

ALBERTA UTILITIES COMMISSION
FACILITIES APPLICATION
(AUC RULE 007)
FOR THE PROPOSED
E.ON CLIMATE & RENEWABLE CANADA LTD.
GRIZZLY BEAR CREEK WIND POWER PROJECT

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TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
COMBINED POWER PLANT AND SUBSTATION APPLICATION	2
PP1 & TS1) Identify the sections of the <i>Hydro and Electricity Act</i> under which the application is made.	2
PP2 & TS2) Identify any other acts (e.g., <i>Environmental Protection and Enhancement Act</i>) that may affect the project.	2
PP3 & TS3) PP3) State the approvals that are being applied for from the Commission, and provide a draft of the approval being requested.; and, TS3) State the approvals that are being applied for from the Commission, and provide a draft of the permit(s) and licence(s) being sought.....	3
PP4 & TS4) PP4) Provide a list of existing approvals for facilities directly affected by this project, if any; and TS4) Where existing facilities are being altered, discontinued, dismantled or removed state the existing order/authority (e.g., approvals, permits and licences) for each facility.	3
PP5 & TS5) Provide details and outcome of consultation with local jurisdictions (e.g., municipal districts, counties).	3
PP6 & TS6) Provide a list of parties/companies that may be affected by the project, confirm that these parties/companies have no concerns regarding the application, and indicate which other agreements are necessary to carry out the project.	5
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.....	5
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.	5
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.	5
PP10 & TS39) PP10) With respect to new facilities or alterations, that may have archaeological or historical impacts, confirm that a <i>Historical Resources Act</i> 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; and, TS39) Confirm that a <i>Historical Resources Act</i> clearance has been obtained or is being applied for. If a historical and/or archaeological impact assessment is required, briefly describe any historical or archaeological sites 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.	6
PP11) Provide the ISO assigned asset identification code, if available.	6

PP12)	Provide the legal description of the proposed power plant site (legal subdivision [LSD], Section, Township, Range, Meridian) and connection point, if applicable.....	7
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.....	8
PP14)	Describe the number of generating units and the total capacity (kilovolt-ampere [kVA], or megavolt-ampere [MVA]) for the project.	10
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.....	10
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.....	11
PP17 & TS41)	If the project site occurs within the plan boundaries of a regional land use plan in force:.....	12
i.	Confirm that the proposed project is being developed in accordance with the applicable regional land use plan.....	12
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.....	12
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.....	12
PP18 & TS11)	Describe the participant involvement information. (See Appendix A – Participant involvement program requirements).	12

PP19 & TS12)	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; and, 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.....	13
PP20 & TS13)	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; and, TS13) Supply a list of mailing addresses, and two sets of printed mailing labels of those parties mentioned in TS12 above.	17
PP21 & TS14)	Identify any persons who expressed concerns about the project and the specifics of their concerns.....	17
PP22 & TS15)	Summarize discussions held with potentially directly and adversely affected persons.	17
PP23 & TS16)	If potentially directly and adversely affected persons raised any concerns, describe how they were dealt with or are being dealt with...	19
PP24 & TS17)	For those potentially directly and adversely affected persons identified above, include a confirmation of resolution of the concerns, if applicable.	19
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 <i>Oil and Gas Conservation Rules</i>	19
PP26 & TS34)	PP27) Provide a noise impact assessment, in accordance with the current AUC Rule 012; and, TS34) Provide a noise impact assessment in accordance with the current AUC Rule 012 for new substations and transformer additions within an existing substation, clearly indicating the impact of the new substation and/or transformer addition.....	19
PP27 & TS7)	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; and, TS7) Provide a description of the proposed project.....	19
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.....	23
PP29)	Present the estimated power plant heat rates, efficiency of the power plant and details of the cooling system for the power plant.	23
PP30)	State the fuel requirements of the power plant, including type, source, method of handling, transportation and environmental effects.....	24
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.....	24
PP33 & TS30)	Provide a legible map of the project area suitable for use in a public notice.	24
PP34 & TS9)	PP35) Supply the expected in-service dates, and describe ramifications if the approval date cannot be met; and, 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..	24
PP35)	Indicate the plant’s emission rates, in kilograms per megawatt-hour (kg/MWh) of nitrogen oxides (NO _x), sulphur dioxide (SO ₂), 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.....	26
PP36)	State whether the proposed plant will comply with the <i>Alberta Ambient Air Quality Objectives and Guidelines Summary</i> and any other standards or guidelines that are applicable to the proposed project for ground-level concentrations of pollutants.....	26
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..	26
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:	27
	• An electrical single-line diagram obtained from the ISO or sanctioned by the ISO showing the transmission development plan for the interconnection, and	27
	• 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.	27
	Additional attachments for power plant applications without an accompanying application for connection (e.g., if the answer is “No” to Question 8 on the power plant schedule). If the power plant is to be connected at transmission voltage level (generally 69 kV or greater), the following information must be provided in the attachments indicated below:	27
	• Electric single-line diagram; and	27
	• Project area map.	27

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.	28
	Additional attachments for power plant applications without an accompanying application for connection (e.g., if the answer is “No” to Question 8 on the power plant schedule). If the power plant is to be connected to a distribution system (generally less than 69 kV), the following information must be provided in the attachments indicated below.	28
	• Connection agreement	28
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 <i>Electric Utilities Act</i> is required.	28
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).....	28
TS8)	Provide a copy of the ISO Direct Assignment letter pursuant to the <i>Electric Utilities Act</i>	28
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.....	28
TS18)	Describe the design and operating voltage of the transmission line and/or substations.	29
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.	29
TS20)	If the ISO requires the TFO, who has been directly assigned for the proposed project, to determine the choice of conductors, describe conductor size and arrangement selected and the basis for conductor selection.	29
TS21)	Describe the proposed transmission line structure type, including height and spacing; if more than one type of structure is proposed, state where each type will be used.....	29
TS22)	State the right-of-way width and the basis for determining the width..	29
TS23)	Describe all major substation equipment being applied for and list the final major equipment in the substation.....	30
TS24)	Describe the switching and protection features of the proposed transmission facilities.	30
TS25)	Describe the electrical interaction of proposed lines with other facilities, such as pipelines, telephone, radio and television transmission facilities, and other surface structures.	30
TS26)	Describe the changes to existing facilities that would be required to accommodate the proposed facilities.....	30

TS27)	Provide a legible map defining the study area and state the reasons for the chosen area.	30
TS28)	Provide legible maps and drawings of the proposed facilities showing: the preferred transmission line route and any alternative routes; right-of-way widths; location of the transmission line on the right-of-way; location of the transmission line relative to property lines; and mile (kilometre) points along each transmission line route..	31
TS29)	Provide legible maps and/or air 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).....	31
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 an electric single-line diagram and a substation layout, including major items of equipment and the fenced boundaries of the station.....	31
TS32)	Discuss the construction schedule, equipment and method of construction, and method of eventual right-of-way maintenance.....	31
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.....	33
TS35)	For right-of-way clearing and maintenance, provide a copy of the Conservation and Reclamation Plan, as required by AESRD (if applicable).....	33
TS36)	Landscape plan – indicate those areas that require screening or landscaping and the measures to be used.....	33
TS37)	Visual aesthetics – indicate those areas that have been identified as significant viewpoints, the predicted impact, and describe the measures proposed to minimize the impact of towers and rights-of-way within the view area.	33
TS38)	Tower location – indicate the flexibility available in locating towers to reduce the inconvenience to residents and their day-to-day activities.....	34
TS40)	For proposed route(s) and possible alternatives that will result in material environmental impacts, provide the following information to a level of detail commensurate with the size and type of the potential impacts:.....	34
i)	Describe the existing environmental and land use conditions of the study area. Describe the regional setting of the study area, including any regional land use plans and policies that apply to the development.....	34
ii)	Describe how the proposed route(s) and possible alternatives and/or proposed substation are predicted to adversely affect the environment. Evaluate any potential impacts related to soils, terrain, vegetation, wetlands, wildlife and wildlife habitat, fish and fish habitat, groundwater, surface water, and land use following published AESRD guidelines. Describe how the environmental	

effects of the project will be mitigated and any monitoring proposed to evaluate the efficacy of the mitigation..... 34

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.). Provide supporting written discussion showing the significance of impacts upon each major environmental, land use and resource feature for each route..... 34

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. 34

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. 35

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. 35

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 B1. 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 merchant line applications. 35

LIST OF TABLES

Table 1 Legal Land Locations of Turbines - Grizzly Bear Creek Wind Power Project.....7

Table 2 Coordinates of Turbines (UTM NAD 83; Zone 12) - Grizzly Bear Creek Wind Power Project.....9

Table 3 Site Selection Considerations - Grizzly Bear Creek Wind Power Project11

Table 4 Occupants, Residents and Landowners – Grizzly Bear Creek Wind Power Project13

Table 5 Turbine Specifications – Grizzly Bear Creek Wind Power Project22

Table 6 Wind Facility Construction Schedule – Grizzly Bear Creek Wind Power Project.....24

Table 7 Substation Construction Schedule – Grizzly Bear Creek Wind Power Project.....32

LIST OF ATTACHMENTS

- Attachment 1 Draft Power Plant Approval and Substation Permit and Licence
- Attachment 2 Consultation with County of Minburn
- Attachment 3 Consultation with County of Vermilion River
- Attachment 4 Transport Canada Approval
- Attachment 5 Alberta Environment and Sustainable Resource Development (ESRD)
Consultation
- Attachment 6 Alberta Culture Consultation
- Attachment 7 Environmental Evaluation
- Attachment 8 Photomontages
- Attachment 9 Mailing List and Labels
- Attachment 10 Participant Involvement Program
- Attachment 11 Shadow Flicker Assessment
- Attachment 12 Noise Impact Assessment
- Attachment 13 Substation Specifications
- Attachment 14 Maps and Figures
- Attachment 15 AESO and TFO Consultation
- Attachment 16 AESO Functional Specification

ACRONYMS

ACCS – Alberta Culture and Community Spirit
AENV – Alberta Environment and Water
AESRD – Alberta Environment and Sustainable Resource Development
AIES - Alberta Interconnected Electric System
ASRD – Alberta Sustainable Resource Development
AUC – Alberta Utilities Commission
CEAA – *Canadian Environment Assessment Act*
DFO – Distribution Facility Operator
EIA – Environmental Impact Assessment
EIS – Environmental Impact Statement
EPEA – *Environmental Protection and Enhancement Act*
HEEA - *Hydro and Electric Energy Act*
HRA – *Historical Resources Act*
HRIA – Historical Resources Impact Assessment
HRMB – Historical Resources Management Branch
kVA - kilovoltampere
MVA – megavoltampere
WTG – Wind Turbine Generator
MW - megawatt
Project – Grizzly Bear Creek Wind Power Project

EXECUTIVE SUMMARY

E.ON Climate & Renewables Canada Ltd. (E.ON) is proposing to construct and operate the Grizzly Bear Creek Wind Power Project (the “Project”) in central Alberta, southwest of the community of Vermilion. The Project consists of 50 wind turbines of 2.4 megawatt (MW) capacity each, achieving a nameplate capacity of 120 MW.

E.ON’s parent, E.ON Climate & Renewables (EC&R), headquartered in Essen, Germany, is responsible for large-scale renewable energy activities. EC&R plays a leading role in the development of the renewable industry worldwide and is already active in onshore and offshore wind, photovoltaic, and concentrating solar power (CSP). EC&R currently operates over 9 gigawatts (GW) of renewable capacity including large hydro. Since its formation in 2007, EC&R has already invested more than 9 billion Euros, including more than \$5 billion in the U.S solar and wind facilities, and will continue to expand the share of renewable energy in its power generation portfolio. For more information on EC&R, please visit <http://www.eon.com/renewables>.

COMBINED POWER PLANT AND SUBSTATION APPLICATION

This application addresses the combined information requirements outlined within the Alberta Utilities Commission (AUC) Rule 007 *Applications of for Power Plants, Substations, Transmission Lines and Industrial System Designations* (September 1, 2013 version), and specifically those required under Section 3 (*Power plant applications one megawatt (MW) or greater*) (hereinafter “PP” requirements) and Section 7 (*Transmission line / substation applications*) (hereinafter “TS” requirements).

As many of the information requirements of the Section 3 and 7 applications in Rule 007 are similar, they have been combined and addressed for both the power plant and substation concurrently. The Table of Contents identifies the information requirements by Rule 007 Section, focussing on the Power Plant (PP) information requirements in sequential order, followed by the Transmission/Substation (TS) information requirements in sequential order, if/where they are not addressed in a combined fashion.

PP1 & TS1) Identify the sections of the *Hydro and Electricity Act* under which the application is made.

E.ON Climate and Renewables Canada Ltd. (E.ON) hereby makes application specific to the Grizzly Bear Creek Wind Power Project (the “Project”) to the AUC pursuant to Sections 1, 14 and 15 of the *Hydro and Electric Energy Act (HEEA)*, c H-16, R.S.A 2000, as amended.

PP2 & TS2) Identify any other acts (e.g., *Environmental Protection and Enhancement Act*) that may affect the project.

The following provincial and federal statutes may affect the Project:

- *Electric Utilities Act*, S.A. 2003, c. E-5.1;
- *Municipal Government Act*, R.S.A. 2000, c. M-26;
- *Wildlife Act*, R.S.A. 2000, c. W-10;
- *Historical Resources Act*, R.S.A. 2000, c. H-9;
- *Public Highways Development Act*, R.S.A. 2000, c. P-38;
- *Migratory Birds Convention Act*, S.C. 1994, c. 22;
- *Species At Risk Act*, S.C. 2002, c.29;
- *Aeronautics Act*, R.S.C. 1985, c. A-2;
- *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12;

- *Safety Codes Act*, R.S.A. 2000, c. S-1;
- *Alberta Utilities Commission Act*, 2007, c. A-37.2;
- *Water Act*, R.S.A. 2000, c. W-3; and,
- *Radiocommunication Act*, R.S.C. 1985, c. R-2.

PP3 & TS3) PP3) State the approvals that are being applied for from the Commission, and provide a draft of the approval being requested.; and, TS3) State the approvals that are being applied for from the Commission, and provide a draft of the permit(s) and licence(s) being sought.

E.ON applies for the following approvals:

- pursuant to Section 11 of the *HEEA*, an order approving the construction and operation of the Project; and
- pursuant to Sections 14 and 15 of the *HEEA*, a permit to construct and license to operate the Substation associated with the Project.

A draft power plant approval, and substation permit and licence are provided in Attachment 1.

PP4 & TS4) PP4) Provide a list of existing approvals for facilities directly affected by this project, if any; and TS4) Where existing facilities are being altered, discontinued, dismantled or removed state the existing order/authority (e.g., approvals, permits and licences) for each facility.

There are no known existing approvals for facilities directly affected by the Project.

PP5 & TS5) Provide details and outcome of consultation with local jurisdictions (e.g., municipal districts, counties).

E.ON representatives met with the County of Minburn and the County of Vermilion River on several occasions. The Project spans two counties; however, the County of Minburn will host 45 turbines while the County of Vermilion River will host 5 turbines. The County of Minburn and the County of Vermilion River were consulted with throughout the planning for the Project, as detailed below:

County of Minburn:

Discussions were held with the Development Officer for the County of Minburn. Dating back to October of 2011, E.ON has been engaged with the County and has secured permits for meteorological towers. E.ON has continued to keep County Council informed of its development process. E.ON provided additional information from other Counties in Alberta where wind energy development and construction has occurred. Communications with the Development Officer and the County Council regarding the by-laws for wind energy development in the County were concluded with the Counties adoption of a Land Use By-law for wind energy development.

A letter of support (Attachment 2) was provided by the County for the Project. E.ON continues to provide updates to the counties and interact with county officials. E.ON will apply for county development permits in Q3 of 2014 as the Project moves closer to construction.

County of Vermilion River:

Discussions were held with the Development Officer for the County of Vermilion River, dating from October, 2011. No meteorological towers were installed for the Project in the County of Vermilion River. However, E.ON representatives met with Council several times and met with individual County Councillors to discuss the Project. In an effort to gain a letter of support from the County, E.ON representatives provided written information and responses to questions raised by the Council (Attachment 3). The Council met on July 27, 2013 and decided not to provide a Letter of Support for the Project citing “public opposition, possible health issues, aesthetic concerns, lack of oversight and regulation, remediation concerns once the project is complete” (Attachment 3). The County has experienced an election and new members of the Council have been approached as recently as June 10, 2014 in a continued effort to provide additional information. E.ON will submit Development Permit applications to the County for approval.

PP6 & TS6) Provide a list of parties/companies that may be affected by the project, confirm that these parties/companies have no concerns regarding the application, and indicate which other agreements are necessary to carry out the project.

Enbridge has pipelines and a compressor station in the Project area. E.ON has met with Enbridge representatives to discuss the Project and its potential effect. A meeting was held June 11, 2014 with Enbridge to discuss pipeline crossing requirements and agreements. Applications will be made to Enbridge for all crossings during and post construction.

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.

Non-objection letters have been received from both Transport Canada and NAV Canada for the proposed Project (Attachment 4). Upon receipt of the Transport Canada permit, it will be submitted to the AUC.

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.

Not applicable as there are no turbines within 300 metres (m) of a numbered highway.

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.

Application to Alberta Environment and Sustainable Resource Development (AESRD) with respect to the *Environmental Protection and Enhancement Act* is not applicable for wind power projects. As required by AESRD, application for *Water Act* Approval and Notifications shall be made prior to construction. E.ON requires approval from the following agencies:

- Transport Canada (Aeronautical Obstruction Clearance and Lighting Direction);
- NAVCanada (Land Use Proposal Submission); and,
- Alberta Culture (*Historical Resources Act* clearance).

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.

E.ON has consulted with Mr. David Moore, AESRD Area Wildlife Biologist (Vermilion) throughout the development planning stages for the Project. Mr. Moore provided guidance on the surveys to be undertaken, has accompanied E.ON personnel on a tour of the proposed Project, has been provided with the results of the environmental studies conducted, and has provided siting recommendations for Project components. On June 30, 2014, Mr. Moore provided AESRD “sign-off” for the Project via the AESRD *Wind Energy Referral Report* (Attachment 5).

PP10 & TS39) 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; and, TS39) Confirm that a *Historical Resources Act* clearance has been obtained or is being applied for. If a historical and/or archaeological impact assessment is required, briefly describe any historical or archaeological sites 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.

E.ON has been in consultation with Alberta Culture (formerly Alberta Culture and Community Spirit [ACCS]) regarding the proposed Project. Specifically, on March 2, 2012 ACCS issued a Schedule A instructing E.ON to conduct an *Historical Resources Impact Assessment* (HRIA) in “areas of high archaeological potential” identified within the preliminary Project Area. Further details of the proposed Project were submitted to Alberta Culture and *Historical Resources Act* (HRA) clearance were requested based on the Project’s avoidance of high archaeological potential areas. On March 28, 2014, Alberta Culture issued HRA clearance for the Project (Attachment 6).

PP11) Provide the ISO assigned asset identification code, if available.

The Alberta Electric System Operator (“AESO”) assigned asset identification codes for the wind power facility is P1250, while the substation is 708S.

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

The legal land description of the turbines is provided in Table 1.

Table 1 Legal Land Locations of Turbines - Grizzly Bear Creek Wind Power Project

Turbine #	LSD	Section	Township	Range	Meridian
1	3	24	49	8	4
2	16	21	49	8	4
3	10	17	49	8	4
4	9	18	49	7	4
5	1	3	49	8	4
6	4	27	49	8	4
7	10	21	49	8	4
8	1	1	49	8	4
9	7	35	48	8	4
10	10	9	49	8	4
11	9	15	49	8	4
12	9	27	48	8	4
13	16	27	49	8	4
14	8	33	49	8	4
15	6	27	49	8	4
16	1	6	49	8	4
17	15	6	49	8	4
18	1	2	49	8	4
19	3	6	49	7	4
20	16	28	49	8	4
21	3	21	49	8	4
22	8	29	49	8	4
23	10	28	49	8	4
24	13	4	49	8	4
25	7	9	49	8	4
26	6	28	49	8	4
27	10	3	49	8	4
28	2	31	49	8	4
29	8	31	49	8	4
30	13	15	49	8	4
31 ^(a)	No turbine 31	n/a	n/a	n/a	n/a
32	13	23	49	8	4

Table 1 Legal Land Locations of Turbines - Grizzly Bear Creek Wind Power Project (continued)

Turbine #	LSD	Section	Township	Range	Meridian
33	5	33	48	8	4
34	12	6	49	7	4
35	2	29	49	8	4
36	9	27	49	8	4
37	8	18	49	7	4
38	7	20	49	8	4
39	10	31	49	8	4
40	13	31	49	8	4
41	1	32	48	8	4
42	12	32	49	8	4
43	15	31	48	8	4
44	9	34	48	8	4
45	6	32	48	8	4
46	13	18	49	7	4
47	9	25	49	8	4
48	8	25	49	8	4
49	13	14	49	8	4
50	16	5	49	8	4
51	13	21	49	8	4

^(a) The proposed Turbine 31 location was dropped from consideration due to wildlife setbacks associated with a bald eagle nest.

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.

The latitude and longitude coordinates (and UTM coordinates) for the turbines are provided in Table 2.

Table 2 Coordinates of Turbines (UTM NAD 83; Zone 12) - Grizzly Bear Creek Wind Power Project

Turbine	Geographic		UTM NAD 83, Zone 12	
	Latitude (°)	Longitude (°)	Easting	Northing
1	53.23712590	-111.04240300	497170	5898650
2	53.24596930	-111.10390000	493067	5899638
3	53.22894050	-111.13435800	491031	5897747
4	53.22916890	-111.00654700	499563	5897764
5	53.19205060	-111.08369800	494408	5893638
6	53.25061790	-111.09767600	493483	5900155
7	53.24230560	-111.10976500	492675	5899231
8	53.19158140	-111.03423000	497713	5893583
9	53.18080160	-111.06007900	495985	5892385
10	53.21370690	-111.11091900	492593	5896050
11	53.22862920	-111.08105800	494589	5897707
12	53.17205560	-111.08340200	494425	5891414
13	53.26098100	-111.08080400	494610	5901306
14	53.26788240	-111.10647200	492899	5902076
15	53.25436580	-111.09216900	493851	5900571
16	53.19190160	-111.15239800	489818	5893629
17	53.20251910	-111.16008800	489307	5894811
18	53.19199600	-111.05568200	496280	5893630
19	53.19226830	-111.02092100	498602	5893659
20	53.26255170	-111.10660800	492889	5901483
21	53.23630230	-111.11766000	492147	5898564
22	53.25471670	-111.13034700	491304	5900614
23	53.25678410	-111.11278500	492476	5900842
24	53.20346210	-111.12069900	491938	5894911
25	53.20883650	-111.11287800	492461	5895508
26	53.25282350	-111.11833500	492105	5900402
27	53.20037250	-111.08666300	494211	5894564
28	53.26493450	-111.16190800	489201	5901755
29	53.26728940	-111.15527400	489644	5902016
30	53.23259730	-111.09962700	493350	5898150
31 ^(a)	No turbine 31	n/a	n/a	n/a
32	53.24722150	-111.07662700	494887	5899775
33	53.18220950	-111.12285400	491790	5892547
34	53.20121020	-111.02618400	498251	5894654
35	53.25026500	-111.13571900	490945	5900120

Table 2 Coordinates of Turbines (UTM NAD 83; Zone 12) - Grizzly Bear Creek Wind Power Project (continued)

Turbine	Geographic		UTM NAD 83, Zone 12	
	Latitude (°)	Longitude (°)	Easting	Northing
36	53.25706880	-111.08363000	494421	5900871
37	53.22450350	-111.00795400	499469	5897245
38	53.23927070	-111.13283200	491135	5898896
39	53.27391000	-111.15865700	489420	5902753
40	53.27567490	-111.16943100	488702	5902951
41	53.17864360	-111.12871000	491398	5892151
42	53.27065330	-111.14665000	490220	5902389
43	53.18775480	-111.16137700	489217	5893169
44	53.18466290	-111.08184300	494531	5892816
45	53.18234890	-111.14097000	490579	5892565
46	53.23197990	-111.02573800	498282	5898077
47	53.25854920	-111.03474900	497682	5901033
48	53.25264400	-111.03293000	497803	5900376
49	53.23148230	-111.07561000	494953	5898024
50	53.20357740	-111.13068600	491271	5894925
51	53.24676150	-111.12292000	491798	5899728

^(a) The proposed Turbine 31 location was dropped from consideration due to wildlife setbacks associated with a bald eagle nest.

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

The Project will consist of 50 Nordex 2.4 MW (Nordex N117) wind turbine generators for a total capacity of 120 MW. The Nordex N117 turbines each have a capacity of 2.67 MVA, total site nameplate capacity will be rated at 126.3 MVA and total site gross capacity will be rated at 133 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 Project is located on private land. The Project lands within the County of Vermilion River are designated as Agricultural, as per the County of Vermilion River Land Use Bylaw No. 13-14

(County of Vermilion River, 2013), while those within the County of Minburn are designated Agricultural District (County of Minburn No. 27 Land Use Bylaw No. 1218-12, as amended by Bylaw 1221-13). The bylaws for both counties have special land use provisions for the development of Wind Energy Conversion Systems (WECS).

Overall, land use practices (i.e., agricultural usage) that currently occur in the Project area are not expected to change as a result of the Project.

The selection of the Project site was based on a number of factors, including those detailed in Table 3.

Table 3 Site Selection Considerations - Grizzly Bear Creek Wind Power Project

Site Selection	Discussion
Preliminary wind resource assessment	The Project area was identified as a prospective wind resource area via review of publicly available wind maps (e.g., Environment Canada’s Canadian Wind Energy Atlas), and site reconnaissance. As no significant issues were identified during this process, E.ON proceeded with further studies, which eventually led to the installation of meteorological towers to monitor the local wind resource.
Review of terrain and topography	E.ON reviewed the Project Region for terrain and/or topographic limitations to Project siting or construction. As no areas of concern were identified, E.ON proceeded with further studies.
Access to transmission	E.ON consulted with the Alberta Electrical System Operator (AESO). As no significant issues were identified during this process, E.ON applied for and received a preliminary Connection Plan and executed a Construction Commitment Agreement.
Land owner interest	E.ON consulted with landowners in the area regarding their interest in wind power development within the area, specifically with landowners whose property was under consideration. No significant issues were identified, and E.ON was able to secure, via option agreements, sufficient land interest to proceed with further development of the Project.

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 summary of environmental effects has been provided within the Environmental Evaluation provided in Attachment 7. Representative photo montages, that illustrate the potential of the Project on the landscape are provide in Attachment 8.

PP17 & TS41) 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.**

There are no final land-use regional plans applicable to the portion of Alberta that the Project is located in.

PP18 & TS11) Describe the participant involvement information. (See Appendix A – Participant involvement program requirements).

The Participant Involvement Program (PIP) consisted of:

1. Mailings to all residents and landowners within 2,000 meters of any of the Project's facilities.
 - a. Included in the mailing packages were copies of the brochure outlining Project specifics, the AUC process and an information brochure;

A letter and brochure (Attachment 10) was sent to all landowners and residents within the 2,000 meter consultation zone in response to a meeting held by the Grizzly Bear Coulee Protection Group. The Grizzly Bear Coulee Protection Group is a group of local citizens who are opposed to the Project. E.ON was invited and provided Project information at the meeting and responded to questions. E.ON brought a consultant from Intrinsik to provide additional information on health effects and counter myths regarding wind turbine health related illnesses.

Intrinsic Environmental Sciences is a North American based consultancy with a proven track record of more than 25 years in business. Intrinsic has over 50 highly trained and experienced scientists practicing in environmental and occupational health.

2. Three public open-houses were held on May 2, 2012; April 25, 2013 and July 16, 2013.
 - a. E.ON representatives were available for questions as were representatives from Golder Associates Ltd. (Golder).
 - b. Visual representations of the Project were displayed created from photographs taken from high traffic and significant locations.
 - c. Maps of the Project layout were available and story boards were used to provide information on wind energy development and construction processes.
3. Meetings and/or phone conversations were held with each resident and landowner within the 800 m consultation zone to gain their feedback and provide additional information and respond to any questions.

PP19 & TS12) 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; and, 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 listing of occupants, residents and landowners on lands within 2,000 m of the Project area, based on land title searches and personal communications, is provided in Table 4.

Table 4 Occupants, Residents and Landowners – Grizzly Bear Creek Wind Power Project

Last Name/Entity	First Name
1173005 Alberta Ltd.	
332546 ALBERTA LTD.	
364176 Alberta Ltd	

Table 4 Occupants, Residents and Landowners – Grizzly Bear Creek Wind Power Project (continued)

Last Name/Entity	First Name
76198 Alberta Ltd.	
911455 Alberta Ltd.	
Alberta Energy & Natural Resources	
Babij	Lorne
Barlow	Rodney
Barr	Heather
Barrett	Wylie and Sharon
Barrs	Heather
Betz	Erna
Betz	John R
Borysiuk	Terry
Borysiuk	Terry and Adele
Borysiuk	Darlene
Borysiuk	Randy
Borysiuk	Richar Fredrick
Borysiuk	William
Bourgeault	Marie
Bourgeault	Ronald and Patricia
Carlson	Barbara
Clark	Trent
Clark	Ward
Clovelly Community Association	
County of Minburn No. 27	
Crawford	Helen Iona
Cusack	Kathy
Cusack	Dorcey and Katherine
Demas	Marilyn and Kirby
Dixon	Ronald
Ducks Unlimited Canada	
Elliott	Douglas
Emmott	Susan
Eyben	Douglas W
Eyben	Robert A
Flemke	Walter
Garnett	Glenn and Donna
Grech	James and Betty
Gutsch	Eric and Rebecca
Gutsch	Robert

Table 4 Occupants, Residents and Landowners – Grizzly Bear Creek Wind Power Project (continued)

Last Name/Entity	First Name
Hanch	Murray Lee
Hensch	George N
Hess	Douglas and Karen
Hess	Lawrence and Gail
Hickman	Darrell
Hinecker	Daryl
Holzapfel	Jerald F
Howard	Lorraine
Hutterian Brethren Church of Mannville	
Johnston	Elizabeth
Johnston	Alan
Kenzie	Robert and Judy
Kern Farms Corporation	
Kipps	Brent and Suzanne
Klippert	Lila
Kochan	Shanon
Kochan	Terrance K
Kochan	Jordan E
Kochan	Mathew
Little's Ranching Company	
Livingstone	Douglas and Cheryl
Loades	Malcolm and Diane
Maron	Walter
McKelvie	Rober and Jean
McMinnis	Curtis and Cindy
McMinnis Farms Ltd	
Muthill Grain Inc.	
Myhovich	David
Myhovich	Curtis
Myhovich	Hope
Myhovich	Michael and Elizabeth
Myshak	Donald
Mytz	Brian
Mytz	Murray Lee
Mytz	Allan
Mytz	Wayne
Mytz (Estate)	Fred Allan
Nydokus	Richard and Margaret

Table 4 Occupants, Residents and Landowners – Grizzly Bear Creek Wind Power Project (continued)

Last Name/Entity	First Name
Nydokus	Raymond
Pawlow	Stanley
Pulyk	Julia and Garry
Pulyk	Jerry C
Pulyk	Garry
Pulyk	James E
Pulyk	Lyndon
Reid	Sharon
Rochefort Investments Ltd. c/o Bennett Jones Verchere	
Roland	Lynne
Scott	David G
Sewalt	Jack
Shumacher	Ronald
Smart	Peter
Smart	Peter W
Smart	Lincoln E
Smith	James
Staden Farms Ltd	
Stafinski	Alice Elizabeth
Stellaville Historical Society	
Stewart Hilltop Farms Ltd.	
Tankerton Stock Farm Ltd c/o Edward Eric Schroeder	
Thompson	Heather E
Three Springs Investments Ltd.	
Tod	Robert S
Tyler	Nelson G
Wascherol	Michael W
Wascherol	Wayne R
Wascherol	Mary K
Wascherol	Wayne
Westover	Warren
Whiting	Clayton and Patricia
Willowby Farms Ltd	
Wright	Gary and Lorraine
Wright	Gary
Wyrd-Scott	F
Wyrd-Scott	Kenneth
Wytz	Walter and Hazel

PP20 & TS13) 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; and, TS13) Supply a list of mailing addresses, and two sets of printed mailing labels of those parties mentioned in TS12 above.

A complete list of mailing addresses is provided in Attachment 9.

PP21 & TS14) Identify any persons who expressed concerns about the project and the specifics of their concerns..

Please refer to the communications tracking sheet provided in Attachment 10.

PP22 & TS15) Summarize discussions held with potentially directly and adversely affected persons.

The discussions are categorized and summarized below.

Noise Effects

Some directly affected persons had questions and concerns about the potential noise levels wind turbines can generate during operations. E.ON provided information regarding expected noise levels based on scientific modelling of the Project and indicated that the Project will comply with AUC Rule 012 - *Noise Control*.

Visual Effect

Individuals expressed concern about the changing landscape with the development of a wind power project in their neighbourhood, and to what extent the turbines would be visible. Visual representations were prepared and displayed at the open houses to illustrate the extent of the visual effect (Attachment 8).

Shadow Flicker

Some individuals expressed a concern about shadow flicker on their residence. E.ON conducted a shadow flicker study and shared the results with those individuals (Attachment 11). The most

impacted residences are estimated to be approximately 18.25 hours per year of shadow flicker with a maximum daily exposure to shadow flicker of 39 minutes.

Wildlife Effects

Some individuals had questions about effects to wildlife, such as bird and bat collisions, caused by wind power projects. E.ON provided information about general effects of wind power on wildlife and details of the extensive environmental studies conducted at the Project. It was explained that the wildlife studies were undertaken following the AESRD guidelines specific to wind (e.g., *Wildlife Guidelines for Alberta Wind Energy Projects*) and in consultation with the AESRD regional biologist, and that the results of the wildlife studies helped identify siting constraints that were taken into account during the Project design stage.

Electromagnetic Field

One individual was concerned with electromagnetic fields and possible health effects. E.ON's consultant Intrinsic Environmental Sciences provided the science regarding electromagnetic field possibilities from wind turbines and underground collection systems. E.ON followed up with the individual and she had no further questions at that time.

Location

Several Stakeholders had questions as to why this location was selected for a wind power project. It was communicated to them that the site was chosen based on the available wind resource, transmission system, landowner interest, and environmental constraints.

Economic Benefits

Individuals expressed an interest in types and numbers of jobs the Project could create. E.ON has experience in the construction and operation of wind power projects in other parts of the world and provided estimates of the number and types of long term jobs the facility will create.

PP23 & TS16) If potentially directly and adversely affected persons raised any concerns, describe how they were dealt with or are being dealt with.

The concerns were addressed as detailed in PP24 and TS15 and in Attachment 10.

PP24 & TS17) For those potentially directly and adversely affected persons identified above, include a confirmation of resolution of the concerns, if applicable.

Where possible, concerns have been resolved. Those concerns which were not resolved are itemized in the Communications Tracking Worksheet (Attachment 10). E.ON will continue to provide additional information where necessary in an effort to foster a good neighbour approach. E.ON will continue to engage concerned stakeholders through telephone calls and or meetings.

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 Project is not located within an oil and gas facility.

PP26 & TS34) PP27) Provide a noise impact assessment, in accordance with the current AUC Rule 012; and, TS34) Provide a noise impact assessment in accordance with the current AUC Rule 012 for new substations and transformer additions within an existing substation, clearly indicating the impact of the new substation and/or transformer addition.

A noise impact assessment (NIA) for the Project is provide in Attachment 12.

PP27 & TS7) 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; and, TS7) Provide a description of the proposed project.

Details of the power generating equipment and substation are provided below.

Each turbine consists of the following components:

Rotor

The rotor consists of three rotor blades made of high-quality, glass fibre-reinforced polyester, a hub, slewing rings and drives for adjusting the rotor blades. A pitch system is used to control and optimize output. The variable-speed rotor enhances the aerodynamic effects and reduces the wind load on the system. If necessary, each rotor blade can be locked in any position by means of an innovative locking system to facilitate servicing.

Drive Train

The drive train consists of the rotor shaft, the gearbox, an elastic coupling and the generator.

Gearbox

The nacelle is equipped with a two-stage, planetary gearbox with a spur gear stage. As an option, a differential gearbox is also available. The gearbox is fitted with a cooling circuit with variable cooling output. The gearbox bearing and tooth engagement are kept continuously lubricated with oil.

Generator

The generator is a double-fed asynchronous machine. Nordex has been using this type of generator with variable-speed turbines successfully for many years. The main advantage is that only 25 to 30% of the energy produced needs to be fed into the electricity grid via a frequency converter. The deployment of this generator/frequency converter system thus cuts the total cost of the wind power system.

Cooling and Filtration

The gearbox, generator and converter of the turbine each have independent active cooling systems. The cooling system for the generator and frequency converter is based on a cooling water circuit, while the gearbox is cooled by an oil-based system. This ensures optimum

operating conditions in all types of weather. A separate cooling system room at the rear of the nacelle facilitates access to the cooling units and ensures optimum performance of the individual systems.

Braking System

The three redundant and independently controlled rotor blades can be set at full right angles to the rotation direction for aerodynamic braking. In addition, the hydraulic disc brake provides additional support in the event of an emergency stop.

Nacelle

The nacelle consists of a cast machine frame, a welded generator frame, a steel structure for the crane system and for supporting the nacelle housing and the nacelle housing itself, which is made of glass fibre-reinforced plastic. Ergonomically designed, it is spacious and thus service-friendly.

Yaw System

The wind direction is continuously monitored by two redundant wind direction sensors on the nacelle. If the permissible deviation is exceeded, the nacelle yaw is actively adjusted by means of up to four geared motors.

Tower

The tubular steel tower is designed and certified as a modular tower. The requirements of EN 50308 in particular have been taken into account in the design of the tower interiors (access ladder, platforms, safety equipment). The tower will be constructed of modular tubular steel with a height of 91 m.

Control and Grid Connection

The wind turbine has two anemometers. One anemometer is used for controlling the turbine, the second for monitoring the first. All operational data can be monitored and checked on a control screen located in the switch cabinet or via an external laptop. The data and signals are

transmitted via ISDN for remote monitoring. At the click of the mouse, the operator can download all key data for the turbine from the Internet. The necessary communications software and hardware is supplied by Nordex.

Lightning Protection

Lightning and overvoltage protection of the entire wind turbine is based on the lightning protection concept and is in accordance with DIN EN 62305.

PadMounted Transformers

Each turbine will have a generator step-up transformer installed at the base of the turbine to increase the output voltage of the turbine to the voltage of the power collection system (typically 34.5 kV). The transformer is a rectangle measuring approximately 2.25 m by 2.50 m. Support for the transformer will be provided by a concrete pad approximately 0.30 m thick, which will be placed over 0.60 m of weak concrete fill. The weak concrete fill will measure 2.30 m by 4.10 m and will be placed under the transformer pad and between the transformer and the tower pedestal. Approximately 1.15 cubic metres will be used in the pad and approximately 8.40 cubic metres will be used in the concrete fill, for a total of approximately 9.50 yards of concrete per transformer.

A summary of the Nordex N117 specifications is provided in Table 5:

Table 5 Turbine Specifications – Grizzly Bear Creek Wind Power Project

Nordex N117/2400 IEC III	
Rated power	2,400 kW
Cut-in wind speed	3 m/s (10.8 km/hr)
Cut-out wind speed	20 m/s (72.0 km/hr)
Number of Blades	3
Diameter	116.8 m
Swept area	10,715 m ²
Rotational speed	7.5 – 13.2 rpm
Rated rotational speed	11.8 rpm
Tip speed	72 m/s (260 km/hr)
Speed control	Variable via microprocessor

**Table 5 Turbine Specifications – Grizzly Bear Creek Wind Power Project
 (continued)**

Nordex N117/2400 IEC III	
Overspeed control	Pitch angle
Hub Height	91 m
Gearbox	Combined spur/planetary gear or differential gearbox
Generator	Double-fed, liquid/air cooled asynchronous generator
Cooling system	Liquid/air cooling
Voltage	660 V
Grid frequency	50/60 Hz
Control System	PLC controlled, ISDN for remote control
Grid connection	Via IGBT converter
Main brake	Pitch angle
Secondary brake	Disk brake
Lightning protection	Fully compliant with EN 62305
Tower Construction	Tubular steel tower, hybrid tower
Rotor hub height/Certification	91m/IEC 3a, DIBt2

Collection and Substation

The wind turbine generators will be connected via a 34.5kV collection system. The 34.5kV collection system will terminate in the Project substation by 4 34.5kV circuit breakers. The Project substation will contain a 240x144/34.5kV transformer and a 240kV rated circuit breaker and associated switches. Additional substation technical specifications are provided in Attachment 13.

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.

At present, E.ON has selected turbines as detailed within this application.

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

Due to the nature of the wind turbines and the technology being used, plant heat rates are not applicable and no cooling system is required.

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

The wind turbines require no fuel to produce power.

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

Maps, figures and drawings are provided in Attachment 14.

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.

Maps, figures and drawings are provided in Attachment 14.

PP33 & TS30) Provide a legible map of the project area suitable for use in a public notice.

A map of the Project, suitable for use in a public notice is provided in Attachment 14.

PP34 & TS9) PP35) Supply the expected in-service dates, and describe ramifications if the approval date cannot be met; and, 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.

The proposed Project construction schedule and proposed in-service date are provided in Table 6.

Table 6 Wind Facility Construction Schedule – Grizzly Bear Creek Wind Power Project

Construction Activity	Start	End	Comments
TSA			
Begin negotiations	10/6/2015	11/14/2015	6 weeks
Execute turbine contract	11/14/2015	11/14/2015	9 month lead time for delivery
BOP Contract			
Issue RFP	2/16/2016	3/13/2016	4 weeks
Bids Received / review	3/16/2016	3/27/2016	2 weeks
Negotiations	3/30/2016	4/27/2016	4 weeks

Table 6 Wind Facility Construction Schedule – Grizzly Bear Creek Wind Power Project (continued)

Construction Activity	Start	End	Comments
LTNP	5/11/2016	5/11/2016	2 weeks after negotiations begin; 1 week before mobilization
Award Bid	5/22/2016	5/22/2016	
Long Lead Electrical Equipment Order	9/15/2015	7/20/2016	44 weeks total to negotiate, manufacture and deliver MPT to site. Typically prefer the MPTs to arrive 4 weeks prior to backfeed. However, since the backfeed date is much earlier than the beginning of deliveries, the MPTs need to be on site 2 months prior to the beginning of commissioning
Construction			
Substation	5/26/2016	9/14/2016	16 weeks before backfeed (beginning on the Tuesday due to May 25 being Memorial Day)
BOP Mobilization	5/18/2016	5/18/2016	1 week before work begins (due to May 25 Memorial Day being a holiday, begin mobilization one (1) week earlier)
Begin roads (public & access)	6/1/2016	6/1/2016	4 weeks ahead of foundations
Foundation Installations			
Foundations 1-30	6/29/2016	7/31/2016	Rate of 1/day
Foundations 31-50	8/3/2016	8/28/2016	Rate of 1/day
Turbine Deliveries	8/7/2016	9/18/2016	Rate of 8/week (week ending) - 8 weeks (includes 1 week for delays;) typically begin after 30 foundations have been installed. Currently a 9 month lead time from execution of contract to arriving on site.
Turbine Erections	8/17/2016	10/16/2016	Rate of 8/week, 3 weeks after WTG deliveries, includes 10 wind days (2 weeks) for a total of 9 weeks
MCC	8/31/2016	10/30/2016	Rate of 8/week, 2 weeks after WTG erections. Includes 10 wind days (2 weeks) for a total of 9 weeks
Backfeed Available	9/8/2016	9/8/2016	Moved to the Tuesday, since Monday is Labor Day
Commissioning	9/14/2016	11/13/2016	Rate of 8/week, 2 weeks after MCC, 1 week after backfeed. Includes 10 wind days (2 weeks) for a total of 9 weeks
COD	12/31/2016	12/31/2016	Typically one month after commissioning completion. This date takes into consideration Thanksgiving, Christmas and New Year's.

Approval for the proposed Project is required by April 2015, for a commercial operation date of December 2016. Generally, long lead times for equipment procurement are required for scheduling construction in the summer of 2016. If the approval date cannot be met, construction would be pushed into the winter months to meet the Project In-Service-Date and possibly be delayed until the next spring (2017) construction season. This would result in increased construction costs and lost wind energy production revenues.

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.

The operating Project will not produce emissions.

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.

The *Alberta Ambient Air Quality Guidelines* are not applicable since the Project will not produce emissions.

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..

Wind power projects are not subject to an environmental impact assessment (EIA) under the *Alberta Environmental Protection and Enhancement Act (EPEA)*. Currently there is no trigger to conduct a *Canadian Environmental Assessment Act (CEAA) Environmental Impact Statement (EIS)*. Under the guidance of AESRD and applicable environmental guidelines E.ON has completed an environmental evaluation for the Project. A general overview of environmental

effects are provided in PP16) with greater detail provided within the Environmental Evaluation (Attachment 7).

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, and**

Maps, figures and drawings are provided in Attachment 14.

- **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.**

Maps, figures and drawings are provided in Attachment 14.

Additional attachments for power plant applications without an accompanying application for connection (e.g., if the answer is “No” to Question 8 on the power plant schedule). If the power plant is to be connected at transmission voltage level (generally 69 kV or greater), the following information must be provided in the attachments indicated below:

- **Electric single-line diagram; and**
- **Project area map.**

Maps, figures and drawings are provided in Attachment 14.

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.

Additional attachments for power plant applications without an accompanying application for connection (e.g., if the answer is “No” to Question 8 on the power plant schedule). If the power plant is to be connected to a distribution system (generally less than 69 kV), the following information must be provided in the attachments indicated below.

- **Connection agreement**

E.ON has been in consultation with the AESO and it’s assigned TFO, ATCO Electric as detailed in Attachment 15.

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.

Not applicable.

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).

Maps, figures and drawings are provided in Attachment 14.

TS8) Provide a copy of the ISO Direct Assignment letter pursuant to the *Electric Utilities Act*.

Refer to attachment 15.

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 as per Rule 007, Section 7.4, as this application is in reference to a substation only.

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

The Grizzly Bear Substation high side voltage will be designed for 230kV (originally operated at 138kV prior to being switched to 230kV) and the low side will be 34.5kV. The substation will consist of a single 140 MVA main power transformer. The substation will be primarily of open air design. The transmission line will run approximately 2 kms from the applicant substation to the under development transmission line from Tenchbray to Vermilion. Initially the line will be operated at 138kV nominal prior to being switched to 230kV nominal. The original line design will be suitable for 230kV.

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.

Not applicable as per Rule 007, Section 7.4, as this application is in reference to a substation only.

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

Not applicable as per Rule 007, Section 7.4, as this application is in reference to a substation only.

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

Not applicable as per Rule 007, Section 7.4, as this application is in reference to a substation only.

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

Not applicable as per Rule 007, Section 7.4, as this application is in reference to a substation only.

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

The Project substation will consist of one (1) 230x138:34.5 kV, 140 MVA main power transformer. A single 230kV high side breaker will be installed on the high side of the transformer. Three (3) 34.5kV circuit breakers with integral high speed grounding switches will be installed to feed the collection strings. A single 34.5kV breaker, circuit switchers, and capacitors or reactors will be installed as system studies indicate in order to meet grid requirements. A substation control building will house protective relaying, metering, and SCADA equipment.

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

The transmission line will originate at a T-tap arrangement with three manually-operated 144 kV gang-switches and will terminate at the Project substation 144 kV circuit breaker. The relays protecting the transmission line will be controlled and operated by a SCADA system that will interface with ATCO Electric.

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 as per Rule 007, Section 7.4, as this application is in reference to a substation only.

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

No changes to existing facilities would be required to accommodate the proposed facility.

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

Maps, figures and drawings are provided in Attachment 14. The substation location was chosen as it represents a central location within the Project area and will require limited transmission by ATCO to connect to the grid.

TS28) Provide legible maps and drawings of the proposed facilities showing: the preferred transmission line route and any alternative routes; right-of-way widths; location of the transmission line on the right-of-way; location of the transmission line relative to property lines; and mile (kilometre) points along each transmission line route.

Not applicable as per Rule 007, Section 7.4, as this application is in reference to a substation only.

TS29) Provide legible maps and/or air 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 as per Rule 007, Section 7.4, as this application is in reference to a substation only.

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 an electric single-line diagram and a substation layout, including major items of equipment and the fenced boundaries of the station.

Maps, figures and drawings are provided in Attachment 14.

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

The Project substation construction schedule is detailed below.

- The current proposed construction schedule for the substation facilities is planned to commence in June 2015 beginning with clearing and grading.
- The excavation and pouring of the concrete foundation is expected to be completed in July 2015. Once the foundation is complete, the fencing will be placed around the Substation to provide security.
- The above and below grade work is expected to begin in July 2015, with a September 2015 completion date. The below grade work, including grounding and conduit is expected to take approximately five (5) weeks. The above grade work will follow,

including the grounding and the conduit and is expected to take approximately one (1) week.

- The installation of the structural steel and bus work will take place following the below grade work and concurrent to the above grade work.
- The setting of the Control Building and Main Power Transformer, will occur concurrently with the pulling and terminating of the Control Cable. This work is schedule to be completed by the end of September 2015.
- The testing of the Main Power Transformer will follow, and the Substation will be ready for backfeed by Monday, October 12, 2015.
- The site will be ready for the final steps of energizing the turbine circuits and commissioning the individual turbines to meet the proposed Commercial Operation Date of December 2016, as detailed in Table 7.

Table 7 Substation Construction Schedule – Grizzly Bear Creek Wind Power Project

Task Name	Duration	Start	Finish
Substation	105 days	Mon 6/1/16	Fri 10/23/16
Mobilization	2 days	Mon 6/1/16	Tue 6/2/16
Site Work	15 days	Wed 6/3/16	Tue 6/23/16
Fencing	10 days	Fri 7/3/16	Thu 7/16/16
Foundations	17 days	Wed 6/24/16	Thu 7/16/16
Below Grade Grounding	17 days	Fri 7/17/16	Mon 8/10/16
Below Grade Conduit	17 days	Fri 7/17/16	Mon 8/10/16
Structural Steel	14 days	Tue 8/11/16	Fri 8/28/16
HV Equipment	14 days	Tue 8/11/16	Fri 8/28/16
Bus Work	14 days	Tue 8/11/16	Fri 8/28/16
Above Grade Grounding/Conduit	5 days	Mon 8/31/16	Fri 9/4/16
Set Control Building	1 day	Mon 9/7/16	Mon 9/7/16
Set Transformer	5 days	Mon 9/7/16	Fri 9/11/16
Pull/Terminate Control Cable	15 days	Mon 9/7/16	Fri 9/25/16
Testing	10 days	Mon 9/28/16	Fri 10/9/16
Cover Stone	10 days	Mon 10/5/16	Fri 10/16/16
Cleanup	5 days	Mon 10/19/16	Fri 10/23/16
Demobilize	1 day	Fri 10/23/16	Fri 10/23/16

The substation area will be designed to account for local drainage and future access, using a combination of shallow ditches and culverts. The area inside the fence will be surfaced with insulating, and is therefore virtually maintenance free. The area outside the fence will be reclaimed with onsite topsoil, and then seeded with an appropriate cover, to suit local requirements. Any culverts will be installed with tapered ends and riprap to prevent erosion, signs indicating buried utilities will be installed, and the cover will be maintained as necessary during operations.

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 functional specification is provided in Attachment 16.

TS35) For right-of-way clearing and maintenance, provide a copy of the Conservation and Reclamation Plan, as required by AESRD (if applicable).

Not applicable as per Rule 007, Section 7.4, as this application is in reference to a substation only.

TS36) Landscape plan – indicate those areas that require screening or landscaping and the measures to be used.

The transmission line will be designed and addressed under a separate Facilities Application by ATCO Electric, the assigned transmission facility operator (TFO). With respect to the Project substation, given the agricultural land-use of the lands, no specific screening or landscaping plans or measures are proposed.

TS37) Visual aesthetics – indicate those areas that have been identified as significant viewpoints, the predicted impact, and describe the measures proposed to minimize the impact of towers and rights-of-way within the view area.

The Project substation is located in a rural area, and specifically within a field currently under annual crop production. No significant viewpoints have been identified within the Project area, nor near the proposed substation location. Photomontages depicting the Project turbines are provided in Attachment 8.

TS38) Tower location – indicate the flexibility available in locating towers to reduce the inconvenience to residents and their day-to-day activities.

Not applicable as per Rule 007, Section 7.4, as this application is in reference to a substation only.

TS40) For proposed route(s) and possible alternatives that will result in material environmental impacts, provide the following information to a level of detail commensurate with the size and type of the potential impacts:

- i) Describe the existing environmental and land use conditions of the study area. Describe the regional setting of the study area, including any regional land use plans and policies that apply to the development.**

Existing environment and land use conditions are detailed within the Environmental Evaluation provided in Attachment 7.

- ii) Describe how the proposed route(s) and possible alternatives and/or proposed substation are predicted to adversely affect the environment. Evaluate any potential impacts related to soils, terrain, vegetation, wetlands, wildlife and wildlife habitat, fish and fish habitat, groundwater, surface water, and land use following published AESRD guidelines. Describe how the environmental effects of the project will be mitigated and any monitoring proposed to evaluate the efficacy of the mitigation..**

Existing environment and land use conditions are detailed within the Environmental Evaluation provided in Attachment 7.

- 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.). Provide supporting written discussion showing the significance of impacts upon each major environmental, land use and resource feature for each route.**

- 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.**

- 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 as per Rule 007, Section 7.4, as this application is in reference to a substation only.

- 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 B1. 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 merchant line applications.**

The substation covered under this application is a merchant facility.

ATTACHMENT 1

DRAFT POWER PLANT APPROVAL AND SUBSTATION PERMIT AND LICENCE

ATTACHMENT 2

CONSULTATION WITH COUNTY OF MINBURN

ATTACHMENT 3

CONSULTATION WITH COUNTY OF VERMILION RIVER

ATTACHMENT 4

TRANSPORT CANADA APPROVAL

ATTACHMENT 5

**ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT
(ESRD) CONSULTATION**

ATTACHMENT 6

ALBERTA CULTURE CONSULTATION

ATTACHMENT 7
ENVIRONMENTAL EVALUATION

ATTACHMENT 8
PHOTOMONTAGES

ATTACHMENT 9
MAILING LIST AND LABELS

ATTACHMENT 10
PARTICIPANT INVOLVEMENT PROGRAM

ATTACHMENT 11
SHADOW FLICKER ASSESSMENT

ATTACHMENT 12
NOISE IMPACT ASSESSMENT

ATTACHMENT 13
SUBSTATION SPECIFICATIONS

ATTACHMENT 14
MAPS AND FIGURES

ATTACHMENT 15
AESO AND TFO CONSULTATION

ATTACHMENT 16

AESO FUNCTIONAL SPECIFICATION