TERIC Power Ltd

AUC Application

Sunrise 2MW Peaker Plant

04-05-44-09-W4

DATE: November 10, 2014

Rev	Description	Originator	Review	Approval	Date
0	Issued for review	T.Chapman	C. Barnes	K.Gilbank	Nov 10, 2014

Information Requirements

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

This Power Plant Application is being made under Part 2, Section 11 of the Hydro and Electric Energy Act: Approval of power plant

> *11. No person shall construct or operate a power plant unless the Commission, by order, has approved the construction and operation of the power plant.*
>
> *RSA 2000 cH-16 s11;2007 cA-37.2 s82(14)*

PP2) Identify any other acts (e.g., Environmental Protection and Enhancement Act) that may affect the project.

The freehold lease is currently operating under an approval by the Alberta Energy Regulator (AER). Per AER Directive 56, Section 5.5.2.1 Installation of on-site power generating equipment

> *On-site power generation is managed and approved by the Alberta Utilities Commission (AUC). Although the facility license should include emissions and noise impact from all sources on-site, power generation equipment is not licensed through Directive 056. For more information, contact the AUC.*

TERIC's Project Sunrise does not require any changes to flow rates, inlet composition or process. It has been confirmed by the AER that an amendment to TERIC's existing D56 license is not required (please see the AER confirmation in Appendix 1: Project Notification Package, in the Participant Involvement Program submitted through the DDS account).

PP3) State the approvals that are being applied for from the Commission.

TERIC Power Ltd. hereby applies to the Alberta Utilities Commission (AUC) for approval to construct and operate a 2.0 MW natural gas-fired power plant north of Hardisty, Alberta.

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

No existing approvals are directly affected by this project.

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

The proposed site for TERIC's Project Sunrise is located within the MD of Wainwright, and the boundary of the MD of Flagstaff is within 2,000m of the proposed site.

Representatives from both MD's were consulted about this project, where the project was discussed in detail;

- **MD Of Wainwright**
    - Jim Klasson - Development Officer

- **MD Of Flagstaff**
    - Rosemary Hoyland - Development Officer

Both Development Officers were satisfied with the consultation conducted, and neither MD had any concerns or objections to the proposed project.

Please see Appendix 2: Stakeholder Consultation Summary, in the Participant Involvement Program submitted through the DDS account, for a detailed list and summary of all stakeholders consulted.

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.

TERIC conducted a detailed participant involvement program in accordance with AUC Rule 007. The associated Participant Involvement Program (submitted through the DDS account) details the consultation and notification activities that TERIC conducted, which includes a list of all parties that may be impacted by this project and a summary of the communication with them.

No parties had any concerns or objections regarding the application.

No other agreements were required in order to carry out the project.

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

N/A

PP8) Provide a copy of the approval from Alberta Transportation if a wind power plant that is within 300 metres of a numbered highway is being applied for.

N/A

PP9) Confirm that an application to AESRD has been made, if applicable, and list all other government departments and agencies from which approval is required. For all power plant

applications, an AESRD wildlife biologist must be included on the referral list, unless the project is located within an urban area. The Commission requires a sign-off from AESRD prior to processing any new wind power applications.

Both the AER and the ERSD were consulted about this proposed project. Due to the fact that that this project is grid-connected, on freehold land and will be on an existing lease, neither regulatory body had any concerns or objections.

Appendix 1: Project Notification Package, in the Participant Involvement Program submitted through the DDS account, contains a record of the correspondence with both regulatory bodies.

PP10) 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.

As the proposed project site is on an existing lease and no land is being taken as part of this application, there are no historical or archaeological impacts.

The proposed power generation equipment is being installed on a brownfield site. The lease exists as part of an oil & gas multiwall battery that was built in 2006.

However, for due diligence; the project is located on lands for which the Historical Resource Value (HRV) is 'Not Listed' therefore an Application for Historical Resources Act Clearance was not required. The HRV search was completed on October 8, 2014.

PP11) Provide the ISO (independent system operator) assigned asset identification code, if available.

The AESO have assigned asset ID: **TER1**

PP12) Provide the legal description of the proposed power plant site (legal subdivision [LSD], Section, Township, Range, Meridian) and connection point, if applicable.

The Power Plant and connection point will be located at 04-05-44-09-W4M in the Municipality of Wainwright, Alberta.

PP13) For wind power plant applications, provide the longitude and latitude coordinates for the centre 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 metres from the coordinates stated in the application, the power plant proponent must reapply 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.

N/A

PP14) Describe the number of generating units and the total capacity (kilovolt-ampere [kVA], or megavolt-ampere [MVA]) for the project.

TERIC will install one induction-generating unit with a total real power generation capacity of 2.0 MW. As this is an induction generator there will be no reactive power produced, thus making the total generation capacity 2.0 MVA.

PP15) 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.

The existing land use on the project site is the Killam 04-05-44-09-W4 Multi-well Gas Battery, an industrial facility owned and operated by TERIC Power Ltd. The land has been approved for this use under ABBT0086381.

The Killam Sunrise site is accessed from Highway 881 to Township Road 440 to Range Road 95.

Local topography consists of rolling hills with a landscape of agriculture and grasslands.

The closest water bodies are Battle River (~6 km to the southeast) and the Hardisty Lake (~9.8 km to the southeast).

No regional land use plans, access management plans, integrated resource plans or policy documents have been identified for the area.

No important environmental features or sensitive areas have been identified on or near the project site.

Please refer to the Air Quality Assessment submitted through the DDS account for a description of the area's meteorological characteristics.

PP16) At a level of detail commensurate with the size and type of potential impact(s) of the project, describe how the project is predicted to adversely affect the environment (such as soils, terrain, vegetation, wetlands, wildlife and wildlife habitat, fish and fish habitat, groundwater, surface water, air quality, and land use), and visual aesthetics. Describe how the environmental and visual aesthetic effects of the project will be mitigated and any monitoring proposed to evaluate the efficacy of the mitigation.

A land survey conducted at the 04-05 site did not identify any environmentally sensitive areas. Vulnerable fish and fish habitat are not present as natural water bodies are not within the site lease.

Noise levels from the existing and proposed equipment are predicted to comply with daytime and nighttime PSLs of AER *Directive 038* and AUC *Rule 012* when assessed from a 1,500m point of reception. Please see the Noise Impact Assessment submitted through the DDS account for further details.

Ground-level concentrations of nitrogen oxides produced by the full gas battery facility, including all significant background emission sources within 5km are predicted to be within the Alberta Ambient Air Quality Objectives (AAAQO). Please refer to the Air Quality Assessment submitted through the DDS account for further details.

Construction and operation of the facilities will be conducted in accordance with the AER and the Municipality of Wainwright's guidelines/regulations to minimize environmental and visual aesthetic effects of the project.

The power generation component will be well below the "skyline" of the existing facilities on TERIC's site as well as that of the adjacent neighbours.

PP17) 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.

N/A – the proposed site does not occur within any regional land use plan; in addition no new land is being taken as part of this application.

PP18) Describe the participant involvement information. (See Appendix A – Participant involvement program requirements).

TERIC's Project Notification Package included all of the required information as outlined in Rule 007:

- Cover Letter
- Sunrise Project Description
- Frequently Asked Questions (FAQs) / Project Information Sheet
- AUC Information Brochure

TERIC's Project Notification Package, as issued to stakeholders, is contained in Appendix 1 of the Participant Involvement Program submitted through the DDS account.

The Participant Involvement Program submitted through the DDS account details the consultation and notification activities that TERIC conducted, and a summary of the communications with the notified parties.

PP19) List all occupants, residents and landowners on lands within 2,000 metres of the project area, as well as other interested persons that were consulted as part of the participant involvement program. If there are populated areas just outside the 2,000 metre limit, applicants should consider including those areas in the participant involvement program.

Please see Appendix 2: Stakeholder Consultation Summary, in the Participant Involvement Program submitted through the DDS account, for a detailed list and summary of all occupants, residents and landowners on lands within 2,000 metres of the project area, as well as other interested persons that were consulted.

PP20) Supply a list of mailing addresses, with corresponding land locations and two sets of printed mailing labels of those parties mentioned in PP19, above.

A list of mailing addresses, with corresponding land locations and two sets of printed mailing labels has been submitted through the DDS account.

PP21) Identify any persons who expressed concerns about the project and the specifics of their concerns.

No persons had any concerns or objections regarding the project. Please see Appendix 2: Stakeholder Consultation Summary, in the Participant Involvement Program submitted through the DDS account, for a detailed list and summary of all stakeholders consulted.

PP22) Summarize discussions held with potentially directly and adversely affected persons.

No persons had any concerns or objections regarding the project or indicated any direct or adverse impact. Please see Appendix 2: Stakeholder Consultation Summary, in the Participant Involvement Program submitted through the DDS account, for a detailed list and summary of all stakeholders consulted.

PP23) If potentially directly and adversely affected persons raised any concerns, describe how

they were dealt with or are being dealt with.

No persons had any concerns or objections regarding the project.

PP24) For those potentially directly and adversely affected persons identified above, include a confirmation of resolution of the concerns, if applicable.

N/A

PP25) If the power plant is to be located within an oil and gas facility, confirm the power plant will comply with the standards outlined in Section 8.090 of the Oil and Gas Conservation Rules.

The power plant will be located within a gas facility and as such the spacing requirements of Section 8.090 of the Oil and Gas Conservation Rules will be met. The new gen-sets feature internal combustion gas-engines that must be spaced in accordance with subsection 9 of Section 8.090. As such the exhaust stacks on these engines are spaced >25 metres from any well, process vessel, oil storage tank or other source of ignitable vapour. Each stack has been constructed so that any emergence of flame along its length or at its end is prevented and the end is not closer than 6 metres to the vertical centre line of a well (projected upward) and it is directed away from the well.

PP26) Provide a noise impact assessment, in accordance with the current AUC Rule 012.

Please see the Noise Impact Assessment submitted through the DDS account for further details.

PP27) 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.

The generating unit will be designed and configured to use a natural gas reciprocating engine driving an induction generator with an output voltage of 4.16kV. The unit capacity will be 2.0 Megawatts.

The generating unit will be enclosed in its own container complete with engine, generator, utility interconnect-rated engine controller, and output breaker and all protective relaying required in order to allow the unit to operate.

The unit will be winterized and able to start when the ambient temperature is as low as -40 degrees C. In order to accomplish this, each unit will be equipped with battery warmers, at least two fully rated block heaters per engine, and heavy-duty 24VDC batteries.

Ideally engine combustion air will be drawn in from outside the enclosure to ensure the air inside the enclosure is maintained at a minimum temperature during the winter. If possible,

external radiators will be used complete with fans driven by variable frequency drives in order to minimize the power used to cool the engine.

PP28) 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.

Installed Maximum capacity will be 2MW

PP29) Present the estimated power plant heat rates, efficiency of the power plant and details of the cooling system for the power plant.

The Power plant will have a closed loop ethylene glycol cooling system that will use a fan to feed air into the exchanger.

Electrical efficiency is expected to be approx. 43-45%.

Heat Rates:

- Heat to Jacket Water = 1,074 kW
- Total Exhaust Heat = 1,295 kW

PP30) State the fuel requirements of the power plant, including type, source, method of handling, transportation and environmental effects.

The power plant's fuel is sweet natural gas withdrawn from the facility's existing fuel gas headers. The gas flows through aboveground steel piping and has no environmental effects prior to its combustion in engines and heaters at the facility.

PP31) Provide a legible plant site drawing showing all major equipment components.

Please refer to the facility's plot plan submitted through the DDS account for further details.

PP32) Provide a legible map showing the power plant site boundaries and land ownership, including any residences and dwellings within 2,000 metres of the boundaries, as well as any additional energy- related facilities within the project area.

Please refer to the facility's Project Area Land Map submitted through the DDS account for further details.

PP33) Provide a legible map of the project area suitable for use in a public notice.

Please refer to the facility's Public Consultation Map submitted through the DDS account for further details.

PP34) Supply the expected in-service dates, and describe ramifications if the approval date cannot be met.

The expected in-service date for the power plant at Sunrise is Feb 1, 2015.

PP35) 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.

	Power Plant Emission Rate (kg/MWh)
NOx	2.2
SO_2	0
Particulate Matter (total)	0

The emission rates comply with all applicable regulatory standards and guidelines. Ambient ground-level concentrations of NOx were confirmed to be in compliance with Alberta Ambient Air Quality Objectives. For further details please refer to the Air Quality Assessment submitted through the DDS account.

PP36) State whether the proposed plant will comply with the Alberta Ambient Air Quality Objectives and Guidelines Summary and any other standards or guidelines that are applicable to the proposed project for ground-level concentrations of pollutants.

Please refer to the Air Quality Assessment submitted through the DDS account for further details.

PP37) Provide the environmental impact assessment as an appendix to the application, if one has been conducted. The applicant must obtain approval from AESRD for thermal power plant facilities greater than one megawatt in total capacity at one site. An environmental impact assessment is mandatory for thermal power plant facilities that use non-gaseous fuel and are greater than 100 megawatts in total capacity; an environmental impact assessment may be required for other power plant facilities regardless of total capacity. When an environmental impact assessment is not mandatory, AESRD will determine if it is necessary, based on the specific nature of the project. The applicant should consult with the Commission and AESRD in the initial stages of preparing its application to determine the level of detail required.

N/A

PP38) If the power plant is to be connected to the transmission system of the Alberta

Interconnected Electric System, 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.**
- **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 Alberta Interconnected Electric System.**

N/A

PP39) If the power plant is to be connected at distribution voltage level to the Alberta Interconnected Electric System (generally less than 69 kV), the applicant must provide a statement from the distribution facility owner indicating that it is willing to connect the generating facilities.

Please refer to the "Letter to AUC- TERIC Power Ltd" submitted through the DDS account for the statement from Fortis Alberta indicating their willingness to connect TERIC's generating facilities.

PP40) 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 Electric Utilities Act is required.

N/A

PP41) 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, and superficial and mineable resources).

N/A