



TransAlta

Welcome!

Welcome to the Windrise Wind Project Open House.

Visit our various displays which outline different aspects of the Project.

Our experienced wind staff are available to answer any of your questions or discuss any of your interests related to the Project.

This open house is presented as part of our consultation and engagement plan. We welcome your feedback and thank you for participating in the process.

Thank you for attending and for taking the time to learn more about the Windrise Wind Project.



TransAlta™




Who is TransAlta?

One of Canada's largest wind generators and growing...

- TransAlta has nearly 110 years of electricity generation experience
- Owner of Canada's first commercial wind farm - Cowley Ridge Wind Farm
- TransAlta owns and operates a diverse generation fleet comprised of wind, solar, hydro, natural gas and coal facilities for a total capacity of approximately 9,000 MW across Canada, the U.S. and Western Australia
- Owner / Operator of 18 wind facilities located in Alberta, Ontario, Quebec, New Brunswick, Wyoming and Minnesota with a total installed capacity of 1,332 MW
- TransAlta operates a fleet of over 900 turbines across Canada and the U.S.





Project Information & Components

Developer: Windrise Wind LP, a wholly owned subsidiary of TransAlta Corp.

Municipality: MD of Willow Creek No. 26

Location: 29km southwest of Fort Macleod in Twp. 6 and Rge. 26 and 27

Project Components.

Turbines: The Project consists of 43 x Siemens-Gamesa 4.8 MW turbines.

Substation: The Project substation will be located on the SW $\frac{1}{4}$ of Sec. 17 Twp. 8 Rge. 26 W4M. A facilities application will be submitted to the AUC.

Collection System: 34.5kV underground electrical collector system and fibre-optic cable connecting turbines to the Project substation.

Roads: Existing roads and access points will be used as much as possible. Approximately 20km of new access roads will be built to service turbines during construction and operation of the Project.

Meteorological Tower: A single permanent met tower will be permitted and installed on-site at a location to be determined at a later date.

Transmission & Interconnection: TransAlta is currently working with the Alberta Electric System Operator AESO as part of the Connection Process to determine the scope and characteristics of the transmission facilities required to connect the Project to the Alberta Interconnected Electric System.



TransAlta

Project Facts

The Project will generate enough electricity to power 88,000 Alberta homes*.

- Located on approximately 11,300 acres of privately-owned land
- Nameplate capacity of 207 MW
- Technology
 - 43 x Siemens Gamesa SG4.8-145 turbines
 - 90m hub height
 - 145m blade rotor diameter

Quick Fact.

TransAlta operates **four wind facilities and two exploratory turbines** in the Municipal District (MD) of Willow Creek.

TransAlta's operating history in the MD dates back to **2001** with the installation of the McBride Lake East exploratory turbine.



*Alberta Energy states that typical Alberta households use about 7,200 kWh of electricity per year - Energy Efficiency Alberta



Community Benefits

The Project provides benefits to people and the community.

Employment opportunities for local trades-people, contractors, and skilled labourers, creating 300 jobs during construction.

Increase purchases of local goods and services which directly benefit local businesses.

Continued use of land for farming, agricultural and grazing purposes during the life of the wind farm.

Generate a significant source of tax revenue for the MD of Willow Creek during the operating life of the wind farm. Currently, TransAlta contributes roughly \$2.5 million in annual tax revenue to the MD from our four operating wind farms.

Supplemental income from annual lease payments to participating project landowners during the life of the wind farm.

Investing in local community programs, initiatives and events.



Environmental Impact Assessment

Comprehensive baseline environmental surveys were initiated and completed on-site by TransAlta in 2018. These year-round surveys were conducted in accordance with provincial and federal guidelines and regulations.

Recommendations from Alberta Environment and Parks (AEP) biologists have been incorporated into our specific study plan.

Completed Environmental Studies Include:

- Spring / Fall Bird Migration
- Spring / Fall Bat Migration
- Summer Breeding Birds
- Sensitive Species (ex. Sharp-tailed Grouse)
- Rare Plants
- Raptor Nest Searches
- Wetland Assessments
- Archaeological Features
- Habitat Mapping

Environmental findings were summarized in a formal report and submitted to AEP in March 2019 for review and sign-off.

The AEP Wildlife Referral Report will accompany our application to the Alberta Utilities Commission.





Environmental Site Conditions

Field work and environmental constraints mapping has assisted with avoidance of wetlands, raptor nests, grouse leks, archaeological finds, and other sensitive features at the Project site.

TransAlta has made considerable efforts to avoid native pasture lands in siting of turbines and associated project infrastructure. No turbines are located on native pasture.

Some notable species observed during on-site environmental studies include:

- Ferruginous Hawk
- Red-tailed Hawk
- Sharp-tailed Grouse
- Sprague's Pipit
- Swainson's Hawk
- Great Horned Owl
- Barn Swallow
- Bank Swallow





Sound & Health Study

In 2014, Health Canada released a summary of their **Wind Turbine Noise and Health Study** which analyzed purported health effects caused by wind turbines. The study was launched to support a broader evidence base on which to provide federal advice and in acknowledgement of community health concerns expressed in relation to wind turbines.

Health Canada, in collaboration with Statistics Canada and an expert panel, explored the relationship between exposure to sound levels produced from wind turbines and the extent of health effects reported by those living near wind turbines.

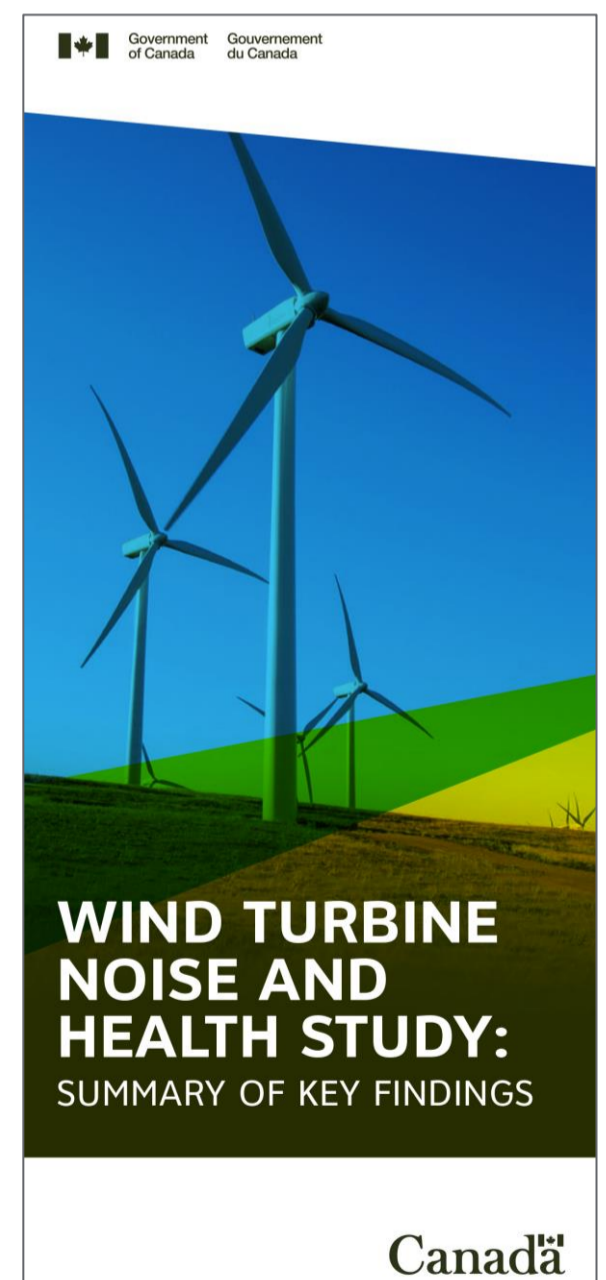
Key Findings

Illness and chronic disease – No evidence was found to support a link between exposure to wind turbine noise and any of the self-reported illnesses and chronic health conditions.

Stress – No association was found between the multiple measures of stress and exposure to wind turbine noise.

Sleep – The results do not support an association between wind turbine noise and self-reported or measured sleep quality.

These results strengthen the peer-reviewed scientific evidence base that supports decisions, advice and policies regarding wind turbine development proposals, installations and operations.





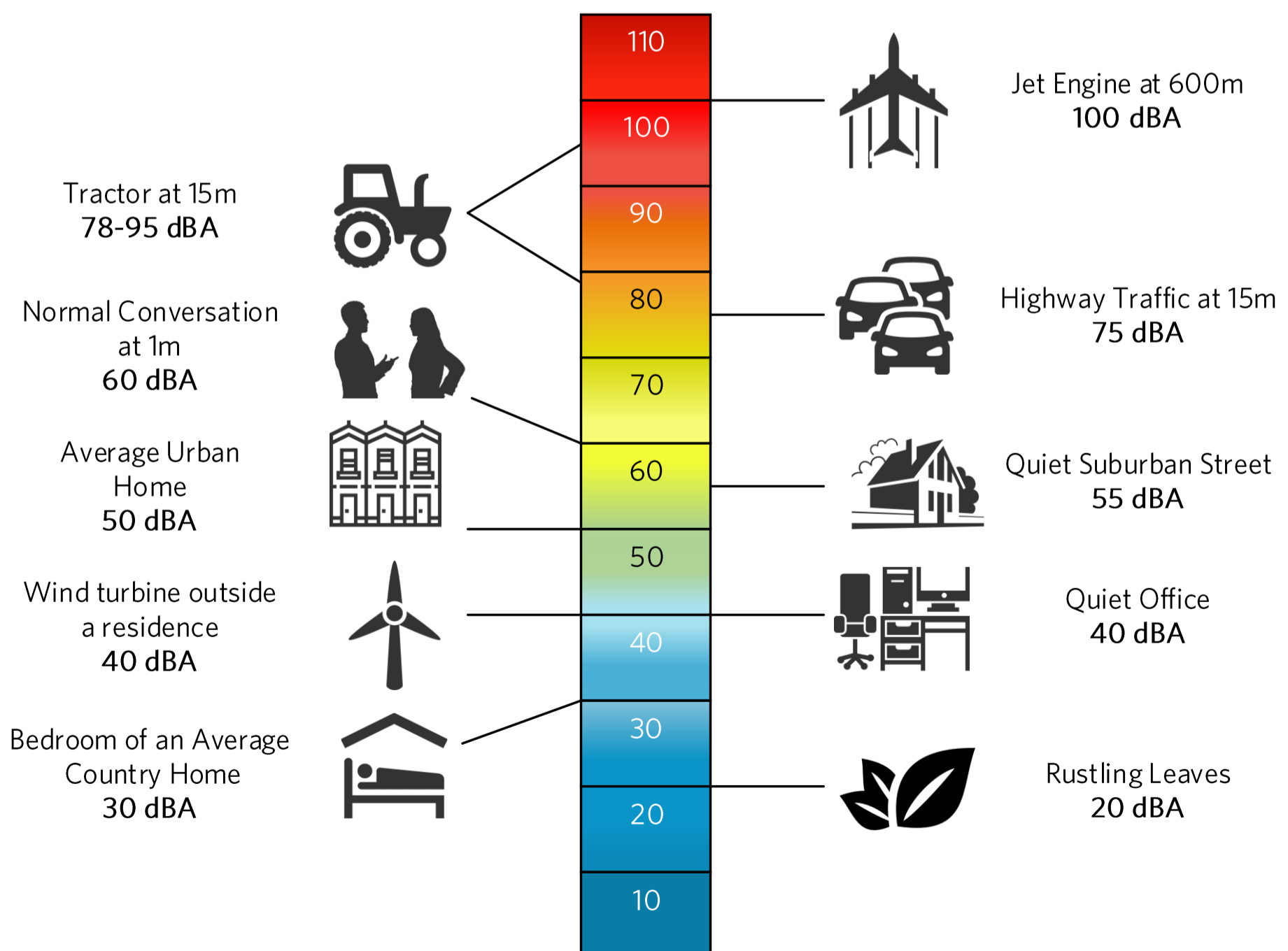
Sound Assessment

Sound produced by a wind farm and substation must meet stringent regulatory requirements outlined in *AUC Rule 012: Noise Control*.

Sound is measured in decibels (dB) that are A-weighted, meaning that it approximates human hearing.

Sound levels from a wind farm, measured cumulatively with noise from other facilities and sources, must not exceed the permissible sound level of 40 dBA at night outside residences with adjustments made for proximity to transportation and population densities.

40 dBA is what you would expect to measure in a quiet office or living room.





Predicted Sound Levels

Sound produced by the wind farm is different with various wind speeds.

As wind speed increases, sound produced by the wind turbines also increases. To meet AUC Rule 012: Noise Control regulations, TransAlta conducted a Noise Impact Assessment to ensure the Project meets the AUC's acceptable sound levels.

- The map shows sound levels produced by the wind turbines which is representative of maximum noise emissions.
- The turbine locations were selected and optimized in order to meet the AUC's Rule 012 permissible noise levels at night of 40dBA at the outside of receptors/residences.

Class C2 Adjustment

A C2 adjustment will allow TransAlta to better demonstrate compliance with AUC Rule 012: Noise Control and ensure requirements are met for permissible sound levels at a residence.

- To obtain the C2 adjustment, TransAlta has conducted wind measurement and sound level analysis in and around the Project area in accordance with AUC Rule 012: Noise Control.
- A Class C2 adjustment accounts for existing background sound levels in addition to sound levels produced by the wind turbines to better demonstrate compliance at a residence.



Visual Impacts

Wind turbines have been a fixture on the landscape in this area since 2001.

TransAlta looks at how the Project may be viewed by residents and landowners, and models views of the Project from various vantage points in and around the Project site.

We utilize visual software to simulate the look of the turbines on the landscape. These simulations can be seen on the screen provided.

Turbine Colour: In accordance with Transport Canada's *Canadian Aviation Regulations (CARS), Standard 621*, turbines will be painted an off-white colour, which is found to be the least intrusive under the widest variety of light conditions.

Turbine Lighting: Transport Canada's *CARS, Standard 621* requires that turbines be lit for aircraft safety. A lighting plan for the Project will be submitted to Transport Canada for their sign-off.

- Lit turbines will include medium-intensity red flashing lights installed on top of the nacelle
- Lit turbines will include low-intensity red flashing lights installed at mid-tower level
- Lights may be synchronized to flash simultaneously
- To minimize visual impact, TransAlta will propose that only 20-30 of the Project's 43 turbines be lit as part of the Transport Canada lighting plan

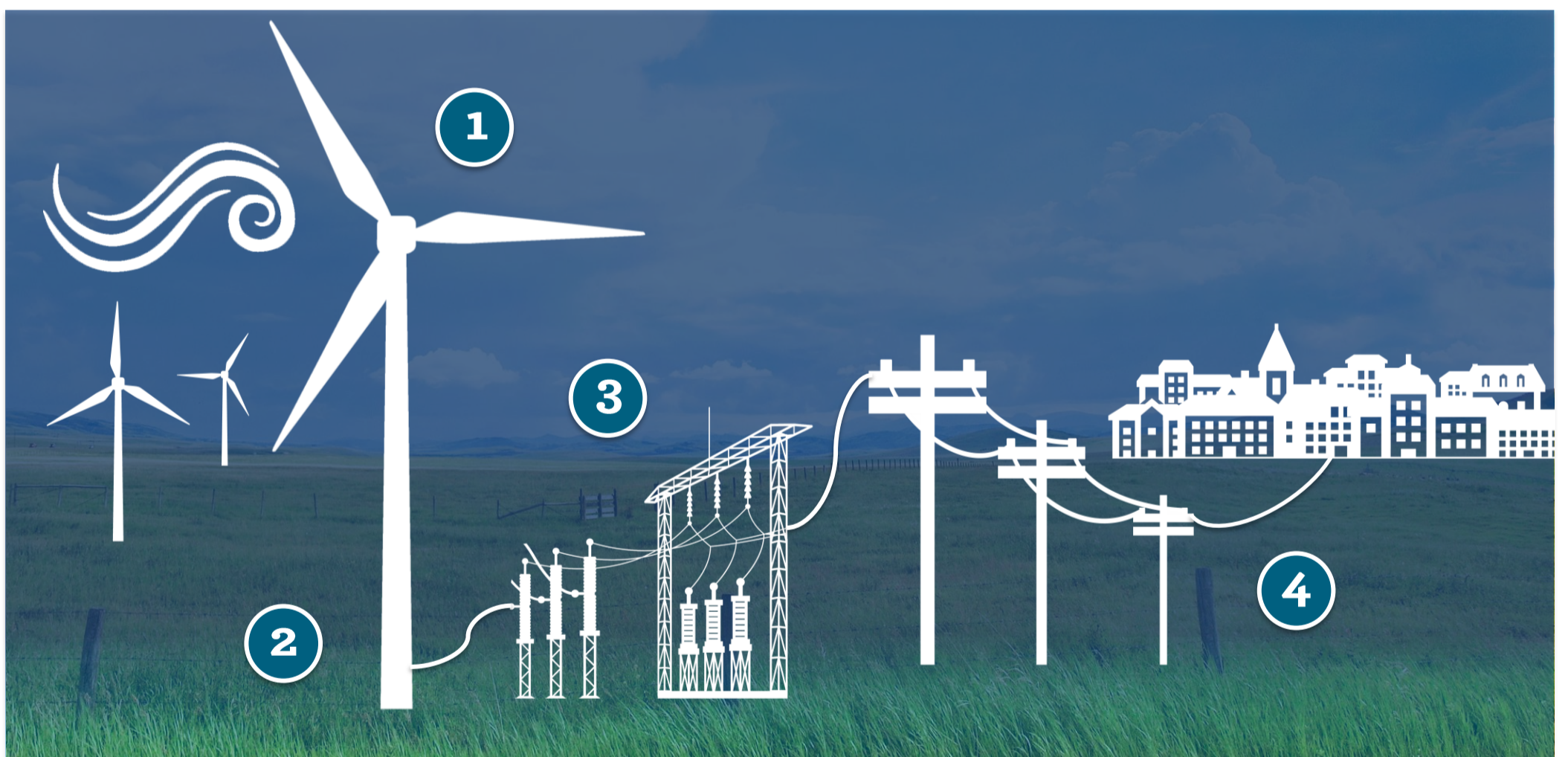


How a Wind Turbine Works

Turbine Technology.

Nameplate Capacity: 43 Siemens Gamesa SG4.8-145 wind energy turbines, each with a nameplate capacity of 4.8 MW.

Tower Height and Diameter: The turbines will be on towers 90 meters in height with a blade rotor diameter of 145 meters.



- 1** Rotating generator converts kinetic energy of the wind into electrical energy
- 2** A transformer inside the turbine nacelle increases voltage for transmission to the Project substation
- 3** The Project substation increases the electricity voltage for transmission over long distances on Alberta's electricity grid
- 4** The electricity is transmitted to local electricity distribution companies where it is delivered to homes, businesses, farms, etc.

Historical Resources Studies

Humans have inhabited this area for hundreds of years, and some reminders of the past survive as archaeological artifacts.

A majority of the windfarm exists on previously cultivated lands used for growing cereal grains and hay. Disturbance caused by farming activities has the potential to damage or compromise physical evidence of past historical activities on the landscape.

Artifacts and sites of historical significance have been recorded in the area and have been avoided in our wind farm siting and design. Protecting the integrity of these important sites remains a priority to TransAlta throughout the life of the Project. All sites and artifacts will be avoided by turbines and other infrastructure, and where necessary, protected during construction activities and operations.

Due to the sensitive nature of artifacts and historical sites and our commitment to protecting them, we provide Alberta Culture and Tourism with our archaeological research but do not disclose their location to others.





Construction

Construction of the Windrise Wind Project is expected to begin in June 2020.

Manufacturing: Wind turbine component parts are manufactured and pre-assembled at the factory, then shipped to the wind farm site where the final assembly takes place.

Site Preparation and Construction: Work crews prepare turbine sites by building access roads, preparing turbine foundations and reassembling turbine components. A crane is used to erect turbine towers and install the nacelles and rotors with their hubs and blades.

Commissioning: During the final construction phase, the electrical collection network is installed and connected to the grid through the substation. Final testing is completed before the wind farm becomes fully operational.

Operation and Maintenance: Activities that are performed on a regular basis throughout the Project's life include monitoring and analyzing performance, conducting environmental surveys and performing preventive maintenance and repairs on the turbines, substation and other components of the wind farm.





TransAlta

Decommissioning & Reclamation

The useful life for current technology wind turbines is approximately 20 to 30 years. Once a facility has reached the end of its useful life, TransAlta will assess options to repower or decommission the Project.

If the site is not repowered, decommissioning and reclamation activities will be carried out as per the lease agreements and in accordance with Alberta's new *Conservation & Reclamation Directive for Renewable Energy Operations* which comes into effect January 2020.

Decommissioning plans address activities related to the restoration of any land negatively impacted by the facility, known as reclamation. Our wind farm leases require that we remove above ground infrastructure, a portion of the concrete foundations, and restore the lands to their former use.

As part of Project planning, a decommissioning plan will be created for the Project and will become part of TransAlta's fiscal planning protocols under our corporate Asset Retirement Obligation (ARO).

Q: Have any wind facilities been decommissioned in Canada?

Yes. TransAlta has decommissioned two wind facilities, the first two decommissionings in Canada. We put a considerable amount of effort into recycling or reusing parts, salvaging metal and reclaiming the land to its natural state.

In fact, **88 percent** of each turbine and transformer by weight at our Cowley Ridge Wind Farm was recycled during decommissioning in 2016. This amounted to a total of **1,252,000 kg** of recycled turbine components.



AESO Renewable Electricity Program

Meeting the Province's Energy Needs.

The Alberta Electric System Operator (AESO) was directed by the Alberta Government to create the Renewable Electricity Program (REP) to encourage the development of large-scale renewable electricity generation.

Providing Electricity: REP Round 1, 2 and 3 will add a total of nearly 1,359 MW of renewable electricity generation to the Alberta grid.

TransAlta's Successful Bid: TransAlta's 207 MW Windrise Wind Project was one of three successful projects in the AESO REP Round 3 process.

Long-Term Agreement: TransAlta and the AESO entered into a long-term electricity services agreement.

Did You Know:

REP Round 1 set a record for the lowest renewable electricity pricing in Canada with a weighted average bid price of 3.7¢/kWh.

REP Round 3 delivered 400 MW with a weighted average bid price of 4.014¢/kWh.





Thank you!

Thank You for Attending.

Please take the time to tell us what you think of the Project using the Survey and Comment Sheets provided.

We look forward to working with Indigenous and local communities, landowners and other stakeholders as we advance the Windrise Wind Project through the AUC application process.

We hope to meet with you again.

For more information about TransAlta and the Windrise Wind Project, please contact us:

transalta.com

projects@transalta.com

(877) 547-3365 Extension 3

