

Power Renewable Energy Corporation

Halsbury 306S Substation and Interconnection Application for the Jenner Wind Power Project

Submission to Alberta Utilities Commission

May 2016

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Application

Power Renewable Energy Corporation (PRE) hereby makes an application to the Commission, pursuant to Sections 14, 15 and 18 of the *Hydro and Electric Energy Act* for the construction and operation of a new substation for the Jenner Wind Power Project.

Signed by:



Jeff Jenner
Chief Executive Officer
Power Renewable Energy Corporation

Overview

Power Renewable Energy Corporation (PRE) proposes to construct a 120 megawatt (MW) wind power project, named the Jenner Wind Power Project (JWPP). The JWPP boundary is approximately three and a half (3.5) kilometres (km) east of Jenner, Alberta as shown in Figure 1 in Attachment 1. On March 3, 2015 PRE submitted a Power Plant Application for the Jenner Wind Power Project, Application # 21394. This Power Plant Application represents Phase 1 of the AUC buildable area phased process.

The JWPP will consist of numerous wind turbine generators that will connect to a 240/35 kV collector substation (Halsbury 306S) via a 35 kV distribution system. PRE intends to own, operate and maintain the 240/35 kV Halsbury 306S substation, which is the subject of this substation facility application. The Halsbury 306S substation will connect to the Alberta Interconnected Electric System (AIES) via a new 240 kV transmission line, designated as 949L, which connects to the existing Jenner 275S substation. The new 240 kV 949L transmission line is a Market Participant Choice (MPC) project and will be subject of a separate facility application by PRE. Modifications to the AltaLink Management Ltd. (AltaLink) owned Jenner 275S substation will be the subject of a separate facility application to be submitted by AltaLink.

PRE is proposing the JWPP as a 120 MW development. Should expansion be pursued, PRE anticipates that the JWPP could accommodate up to an additional 180 MW, potentially making the JWPP a 300 MW facility.

Corporate Information

PRE is an independent power producer focused on developing, managing, and operating wind energy systems. The management team of PRE have developed and constructed numerous wind farms across Canada. PRE is a wholly owned subsidiary of Power Energy Corporation (PE). PE invests in companies operating in the renewable energy sector and holds ownership positions in two companies operating in this sector: Potentia Solar Inc., a solar power producer, and Eagle Creek Renewable Energy LLC, a U.S.-based owner and operator of hydropower facilities. PE is a wholly owned subsidiary of Power Corporation of Canada, a diversified international management and holding company.

PRE's head office mailing address is:
Power Renewable Energy Corporation
161 Bay Street, Suite 2220, PO Box 609,
TD Canada Trust Tower, Brookfield Place
Toronto, Ontario, M5J 2S1

Please send inquiries, questions, and correspondence relating to this application to the contact information provided in the filing.

Schedule

A preliminary project schedule for the Halsbury 306S substation to connect the Jenner Wind Power Project is provided as Table 1 below. Approval of this Facility Application will be required by Q4 2016.

Table 1 Project Schedule for the Halsbury 306S Substation

Activity	Start Date
Stakeholder consultation	Ongoing
File Substation Application with AUC	Second quarter of 2016
Start construction ¹	First half of 2017
Construction completed	August 2017
Connection In-service Date	October 2017
Wind Farm In-service Date	December, 2017

¹Pending AUC approval

List of Acronyms

ACT	Alberta Culture and Tourism
AEP	Alberta Environment and Parks
AESO	Alberta Electric System Operator
AIES	Alberta Interconnected Electric System
AUC	Alberta Utilities Commission
DTS	Demand Transmission Service
EPEA	Environmental Protection and Enhancement Act
ESRD	Environment and Sustainable Resource Development (predecessor of AEP)
EUA	Electric Utilities Act
HEEA	Hydro and Electric Energy Act
HRIA	Historical Resources Impact Assessment
ISO	Independent Systems Operator
JWPP	Jenner Wind Power Project
Kg	Kilogram
LSD	Legal Subdivision
MARP	Maximum Authorized Real Power
MC	Maximum Capability
MPC	Market Participant Choice
MW	Megawatt
MWh	Megawatt-hour
NIA	Noise Impact Assessment
NID	Need Identification Document
NO_x	Nitrogen Oxides
PE	Power Energy Corporation
PIP	Participant Involvement Program
PSIP	Project Specific Information Package
PRE	Power Renewable Energy Corporation
SLD	Single Line Diagram
SO₂	Sulphur Dioxide
STS	Supply Transmission Service
VEC	Valued Ecosystem Component

Substation Application Information

TS1) Identify the sections of the Hydro and Electric Energy Act or Transmission Deficiency Regulation under which the application is made.

Power Renewable Energy Corporation (PRE) hereby makes application to the Commission, pursuant to Sections 14 and 15 of the HEEA Act.

TS2) Identify any other acts (e.g., Environmental Protection and Enhancement Act, Water Act and Wildlife Act) that may affect the proposed project.

Other acts that may affect the project are:

- *Alberta Land Stewardship Act*, S.A. 2009, c A-26.8
- *Agricultural Pests Act*, R.S.A. 2000, c. A-8
- *Alberta Utilities Commission Act*, SA 2007, c A-37.2
- *Electrical Code Regulation*, Alta. Reg. 209/2006
- *Electric Utilities Act*, SA 2003, c E-5.1
- *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12
- *Historical Resources Act*, R.S.A. 2000, c. H-9
- *Hydro and Electric Energy Act*, RSA 2000, cH-16
- *Migratory Birds Convention Act, 1994*, S.C. 1994, c. 22
- *Occupational Health and Safety Act*, R.S.A. 2000, c. O-2
- *Personal Information Protection Act*, S.A. 2003, c. P-6.5
- *Radiocommunication Act*, R.S.C. 1985, c. R-2
- *Safety Codes Act*, R.S.A. 2000, c. S-1
- *Special Areas Act*, R.S.A. 2000, c. S-16
- *Species at Risk Act*, S.C. 2002, c. 29
- *Surface Rights Act*, R.S.A. 2000, c. S-24
- *Water Act*, R.S.A. 2000, c. W-3
- *Weed Control Act*, S.A. 2008, c. W-5.1
- *Wildlife Act*, R.S.A. 2000, c. W-10

TS3) State the approvals that are being applied for from the Commission, and provide a draft of the permit(s) and license(s) being sought.

This application is for an order granting a permit to construct and a license to operate a new wind generation collector substation designated Halsbury 306S. The draft of the permit and license is attached in Attachment 2.

PRE requests that this transmission application be combined, as contemplated by Section 15.4 of the HEEA and Section 6 of the Commission Rule 007, with:

- The AESO's Need Identification Document for the JWPP connection;
- The PRE's Transmission Line 949L and Interconnection Application; and
- The TFO's Facility Application for modifications at Jenner 275S.

TS4) Where existing facilities are being altered, discontinued, dismantle or removed state the existing order/authority (i.e. approvals, permits, and licenses) for each facility.

Not applicable.

TS5) Provide details and outcome of your consultation with local jurisdictions (e.g., municipal districts, counties).

The JWPP and associated Halsbury 306S substation are located on privately owned agricultural land within Special Areas No. 2. Developers of the JWPP have been in contact with Special Areas over a period of several years on a number of issues relating to wind power development. Issues that have been discussed with Special Areas regarding the proposed Halsbury 306S substation include:

- Occasional updates on the project status and industry developments, as further outlined below
- Special Areas requirements for public involvement and consultation, and for the development of public acceptance and support
- Special Areas requirements for a development permit, and the potential timing of a JWPP application to Special Areas following the final selection of the JWPP turbine locations
- The buildable area approach for the JWPP compared with the traditional AUC application approach
- Setbacks for the Halsbury 306S substation

These discussions have occurred via face-to-face meetings on June 3, 2014, September 9, 2014 and on November 25, 2015, and via various phone calls and emails. Particulars of the most recent formal consultations are outlined below.

On November 25, 2015, the following members of Special Areas met with representatives of PRE, Joss Wind, and Scott Land:

- Jordon Christianson — Chair
- Trent Caskey — Administrator

PRE provided Special Areas representatives with copies of the Open House boards. The meeting included discussion around feedback received from landowners and grazing lease holders, which generally was positive to date.

The potential locations for the Halsbury 306S Substation were discussed. Furthermore, community involvement and support was also discussed, including the use of the local school as the open house venue.

On April 13, 2016 Scott Land met with Trent Caskey of Special Areas to provide an update on the proposed Halsbury 306S substation location. Scott Land informed Mr. Caskey of the reasons for the specific location, including existing wetland constraints and the request by the landowner to have the least impact possible on farming operations. Mr. Caskey confirmed there are no concerns from Special Areas regarding the proposed Halsbury 306S substation location.

Furthermore, the Participant Involvement Program (PIP), detailed in Attachment 3, includes a list of agencies that may be affected by the JWPP Interconnection and provides details of the consultation completed with these parties.

TS6) Provide a list of companies that may be affected by the project, confirm that these companies have no concerns regarding the application, and indicate which other agreements are necessary to carry out the project.

The Participant Involvement Program (PIP), detailed in Attachment 3, includes a list of all companies that may be affected by the JWPP interconnection and provides details of the consultation completed with these parties.

No concerns were raised in relation to the proposed Halsbury 306S substation.

TS7) Provide a description of the proposed project.

PRE intends to own, operate and maintain the Halsbury 306S substation, which is the subject of this application. The JWPP will consist of numerous wind turbine generators that will connect to the Halsbury 306S substation via a 35 kV distribution system. The Halsbury 306S substation will connect to the Alberta Interconnected Electric System (AIES) via a new 14 km 240 kV transmission line, designated as 949L, that connects to the existing Jenner 275S substation. The Halsbury 306S substation will consist of one 240 kV breaker, two 240/35 kV transformers rated at 120/160/200 MVA and two 35 kV switchgear buildings complete with breakers.

The proposed location of the Halsbury 306S substation is SE 32-21-8-W4 and is shown in Figure 3 in Attachment 1. The proposed in-service date of the connection facilities is October, 2017. A simplified single line diagram of the connection is shown in Figure 2 in Attachment 1.

TS8) Provide a copy of the ISO direct assignment letter pursuant to the Electric Utilities Act. Alternatively, if a needs identification document was not required, provide a copy of the ISO approval letter pursuant to the abbreviated needs approval process, or a statement that the project was exempt pursuant to Section 1.4.1(a) of this rule.

A copy of the ISO acceptance letter is included in Attachment 4.

TS9) Give the dates by which both the approval and the proposed facilities are required; state the ramifications if they are not available at that time.

Approval of the AUC Facilities and Connection applications are required by Q4 of 2016 in order to meet the project in-service date of October, 2017. Project delay would condense the schedule and construction would need to be completed in sub-optimal months. Delays would financially impact PRE and delay green energy production.

TS10) Describe any transmission line routing alternatives to the proposal and compare the relative impacts (environmental, social, and economic) of these alternatives with the proposal.

Not applicable.

TS11) Describe the participant involvement program that you have conducted (see Appendix A1 – Participant involvement program guidelines).

Attachment 3 describes the PIP, which was carried out in accordance with AUC 007 Appendix A1 — Participant involvement program guidelines.

TS12) List all occupants, residents, and landowners, as well as other interested parties that were contacted as part of the participant involvement program, with corresponding land locations.

The Participant Involvement Program (PIP), detailed in Appendix 3, includes a list of all parties that may be affected by the Halsbury 306S substation with corresponding legal locations.

TS13) Supply a list of mailing addresses, with corresponding land locations and 2 sets of printed mailing labels of those parties mentioned in TS12 above.

The PIP, detailed in Attachment 3, includes a list of mailing addresses with corresponding land locations for landowners, occupants, and residents mentioned in TS12, as well as two sets of mailing labels. The mailing list also includes all industry and agency contacts included in the PIP.

TS14) Identify any persons who expressed concerns about the project and the specifics of their concerns.

The PIP, detailed in Attachment 3, includes a list of questions and concerns stakeholders raised during the PIP.

TS15) Summarize discussions held with potentially directly and adversely affected persons.

The PIP, detailed in Attachment 3, provides a summary of the discussions held with potentially directly and adversely affected persons.

TS16) If potentially directly and adversely affected persons raised any concerns, describe how the concerns were dealt with or will deal with.

Attachment 3, the PIP, provides the questions and concerns that were raised by participants in the PIP and the responses that were provided to them.

TS17) For those potentially directly and adversely affected persons identified above, include a confirmation of resolution of the concerns, if applicable.

In addition to the questions and concerns raised by participants, Attachment 3, the PIP, provides either a confirmation of resolution or indicates the next steps of PRE where applicable.

TS18) Describe the design and operating voltage of the transmission line and/or substations.

The Halsbury 306S substation was designed to a nominal voltage of 240 kV. The operating voltage will fall within the range of 250 kV to 260 kV as per AESO Rule 304.4 "Maintaining Network Voltages".

TS19) Provide the continuous and maximum ratings of the transmission line for the various operating conditions as stipulated by the ISO and the expected transmission line losses. Describe changes, if any, proposed by the TFO or market participant.

Not applicable.

TS20) If the ISO requires the TFO, who has been directly assigned for the proposed project, to determine the choice of conductor, describe conductor size and arrangement selected and the basis for conductor selection.

Not applicable.

TS21) Describe the proposed structure type, including height and spacing; if more than one type of structure is proposed, state where each type will be used.

Not applicable.

TS22) State the right-of-way width and the basis for determining the width.

Not applicable.

TS23) Describe all major substation equipment being applied for and list the final major equipment in the substation.

The major equipment in the Halsbury 306S substation includes:

- One (1) 240 kV breaker;
- Two (2) 240/35 kV transformers rated at 120/160/200 MVA;
- Two (2) 35 kV switchgear buildings complete with breakers;
- The substation site will be enclosed by a chain-link fence.

TS24) Describe the switching and protection features of the proposed transmission facilities.

The following is a high level summary of the protection and control philosophy of the proposed transmission facilities:

Line Protection

Telecommunication, protection and control schemes for the new transmission line at the Halsbury 306S substation will comply with the AESO Functional Specification.

Breaker Control and Breaker Fail Protection

The 240 kV circuit breaker at Halsbury 306S substation will have breaker fail protection and sync-check relays. It will also have a Synchrophasor Measurement Unit as required by the AESO. The relays and its module will be designed to provide complete open/close control, both locally and remotely. Synchcheck relays will be installed on the 35 kV breakers connected to the transformer.

Transformer

The transformer will be protected by “A” and “B” transformer protection relays. Protection will consist of high-speed differential clearing, backup overcurrent and mechanical non-electrical protection schemes. The non-electrical protection will operate through either relay, and will use both of the transformer protection relays for redundant tripping and annunciation.

Overcurrent protection will be required on both the high and low sides to ensure proper coordination with low-side devices. Both relays will be connected to separate neutral CTs to provide ground overcurrent protection.

TS25) Describe the electrical interaction of proposed lines with other facilities, such as pipelines, telephone, radio, and television transmission facilities, and other surface structures.

Not applicable.

TS26) Describe the changes to existing facilities that would be required to accommodate the proposed facilities.

The only change to existing facilities is at the Jenner 275S substation which is the responsibility of AltaLink and will be described in their facility application to the AUC.

TS27) Provide a legible map defining the study area and state the reasons for the chosen area.

The substation study area is illustrated in Figure 3 in Attachment 1. The area was selected as it is central to the JWPP and at the termination of the 949L transmission line.

TS28) Provide legible maps and drawings of the proposed facilities showing

- The preferred transmission line route and any alternatives routes
- Right-of-way widths;
- Location of transmission line on the right-of-way;
- location of the transmission line relative to property lines
- Mile (kilometre) points along each transmission line route.

Not applicable.

TS29) Provide legible maps and/or photo mosaics upon which the proposed transmission 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.

TS30) Provide a legible map of the project area suitable for use in a public notice.

Please refer to Figure 4 in Attachment 1.

TS31) Provide an electric single-line diagram or switching map showing new facilities in place in the system. In the case of a substation, provide a single-line diagram and a substation layout, including major items of equipment and the fenced boundaries of the station.

Please refer to Figure 2 in Attachment 1 for the single line diagram of the new facilities within the power system. Please refer to Figure 5 in Attachment 1 for the substation layout diagram.

TS32) Discuss the construction schedule, equipment and method of construction, and method of eventual right-of-way maintenance.

Construction Schedule

The Halsbury 306S substation construction schedule is shown in the table below.

Table 1: Halsbury 306S Substation Construction Schedule

Item	Schedule Activity	Timing
1	Strip Overburden from Halsbury 306S substation site	May 2017
2	Construct Halsbury 306S substation	May-August 2017
3	Commission Halsbury 306S substation	September 2017
4	Connection In-service Date	October 2017

Methods of Construction

The construction activities and equipment required to build the Halsbury 306S substation are described in the table below.

Table 2: Halsbury 306S Substation Construction Sequence

Item	Activity	Equipment
1	Strip overburden from Halsbury 306S substation footprint and temporary construction laydown area and stock pile alongside proposed substation site to be used during reclamation activities following the useful life of the asset	Dozer, Excavator, Scraper
2	Rough grade substation pad by installing and compacting layers of engineered fill to create substation base	Dump Trucks, Excavator, Compaction Equipment, Dozer, Scraper
3	Install ground grid (grounding conductor, ground rods, and ground wells if required) as per Issued for Construction drawings	Mini Excavator, Cadweld Equipment, Jack Hammer, Drill Rig
4	Install final lift of sub grade material to cover ground grid and install substation fence and access gates	Loader, Excavator, Compaction Equipment, Auger, Cement Trucks
5	Install concrete foundations and screw pile foundations for switchgear building, structural steel, transformers, and breakers	Screw Pile Excavator, Excavator, Cement Trucks,
6	Install Cable Tray and Concrete trench for communication cable and power cable	Crane, Mini Excavator
7	Install Major Apparatus (Breakers, Airbreaks, Switchgear/Control Buildings, CTs, PTs, 240kV/34.5KV Transformers, Lightning Arrestors)	Cranes, Manlifts
8	Install structural steel including deadend structure and bond structures to ground grid	Cranes, Manlifts, Mini Excavators
9	Install and terminate 240kV buswork and 34.5 kV cable bus	Cranes, Manlifts, Termination Equipment
10	Install Power Cables from 34.5kV Switchgear to 34.5kV riser poles	Manlift, Mini Excavator, Termination Equipment
11	Install resistive rock across the entire substation site	Skid Steers, Dump Trucks

12	Complete control wiring to all Major Apparatus (outdoor) to the control building (indoor)	Manlift
13	Commission outdoor equipment (240kV Breaker, Airbreaks, CTs and PTs) and indoor equipment (Switchgear, Protection Relays, SCADA Equipment)	Manlift, Test Equipment, Grounds
14	Energize Substation	Test Equipment, Grounds

Operations and Maintenance Activities

A detailed substation operation and maintenance plan will be developed and will include periodic checks of the substation equipment including the following:

- a. Transformer oil samples
- b. Thermal imagery of substation equipment
- c. Checking and adjusting major equipment such as Airbreaks and Breakers
- d. General site maintenance (weed control, gravel condition, fence repair, etc.)

TS33) Provide the most up-to-date functional specifications when the application is filed and the final functional specification before construction of the project begins.

The latest AESO Functional Specification dated February 25, 2016 is provided in Attachment 4.

TS34) Provide a noise impact assessment in accordance with the current AUC Rule 012 for new substations and transformers additions within an existing substation, clearly indicating the impact of the new substation and/or transformer addition.

A Noise Impact Assessment was completed for the Halsbury 306S substation. The assessment has been included in Attachment 6.

7.1.1 Environmental and land use information

Approval from AEP may be required. The applicant should contact AEP directly to ascertain if AEP approval is required. All applications must state that the applicants will comply with AEP’s *Environmental Protection Guidelines for Transmission Lines*, pursuant to the *Environmental*

***Protection and Enhancement Act* and the regulations under that act. Each application must include environmental and land use information at a level of detail commensurate with the size and type of potential effects of the project. The Commission will determine the level of detail on a project-by-project basis. Commission guidance with respect to environmental information requirements of applications is provided in the following documents:**

- **Transmission Line Developments – Environmental Guidelines Checklist for Applicants**

- **Substation Developments – Environmental Guidelines Checklist for Applicants**

The Commission expects applications for higher-voltage transmission lines of significant length will be more detailed. If the ISO has provided information in the related needs identification document, the TFO or market participant should expand on that information by way of route site-specific information for the applied-for route and alternatives, if any. Notwithstanding, the information listed in TS35 through TS42 below must be provided.

PRE used the Environmental Guidelines Checklist for substation developments as suggested by the AUC. Responses to the questions posed are summarized in the Guidelines Checklist in Attachment 5 or in the information provided in TS35 through TS42.

TS35) Describe the clean-up and reclamation plan that will be carried out following commissioning, including any temporary workplace areas and temporary access roads.

Please refer to Attachment 9 in PRE's Power Plant Application for the Jenner Wind Power Project, Application # 21394.

TS36) Visual aesthetics and screening – indicate those areas that have been identified as significant viewpoints, and describe how the project is predicted to adversely affect towers and the right-of-way within the viewpoints areas including the identification of project components and locations that require screening and the screening measures (e.g., fences, earth berms, painting, landscaping) to be used.

No areas were identified as being "significant viewpoints" during the PIP process, regulatory consultation with Special Areas, or during environmental field assessments. There are no recreation areas in proximity to the project, no historical areas with roadside pullouts on adjacent numbered highways, and no hills or large terrain features in the area which are used as viewpoints. Furthermore, the land is cultivated and privately owned. Public access is restricted. Therefore, no mitigation is being proposed.

TS37) Tower location – indicate the flexibility available in locating towers to reduce the inconvenience to residents and their day-to-day activities.

Not applicable.

TS38) Confirm that a *Historical Resources Act* clearance is being obtained or is being applied for. If a historical and/or archaeological impact assessment is required, briefly describe any historical or archaeological sites and parks along the routes, with emphasis on major features close to or traversed by the route. Please ensure that any historical resources summary provided excludes confidential site location, type and content information.

PRE has applied for *Historic Resource Act* clearance via a January 4, 2016 submission of a Statement of Justification for the Project lands associated with the Jenner Wind Power

Project. The proposed substation is within the boundary of those lands. Alberta Culture and Tourism (ACT) is reviewing the application (Please refer to PRE Power Plant Application, Number 21394, in Attachment 7). ACT does not provide any more detail than this once a project is in its system and before it issues the letter of clearance and/or additional requirement.

The JWPP is in the second stage of ACT's three-stage review process. This is the most substantive phase and involves the provincial experts assessing recommendations. The final stage is the head of ACT department responsible reviewing staff recommendations and issuing either clearance or a directive for fieldwork.

If PRE receives a decision following the submission of the Buildable Area application, PRE will upload the decision to the AUC separately.

The following is a summary of findings that were submitted:

Archaeological Resources:

PRE examined site data from the Borden Blocks in which the JWPP Buildable Area is situated. The JWPP Buildable Area is essentially within Borden Blocks EfOs and EeOs. A very small area of the JWPP Buildable Area extends into EfOr; however, there are no sites in EfOr near the JWPP Buildable Area.

There are 75 recorded sites in EfOs block. All but five of these sites are classed as stone features, primarily stone circles and/or cairns. Other sites are classed as lithic scatters or isolated finds. Most, if not all, of the sites in this Borden Block are surface finds. Site inventory data for EfOs include some features that are classified as alignments, and one site that has stone circles, cairns and an alignment, and a possible medicine wheel (EfOs-36). The majority of sites in this Block are north of the Red Deer River.

There are no recorded EfOs Block sites within the project area and there are only four recorded sites that are close to the JWPP Buildable Area.

EeOs covers approximately the southern half of the JWPP Buildable Area, and there are 62 recorded sites in this Borden Block. Like EfOs, most of the sites in this block are stone surface features, such as tipi ring and cairns. The Block has 40 such sites: 10 lithic scatters (that is, small groups of stone tool-making debris), seven Euro-Canadian homesteads, and the remainder are finds of single artifacts (these latter sites effectively no longer exist).

The majority of sites in this Borden Block are south of the JWPP Buildable Area. In fact, only one EeOs site is within the JWPP Buildable Area and three others close to the boundary or potentially in the JWPP Buildable Area, including one site that no longer exists

Evaluation:

The distribution of recorded sites in the general region is correlated with native grasslands, as well as the oil and gas development area, where, of course, most of the previous HRIA work in the area has been carried out. Recorded sites are clustered in the area of the densest concentration of oil and gas sector activity, essentially in the northwest portion of the development area.

Based on the recorded sites, site location patterns in this area and the general terrain

there is moderate to high potential for the presence of unrecorded sites anywhere in that portion of the JWPP Buildable Area in areas of native grassland.

Palaeontological Sensitivity:

Sections of land in the northwest area of the JWPP Buildable Area carry HRV values of 3P and 5P, indicating that they have potential to contain palaeontological resources; however, for the most part, fossiliferous bedrock exposures and shallowly buried bedrock are limited to river and coulee valley slopes, the river valley, and some areas where ground moraine deposits are particularly thin near the break of slopes. These areas will not be impacted by the JWPP.

- TS39) For proposed route(s) and possible alternatives that will result in an adverse effect to the environment, provide a sign-off from AEP indicating that AEP has reviewed all environmental aspects of the project and is satisfied with the project as proposed in the application, or identify any unresolved project aspects where agreement with AEP was not achieved. Provide the following information to a level of detail commensurate with the size and type of the potential impacts:**

On September 30, 2013, a site visit of the JWPP lands was completed with Scott Stevens of Alberta Environment and Parks (AEP).

On November 5, 2014, PRE submitted a document summarizing the JWPP development activities and flora and fauna assessments for the JWPP to Scott Stevens, Wildlife Biologist, Red Deer, at AEP (formerly Alberta Environment and Sustainable Resource Development [ESRD]) for “AEP Sign-Off” for its AUC Phase I Buildable Area Application, within which the substation is to be located.

On March 12, 2015, Mr. Stevens issued the “Wind Energy Referral Report — Environment and Sustainable Resource Development” for the Project.

Mr. Stevens continues to be the regional wildlife biologist for the JWPP at the time of this application.

- i. Describe the present (pre-project) environmental and land-use conditions of the local study area. Describe the regional setting of the study area, including any government land-use plans and policies that apply to the development.**

Please refer to Attachment 9 in PRE’s Power Plant Application for the Jenner Wind Power Project, Application # 21394, which provides an Environmental Evaluation document. The Environmental Evaluation document summarizes the JWPP development activities and the results of multiple years of wildlife monitoring surveys and habitat evaluations. It includes surveys and evaluations that have been conducted within and surrounding the proposed JWPP area between 2012 and 2015.

The development of the JWPP, and the methodologies used for environmental assessment, were, and continue to be, based on AEP’s requirements and standards and acceptable practices for environmental assessments.

The Environmental Evaluation document provides relevant information on environmental features, land use, and regional settings. The document also provides maps.

The specific objective of these environmental assessments was to identify potentially affected Valued Ecosystem Components (VECs); determine what effects the JWPP may have on each VEC; and develop mitigation techniques that will eliminate, reduce, or control any adverse environmental effects. PRE continues to monitor VECs at the JWPP, within which the substation is located.

Furthermore, please refer to Attachment 5 – Environmental Checklist within this application for site specific information and environmental protection measures for the substation.

- ii. Describe how the proposed route(s) and possible alternatives and/or proposed substation are predicted to adversely affect the environment. Describe the potential adverse effects on soils, terrain, vegetation species and communities, wetlands, wildlife species and habitat, aquatic species and habitat, groundwater, surface water bodies and hydrology, environmentally sensitive areas, and land use within the local study area, following and referencing published AEP guidelines if applicable. Describe how the environmental effects of the project will be avoided or mitigated and any monitoring proposed to evaluate the efficacy of those measures. Additionally, describe the methodology used to identify, evaluate, and rate any adverse environmental effects and determine their significance, along with an explanation of the scientific rationale for choosing this methodology.**

Provide supporting written discussion with other government agencies related to the adverse effects upon each major environmental, land use and resource component for each route. For example, if the project will potentially affect wildlife, fisheries, wildlife habitat or fisheries habitat, a local AEP wildlife biologist must be consulted prior to route selection of alternatives to ensure that fisheries and wildlife habitat values have been considered. Details and outcomes of the consultation, with the local wildlife biologist at AEP, including the name and contact information, and with personnel from other agencies or groups must be provided.

Please refer to Attachment 9 in PRE's Power Plant Application for the Jenner Wind Power Project, Application # 21394, for information on the proposed substation location.

- iii. Show the major environmental features (e.g., vegetation communities, rare plants, wetlands, topography, unique terrain features, sensitive soils, wildlife species setbacks and habitat, and environmentally significant areas), land use and resource features (e.g., agricultural, residential, recreational, forestry, trapping and hunting areas, protective notations, and existing or potential archaeological sites) for each route in a table in the correct units (by kilometre, total number, etc.).**

Not applicable for this substation application.

- iv. Present an overall comparison of the environmental impacts and costs associated with the alternative routes and proposed route and identify the environmentally preferred route.**

Not applicable for this substation application.

- v. Summarize any discussions held with municipalities to ensure compatibility of the proposed facility with various municipal services if a proposed transmission line passes through or immediately adjacent to an urban centre.**

Not applicable for this substation application.

TS40) If the project occurs within the plan boundaries of a regional land use plan in force:

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

As of May 4, 2016, the Alberta Environment and Parks, Land-use Framework, Regional Plans website (<https://landuse.alberta.ca/REGIONALPLANS/Pages/default.aspx>) indicated that the Red Deer Regional Land Use Plan has not started the Land Use planning process.

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

Not applicable.

- 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 no management frameworks in place as no regional land use plan in effect.

TS41) If the project is to be constructed within an area of a substation for which approval is being sought where, upon appropriate assessment, the proponent is aware of or ought to be aware that a substance that may cause, is causing or has caused an adverse effect to the environment has been released, indicate the nature of the reportable release, how the release was administered and reported, and how any

resultant or ongoing effects will be administered or contained with regard to the proposed project.

Not applicable as Halsbury 306S is located on agricultural land.

TS42) For applications to discontinue service, dismantle or remove a transmission line provide information regarding: the salvage, remediation and reclamation work to be performed; assessment of contamination; legislative requirements or other published guidelines that will be adhered to or considered.

Not applicable.

TS43) Provide a detailed cost breakdown of all alternatives on a common basis with an accuracy tolerance within plus 20 per cent minus 10 per cent. This cost breakdown must be provided in the format shown in Appendix B2, which reflects the summary page of the cost template used in the ISO cost estimating framework (ISO Rule 9.1.2). Where identifiable, include costs to be borne by persons other than the applicant and the applicant's customer(s) in the comparison. This information requirement may not be applicable to market participant choice and merchant line applications.

The proposed Halsbury 306S substation development will be fully funded by PRE and since this is a private facility, PRE has elected not to disclose the cost of this development.

TS44) If the applicant is a market participant, the applicant must (i) provide confirmation that all required agreements are in place with the TFO including the asset transfer agreement, the written agreement with the TFO for the temporary operation of the transmission facility, if available, and confirmation of ISO approval of the connection proposal; and (ii) specify the temporary period for which the market participant expects to hold the operating licence, which period may not exceed the term specified in the written agreement with the TFO for the temporary operation of the transmission facility. If the written agreement with the TFO for the temporary operation of the transmission facility is not available at the time of filing the application, the market participant must provide confirmation that the agreement is in place prior to energization.

For the subsequent transfer of the operating license from a market participant to a TFO please refer to Section 10 of this rule.

Not applicable.

Interconnection Application Information

Power Renewable Energy Corporation (PRE) hereby makes application to the Commission, pursuant to Section 18 of the HEEA Act.

- IC1) Provide a statement that the local distribution company has agreed to interconnection, the LSD of the interconnection point, and an electric single-line diagram showing the interconnection point with the company. This agreement must reflect that the interest of current customers of the distribution company are served, that provision for future customer load has been made, and that both parties (generator and wire owner) are satisfied with the arrangement and its implications.**

Not applicable as the connection will be at 240 kV.

- IC2) Provide local area load flow studies, including contingency analysis, with sufficient detail to demonstrate that the proposed interconnection would conform with current accepted planning criteria. Present the report of these studies with sufficient graphical outputs, which should be labeled and indexed to provide clarity as to what was studied.**

The load flows with contingency studies are included in the requisite power system studies entitled "Engineering Study Report Joss Wind Aggregated Generating Facility (WAGF)". This report will be submitted by the AESO as part of the Need Identification Document for the JWPP connection.

- IC3) For connection of power plants with total capacity of 70 MW or larger, provide dynamic studies to determine the impact of the new generation on the transient and dynamic stability of the AIES. These dynamic studies should include system response to close-in and worst-case three-phase faults with and without the new plant addition to show the relative system performance. Study results should include macro-system quantities, such as machine angles, major bus voltages, major line active and reactive power flows, and system frequency. Present the report for the studies with sufficient graphical outputs labeled and indexed to provide clarity as to what was studied. For power plants with total capacity over 10 MW but less than 70 MW, the Commission, in consultation with ISO, will assess the need for dynamic studies.**

Transient studies are included in the requisite power system studies entitled "Engineering Study Report Joss MPC Wind Aggregated Generating Facility (WAGF)". This report will be submitted by the AESO as part of the Need Identification Document for the JWPP connection.

- IC4) For connection of wind farms, provide details of how dynamic voltage control and “Low Voltage Ride Through” are able to conform with the current accepted standard are provided at the point of interconnection. Details should include control block diagrams of the voltage control system and time domain responses to illustrate dynamics and stability of the voltage control system.**

The voltage control modeling information and low voltage ride through capabilities for the proposed wind turbine is provided in Attachment 7. The turbines considered will have zero voltage ride-through capability and will meet the current accepted standard at the point of connection.

- IC5) Provide short circuit levels at substations near the proposed connection.**

Short circuit levels at substation near the generating facility are included in the requisite power system studies entitled “Engineering Study Report Joss MPC Wind Aggregated Generating Facility (WAGF)”. This report will be submitted by the AESO as part of the Need Identification Document for the JWPP connection.

- IC6) Provide the most up-to-date functional specifications when the application is filed and the final functional specification before construction of the project begins.**

The AESO Functional Specification dated February 25, 2016 for the project is included in Appendix 4.

- IC7) Include a cost estimate for the connection and required system upgrades.**

The proposed Halsbury 306S substation and the MPC transmission line development will be fully funded by PRE and since this is a private facility, PRE has elected not to disclose these costs.

- IC8) Explain proponent’s contribution, if any, toward the capital cost of the interconnection.**

PRE will be funding 100% of the direct cost of the interconnection.

ATTACHMENT 1

Figures

ATTACHMENT 2

Draft Substation Permit and License

ATTACHMENT 3

Participant Involvement Program

ATTACHMENT 4a and 4b

**AESO Acceptance Letter and
Functional Specification**

ATTACHMENT 5

Environmental Guidelines Checklist

ATTACHMENT 6

Noise Impact Assessment

ATTACHMENT 7

Wind Turbine Modeling Information