further information.
• Location of proposed electric facilities, including site specific map.
• The general nature of potential impacts and need for the proposed transmission facilities and explanation of how it fits with existing and future plans.
• Discussion of the potential restrictions on the development of lands adjacent to the proposed project, such as setbacks.
• Description of proposed on-site equipment.
• Proposed project schedule for the Commission application, construction and start-up commenced in Quarter one of 2016 and we aim to complete this process by the first quarter of 2017. The final stages including complete grid connection and construction are planned for 2018.
• The information package included the most recent version of the Commission public information document
• Other relevant information that would assist the stakeholder in understanding the proposed project.

PP20) List all occupants, residents and landowners on lands within the appropriate notification radius as determined using "Participant involvement program guidelines", as well as other interested persons that were consulted as part of the participant involvement program. If there are populated areas just outside the minimum notification distance, applicants should consider including those areas in the participant involvement program.

Please refer to the Participant Involvement Program Report **Appendix H** for Oyen for list of occupants, residents and landowners within 1,500 metres**.**

PP21) Supply a list of mailing addresses, with corresponding land locations and two sets of printed mailing labels of those parties mentioned in PP19 above.

Please refer to the Participant Involvement Program Report in **Appendix H** for Oyen's list of occupants, residents and landowners within 1,500 metres and their mailing labels.

PP22) Identify any persons who expressed concerns about the project and the specifics of their concerns.

None

PP23) Summarize discussions held with potentially directly and adversely affected persons.

All questions were based on general understanding of the technology and solar parks as a whole and no issues of real concerns were communicated.

PP24) If potentially directly and adversely affected persons raised any concerns, describe how they were dealt with or are being dealt with.

All questions were based on general understanding of the technology and solar parks as a whole and no issues of real concerns were communicated.

PP25) For those potentially directly and adversely affected persons identified above, include a confirmation of resolution of the concerns, if applicable.

The resolutions comprised of educating the residents listed above about the intended technology and how it operates to produce electricity. There were also a few technical questions about the kilowatt production of the solar panels and at which angles they will be positioned.

PP26) If the power plant is to be located within oil and gas facility, confirm the power plant will comply with the standards outlined in sections 8.090 and 8.170 of the Oil and Gas Conservation Regulations.

Not applicable.

PP27) Provide a noise impact assessment, in accordance with the current Rule 012 Noise Control.

A noise impact assessment was completed in accordance with AUC Rule 012 Noise Control. The predicted sound levels for nearby residents, occupants or landowners are well within the regulated limits. Please refer to Noise Impact Assessment **Appendix H.**

PP28) For an application where no changes to the major components of the power generating equipment are contemplated after filing of the application, provide details of the power generating equipment and associated facilities, such as make, model and nominal capacity.

Not applicable.

PP29) For an application where vendors to supply the major components of the power generating equipment have not been selected, provide the nominal

capacity of the applied-for power plant and the design and maximum operating parameters, and characteristics specified for the power generating equipment and associated facilities.

A preliminary facility design was completed. Please see the list of the main components below, in which it outlines the exact or similar components which will be utilized.

Component	**Supplier**	**Model**	**Description, Specification**	**Quantity (approx.)**
Solar Panel	Jinko Solar	JKM270P	270 W, polycrystalline, 16.5 % efficiency, dimensions ~1650*992*40 mm.	41,360
Inverter	Schneider Electrics	Xantrex GT630 E	Output Power 630 kW, Nominal AC Output Voltage 375V.	16
PV Racking system	Schletter GmbH	FS Uno/Duo 100	Fixed axis, continuous rows, racks with 44 modules, south-faced with an angle of 25°	940
Racking foundation anchors	Schletter GmbH	FS Uno/Duo 100	No concrete, only ramming of piles	940
Fence and Gates	Local	Local	Wire mesh fence, approx. 2 m high, Approx. 620 posts	1860 m
Substation/Switchgear	To be determined	To be determined	25 kV	1

There will be one access road used for both departure and arrival into the project site, as indicated on the Site Layout plan, in **Appendix J** The access road is located in the North-East corner of the property, off of Buffalo Trail 41. The entrance area of the access road will be widened, if required, to ensure there is an adequate and safe turning radius for semi tractor-trailers, as per the Alberta, Ministry of Transportation guidelines.

The inverter/transformer platforms will be distributed through the center area of each site to minimize low voltage DC wiring and reduce power losses. The placement of the inverter/transformer platforms central to the site, also reduces noise to any surrounding residents or occupants.

A perimeter fence will be installed around the entire site. Site Layout plan, **Appendix J** indicates the location of major project components, solar array areas, access roads and the controller area. Also, please refer to this **Appendix J** to see the details of the security fence plan, the inverter station and the camera layout.

PP30) Present the estimated power plant heat rates, efficiency, and details of cooling system.

The efficiency of the solar panels are 16.5%. The efficiency of the inverter and transformer stand at 96.5%. Air fan cooling units are used in the inverters.

PP31) State the fuel requirements of the power plant, including type, source, and method of handling, transportation, and environmental effects.

Not applicable.

PP32) Provide a legible plant site drawing showing all major equipment components.

Please refer to the Layout plan attached in **Appendix J**.

PP33) Provide a legible map showing the power plant site boundaries and land ownership, including any residences and dwellings within the appropriate notification radius as determined using "Participant involvement program guidelines", as well as any additional energy-related facilities within the project area.

Please refer to the map attached in **Appendix K**.

PP34) Provide a legible map of the project area suitable for use in a public notice.

Please refer to the first two maps included in **Appendix B**.

PP35) Supply the expected in-service dates, and describe ramifications if the approval date cannot be met.

Q4 2018/Q1 2019. There are no known ramifications presently.

PP36) Indicate the plant's emission rates, in kilograms per megawatt-hour (kg/MWh) of nitrogen oxides (NOx), sulphur dioxide (SO2), and primary particulate matter, and state whether the emissions will comply with the current Alberta Source Emission Standards and any other emission rate standards or guidelines that are applicable to the proposed project.

Not applicable as our proposed facility is a solar plant and does not release any materials or liquids into the environment

PP37) State whether the proposed plant will comply with the Alberta Ambient Air Quality Guidelines for ground-level concentrations of pollutants.

Not applicable as our proposed facility is a solar plant and does not hinder the air quality in any means

PP38) Provide the environmental impact assessment as an appendix to the application, if one has been conducted.

Not applicable as an Environmental Impact Assessment was not required. Please refer to **Appendix C** for the Phase I Environmental Assessment and the migratory survey.

PP39) If the power plant is to be connected to the Alberta Interconnected Electric System (AIES), irrespective of voltage level, provide the following information:

• An electrical single-line diagram obtained from the ISO or sanctioned by the ISO showing the transmission development plan for the interconnection, and

• A map with one or more conceptual layouts showing possible routes and general land locations for facilities that would be used to interconnect the power plant to the AIES.

Not applicable, as our proposal will be connected to ATCO.

PP40) If the power plant is to be connected at distribution voltage level (generally less than 69 kV), the applicant must provide a statement from the Distribution Facility Owner (DFO) indicating that it is willing to connect the generating facilities.

We have requested from ATCO to provide the requirement set in PP40 and will submit it as soon as it is received.

PP41) For a municipality or a subsidiary of a municipality to hold an interest in a generating unit, documentation confirming compliance with section 95 of the EU Act is required.

Not applicable, as our proposal is a solar plant.

PP42) For a wind power application, provide legible maps and/or air photo mosaics upon which the proposed collector power line route or routes have been imposed and showing the residences, landowner names, and major land-use and resource features (e.g., vegetation, topography, soil type, existing land use, existing rights-of-way, existing or potential archaeological sites, and superficial and mineable resources).

Not applicable.