



Cypress Renewable Energy Centre  
Limited Partnership

Cypress Renewable Energy Centre  
Limited Partnership is a partnership  
between EDF Renewables Canada Inc.  
and Kainai Nation (Blood Tribe).

Today you'll have the  
opportunity to receive  
project updates, meet  
the team, and have your  
questions answered.



# THE CYPRESS WIND POWER PROJECT

COMMUNITY OPEN HOUSE



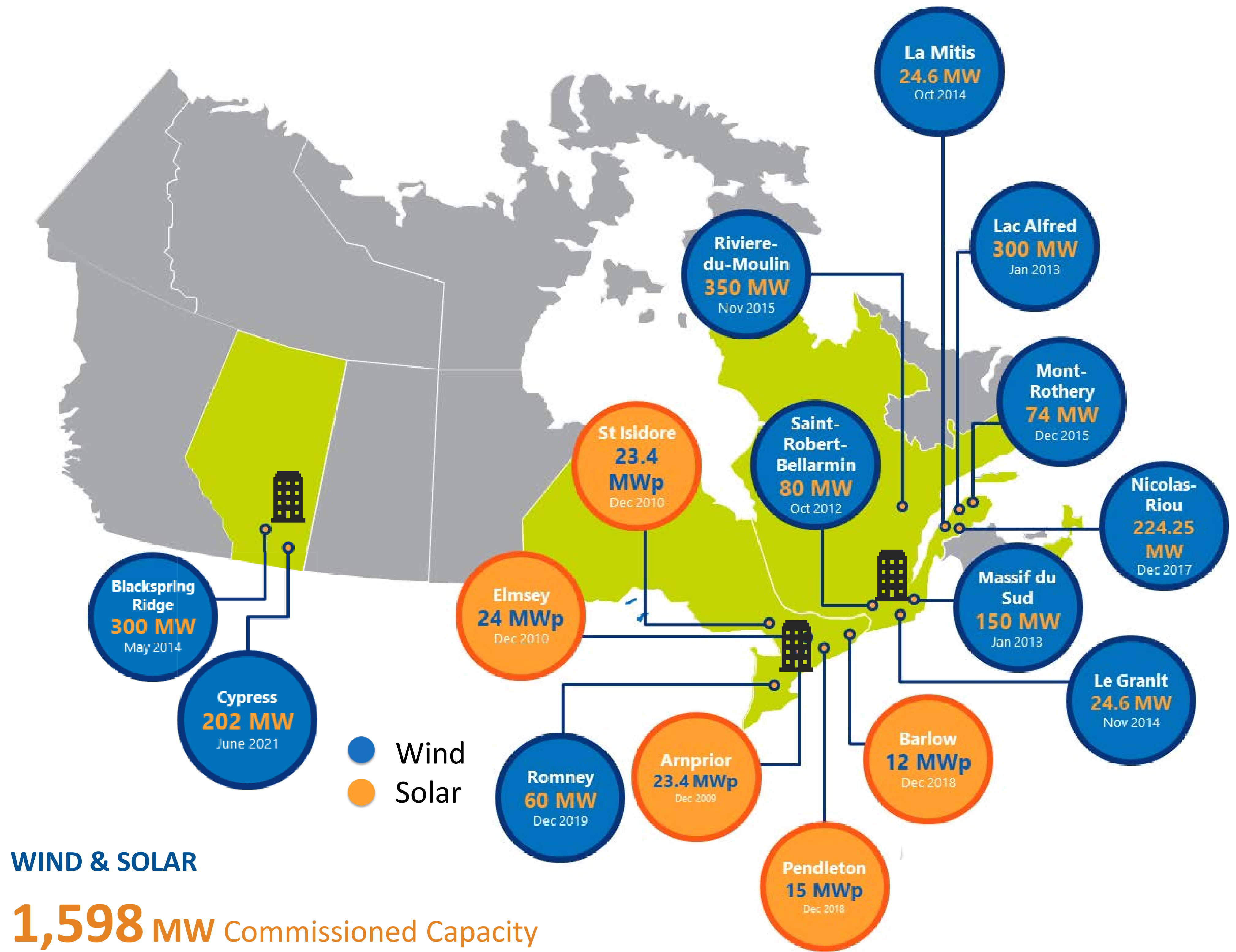
# EDF RENEWABLES CANADA INC. (EDF RC)

## 1.9 gigawatts

Put into service, under construction or in development.



EDF RC Office locations:  
Calgary, Toronto and Montreal



### WIND & SOLAR

**1,598 MW** Commissioned Capacity

**289 MW** in Development/Construction

### OPERATIONS & MAINTENANCE

**1,587 MW** Wind

**70 MW** Solar

**\$3.5+ billion** invested  
in Canada since 2008

# WHAT IS THE AESO RENEWABLE ELECTRICITY PROGRAM?



**Alberta is changing the mix of power generation** to include a larger portion of renewable energy, including wind and solar.

In February 2018, **the Alberta Electric System Operator (AESO)** launched Round 2 of the Renewable Electricity Program (REP Round 2) – a competitive procurement program to promote the development of approx. 300 megawatts (MW) of large-scale renewable electricity generation. REP Round 2 focused on committing to work with Indigenous communities to encourage participation in Alberta’s electricity sector.

On December 17, 2018, the Government of Alberta announced the results of REP Round 2. **REP Round 2 competition** awarded five wind projects totaling 363 MW.

**The Cypress Wind Power Project was selected and awarded a contract.**

More information can be found at [www.aeso.ca](http://www.aeso.ca)

# WHY CHOOSE THIS PROJECT SITE?



**Close proximity** to existing transmission



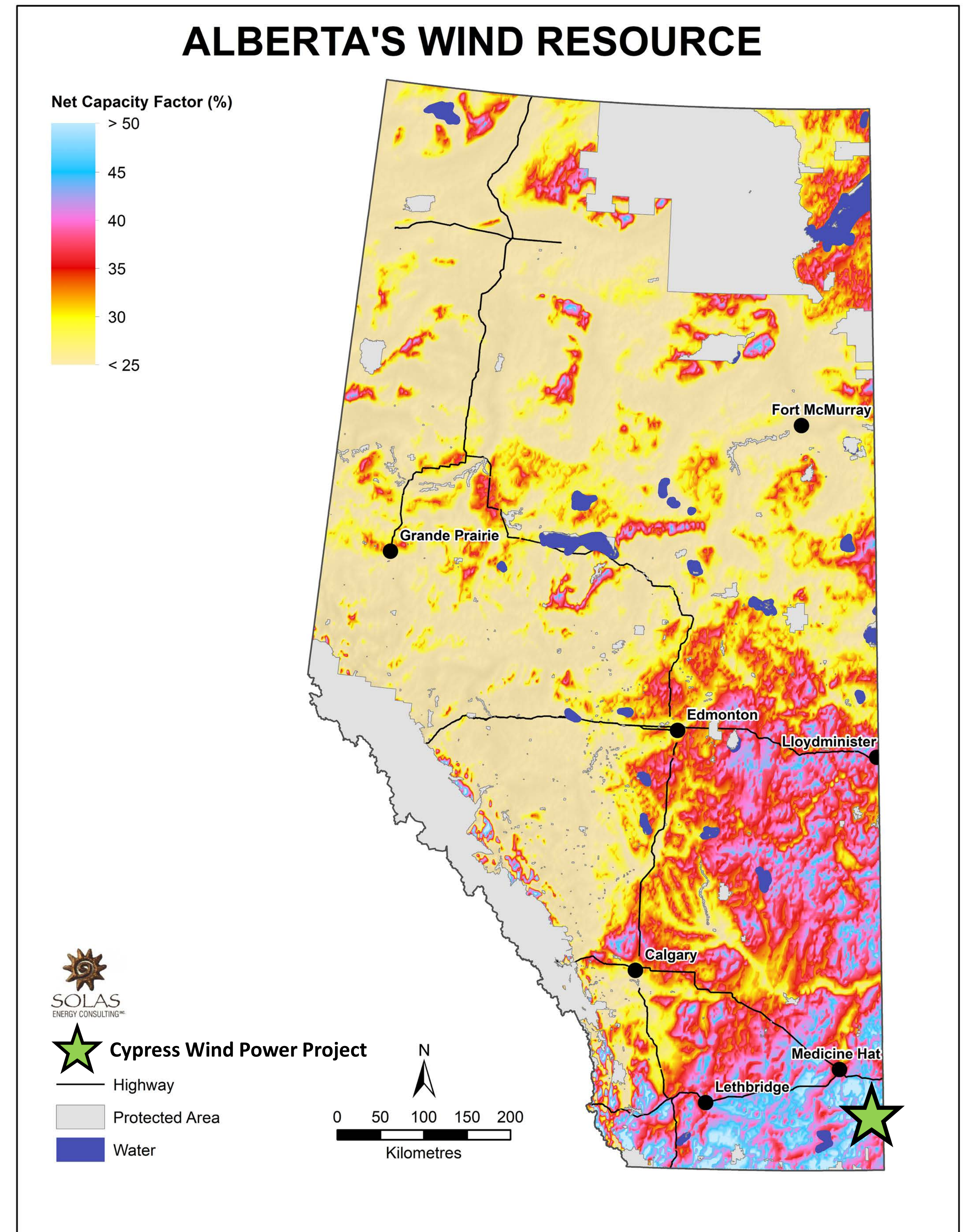
**Strong wind resource**



**Supportive local community**



**Compatible** with existing agricultural use



# PROJECT AND COMMUNITY ENGAGEMENT TIMELINE



## PROJECT TIMELINE\*

### APRIL 2017

- First Project mail-out to affected stakeholders
- First open house



### OCTOBER TO NOVEMBER 2017

- Update Project mail-out to affected stakeholders
- Second open house



### Q4 2017-2018

- Completion of environmental field studies



### Q2 2019

- Application submission to AUC for review and approval



### Q2 2020

- Start of construction



Public engagement continues throughout the Project lifecycle



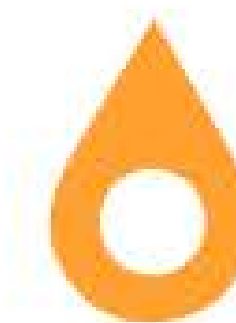
### Q4 2016

- Initiation of public consultation
- Commence environmental field studies



### JULY 2017

- Update Project mail-out to affected stakeholders



### MARCH 2019

- Project update mail-out to affected stakeholders
- Third open house upcoming March 26, 2019



### Q4 2019 to Q1 2020

- AUC approval

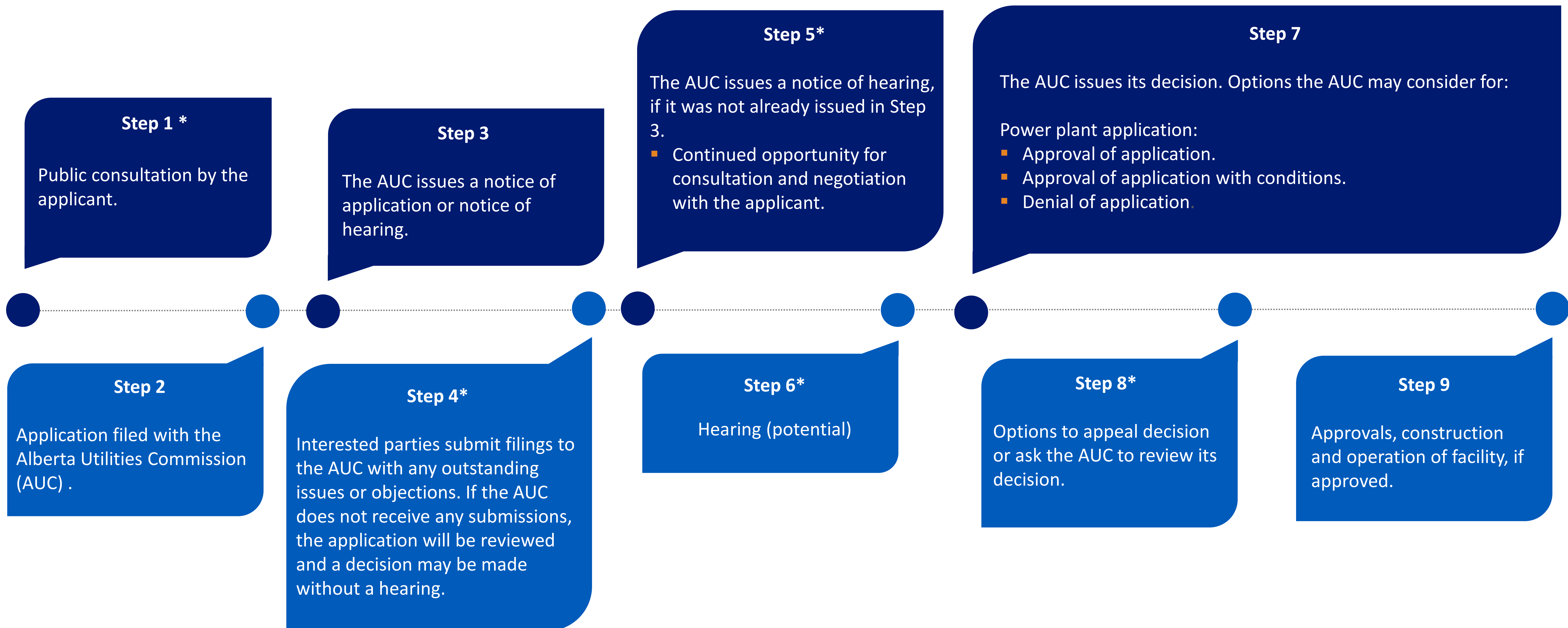


### June 2021

- Commercial operations

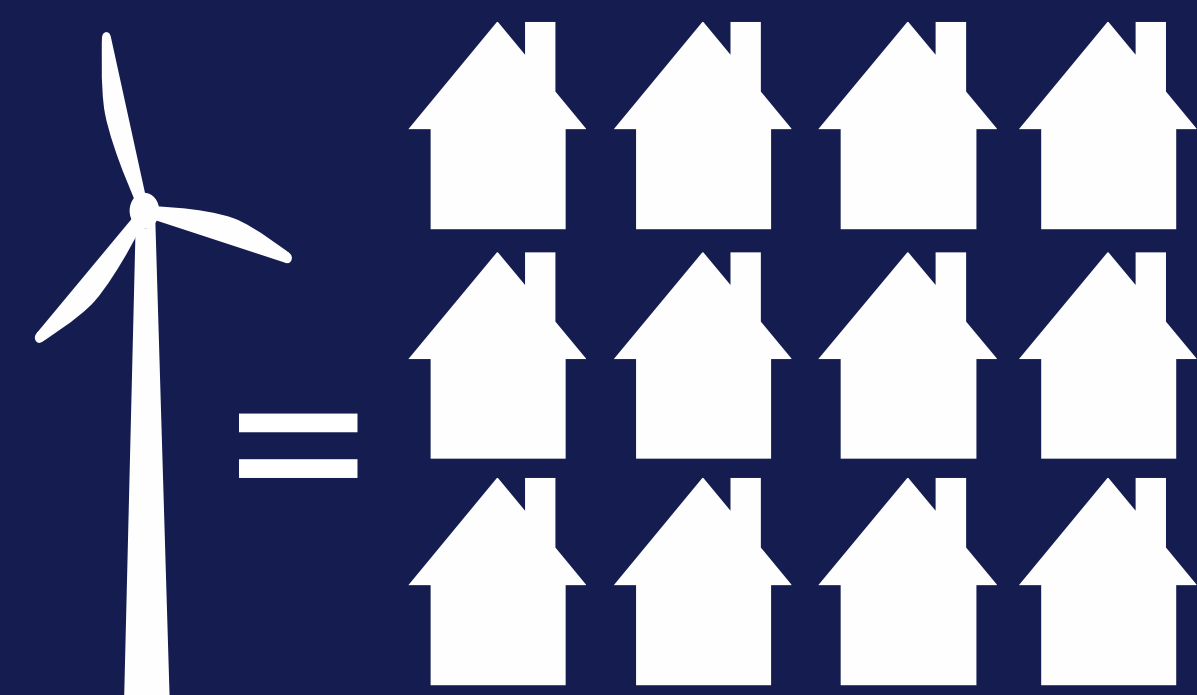
\*Project timeline is subject to change

# ALBERTA'S RENEWABLE ENERGY APPROVAL PROCESS



\*Denotes opportunity for public involvement.

# WHY WIND MAKES SENSE



1 MW  
Turbine ~ 300 homes

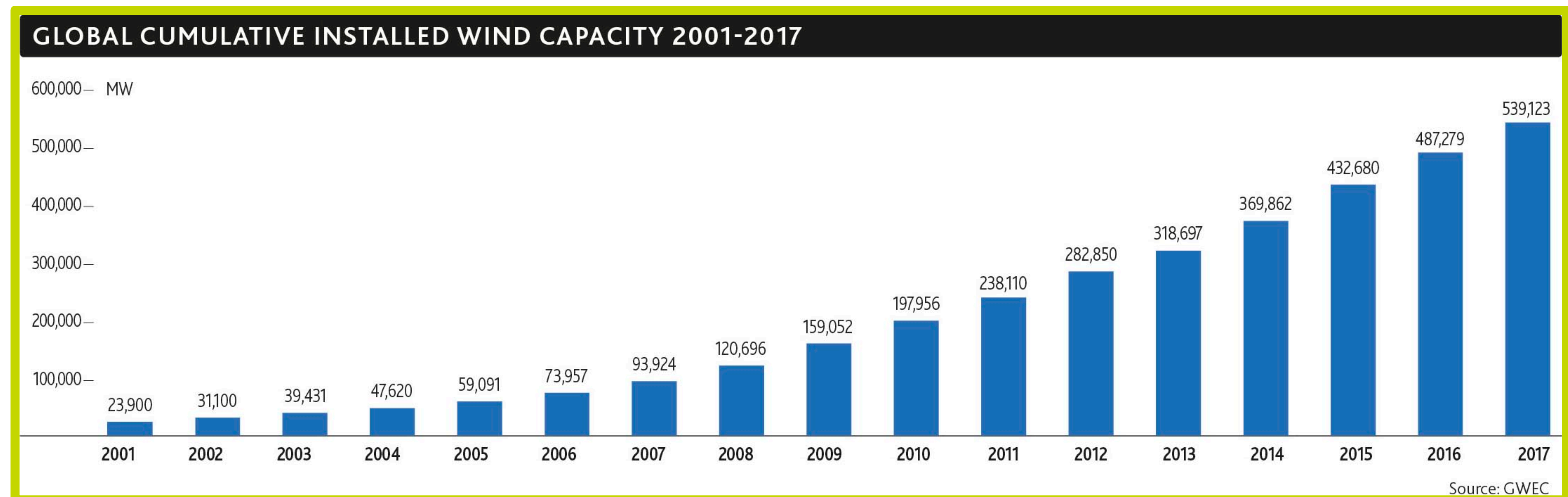
Source: CanWEA Secret Is Out Brochure  
<https://canwea.ca/wp-content/uploads/2017/11/canwea-secretisout-brochure-en.pdf>

*Alberta now ranks third in Canada with an installed wind energy capacity of 1,483 MW. The province's wind farms produce enough electricity each year to power 625,000 homes, equivalent to about eight per cent of Alberta's electricity demand.*

Source: CanWEA <https://canwea.ca/wind-energy/alberta/>



## Global Installed Wind Capacity 2001-2017



### Clean power

Wind energy reduces dependence on other forms of electricity generation that contribute to greenhouse gas emissions.

### Local job opportunities

Contractors, suppliers and local businesses benefit from the direct and indirect economic activity the project brings to the local economy.

### Clear air

Wind energy emits no greenhouse gas during the production of electricity.

### Water conservation

Wind turbines do not use water to produce electricity.

### Predictable pricing

Wind generated electricity prices are fixed and stable, unlike natural gas or oil which have volatile and unpredictable pricing.

# HEALTH CANADA STUDY: WIND TURBINE NOISE AND HEALTH STUDY



In 2014, Health Canada commissioned a \$1.2 million study on the potential impacts of wind turbines on human health.

A hardcopy of the key findings brochure is available. Please ask any EDF RC staff for a copy.

- **Illness and disease**

No evidence was found to support a link between exposure to wind turbine sound and any of the self-reported illnesses and/or chronic conditions.

- **Stress**

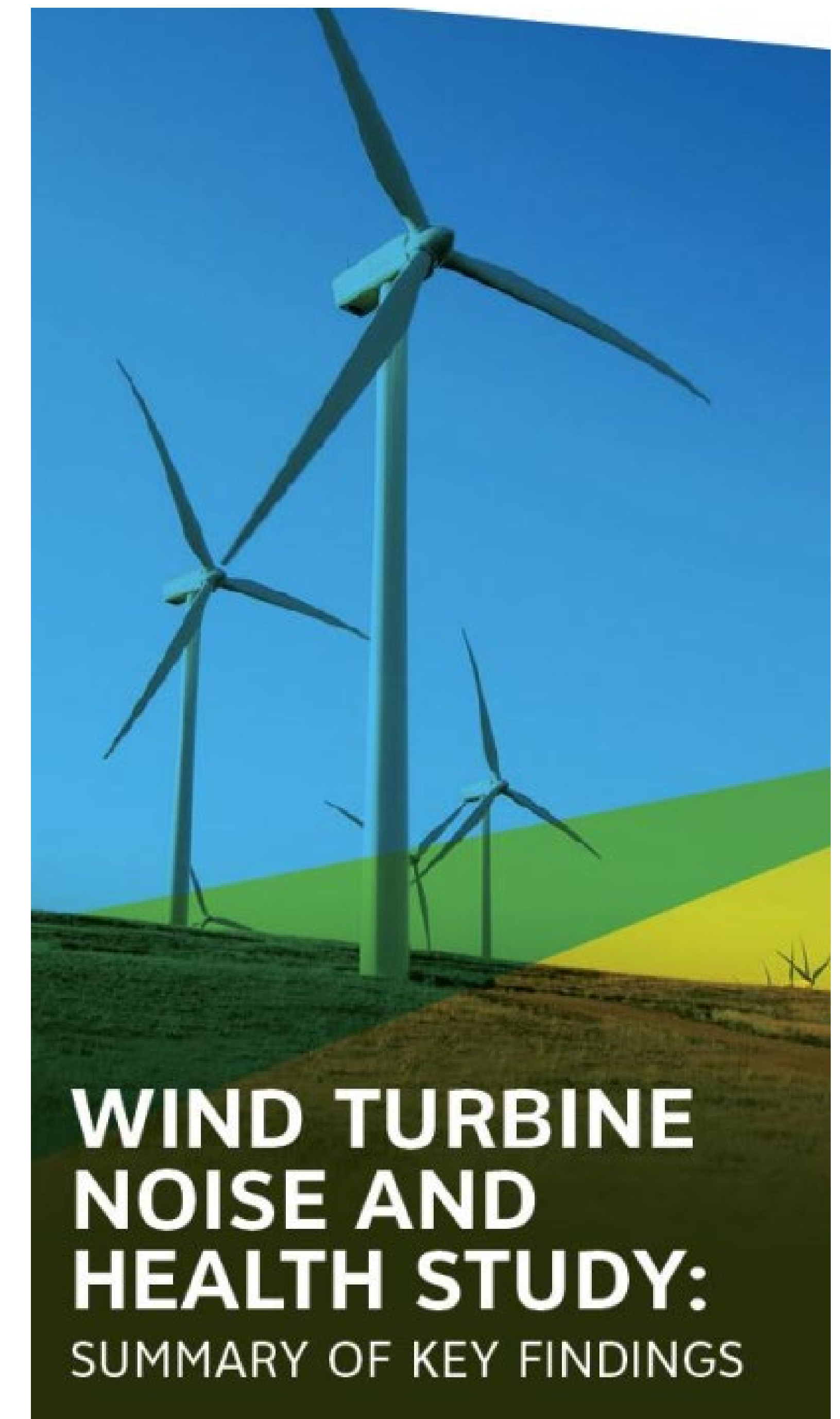
No association was found between the multiple measures of stress and exposure to wind turbine sound.

- **Sleep**

No association between wind turbine sound and self-reported or measured sleep quality.

- **Annoyance and quality of life**

No association was found with any significant changes in reported quality of life, or with overall quality of life and satisfaction with health.\*



Ontario Chief Medical Officer's 2010 report which concluded:

*There is "no scientific evidence of any direct causal link between wind turbines and adverse health effects."*

\*Assessed using the World Health Organization's Quality of Life Scale.



# WIND AND PROPERTY VALUES

Three recent wind power project applications in Alberta received by the Alberta Utilities Commission (AUC) considered the potential impact of wind power projects on property value (Grizzly Bear Creek Wind Project - E.On Climate & Renewables Canada Ltd.; Bull Creek Wind Project - BluEarth Renewables Inc.; and Halkirk 2 Wind Project - Capital Power).

The AUC concluded that in all three cases, **the Commission was not presented with sufficient evidence to suggest the respective projects would result in an adverse impact on property values.**



# AVIAN & BAT IMPACTS

## Well sited wind projects should have minimal impacts upon local bird and bat populations.

- Working closely with Alberta Environment and Parks, EDF RC has undertaken all required bird and bat studies to quantify potential risks and implement mitigation measures to ensure sustainable development.
- Potential impact on birds and bats was considered in the Environmental Evaluation for the Cypress Wind Power Project.
- A multi-year post-construction wildlife monitoring program will be undertaken to determine effects.

A report published in Avian Conservation & Ecology stated:

*“Overall...the effects of collisions, nest mortality, and lost habitat on birds associated with Canadian wind farms appear to be relatively small compared to other sources of mortality.”*

Source: Zimmerling, R. J., Pomeroy, A.C., d’Entremont, M. V., and Francis, C.M. (2013)

# IN HARMONY WITH AGRICULTURE

- We recognize that we need the support of local landowners and we work diligently to make sure we listen and co-operate.
- Well designed wind energy projects complement farming activity with minimal disruption.
- We work closely with our landowners to ensure project infrastructure fits with current and future land use.



# ENVIRONMENTAL AND TECHNICAL ACTIVITIES UNDERWAY

*Wind power project design includes consideration of impacts on wildlife and vegetation.*

We have engaged Alberta Environment and Parks (AEP) early and throughout the planning and development phases of the project to better understand the site and potential environmental impacts. We completed environmental studies in 2017 and 2018, including the following:

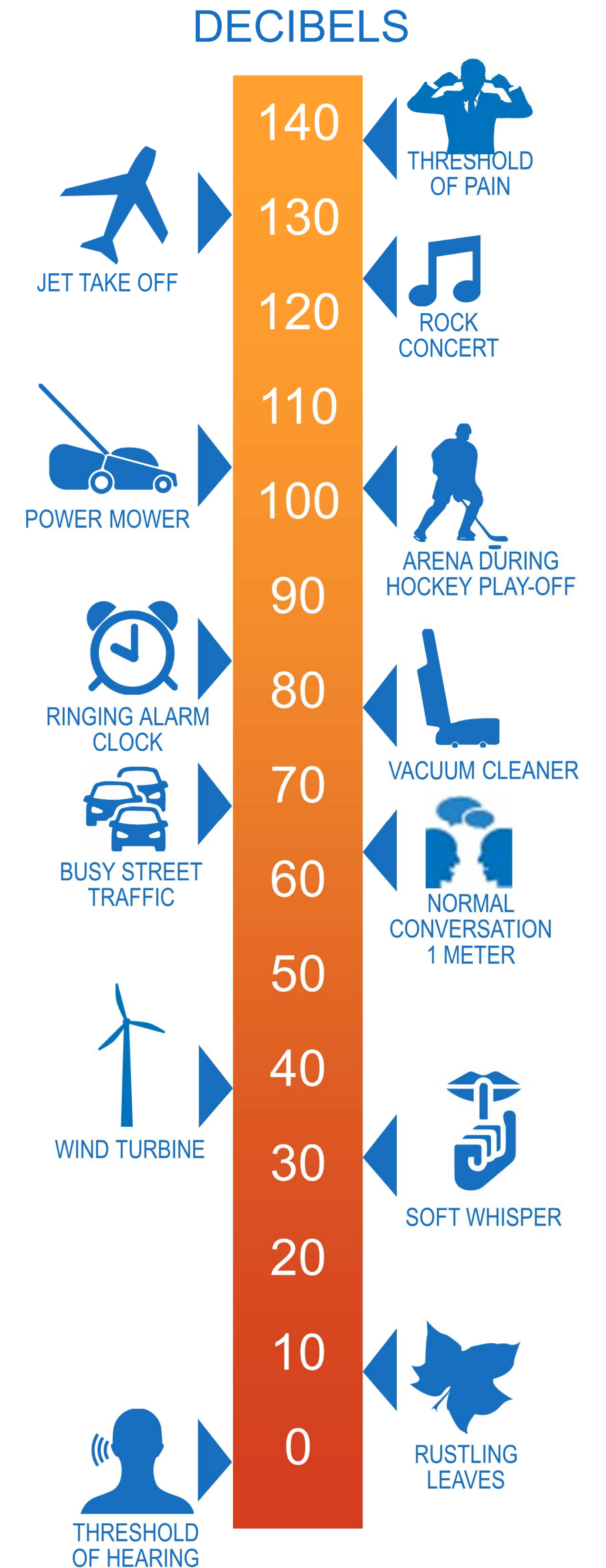
- Wildlife – spring and fall birds, spring and fall bats and sensitive species
- Vegetation
- Wetlands
- Noise Impact Assessment
- Historical Resources

In 2019, we will be completing additional field studies to ensure wildlife data is current. We will continue to work closely with AEP to ensure a robust understanding of the site. Additionally, field work will be completed for historical and paleontological resources in 2019.



# NOISE IMPACT ASSESSMENT

- All wind energy projects must meet Alberta Utilities Commission (AUC) Rule 012: *Noise Control*.
- The Noise Impact Assessment will be completed for all residences and dwellings within 1.5 kilometres of the project.
- The study includes the noise from the project and nearby operational and proposed energy related facilities.
- The results of the Noise Impact Assessment were used to determine the final turbine layout. The resulting noise contours are available on the Infrastructure, Shadow Flicker, and Noise Map.
- This Project meets the requirements of AUC Rule 012: *Noise Control*.



# MUNICIPAL, LOCAL AND INDIGENOUS COMMUNITY BENEFITS

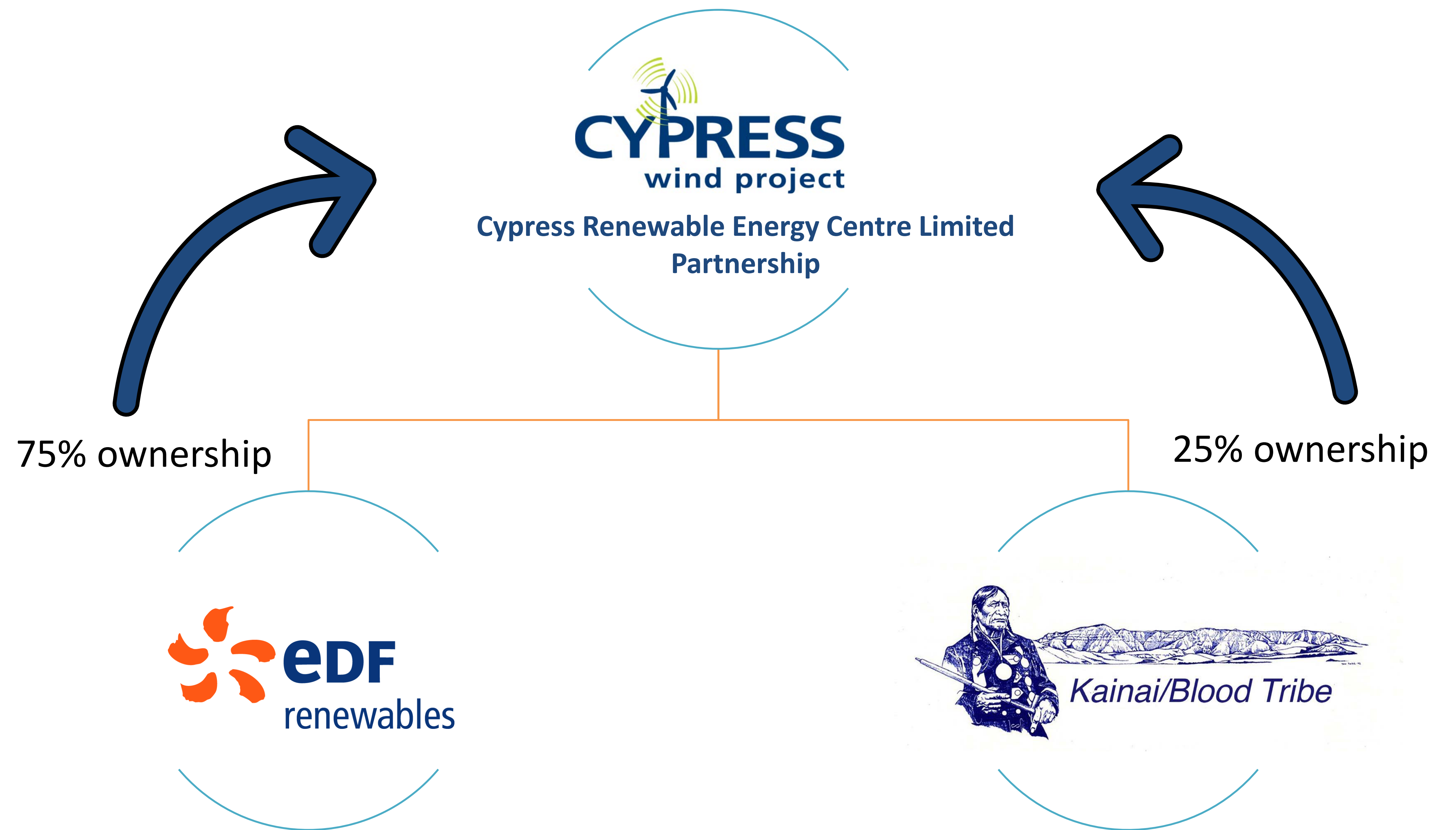
We value the long-term benefits of working with the local stakeholders and Indigenous communities. If the project is approved, community benefits will include:

- **Employment** opportunities during the construction and operational phases of the project. The project is anticipated to generate up to 250 jobs at peak construction, and up to 10 permanent positions during operations.
- **Contract opportunities** for local businesses.
- **Local investments** into hospitality and construction services during the development, construction and operational phases of the project.
- **Tax revenues** throughout the life of the project.
- **Indigenous Community Ownership**



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# PROJECT OWNERSHIP



# LOCAL ECONOMIC BENEFITS

## ■ Direct benefits

The project will result in increased job opportunities for the local area. Some of these job opportunities may include:

- Surveying
- Civil engineering
- Mechanical work
- Electrical work
- Road construction
- Transportation equipment
- Earthwork activities
- Maintenance of vehicle fleet
- Maintenance paths
- Snow removal
- Other related services



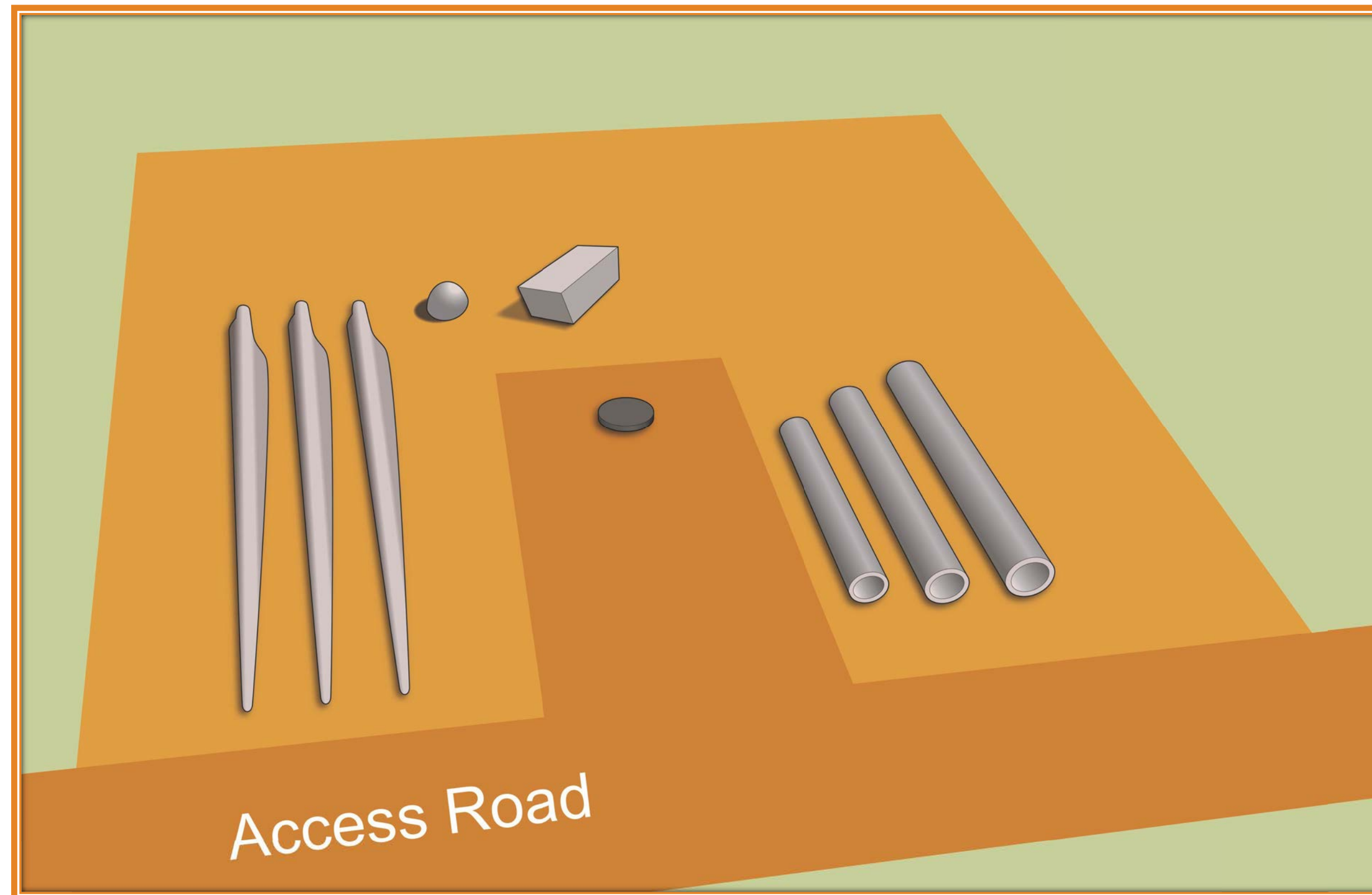
## ■ Indirect benefits

Increased spending on goods and services during construction and operational phases.



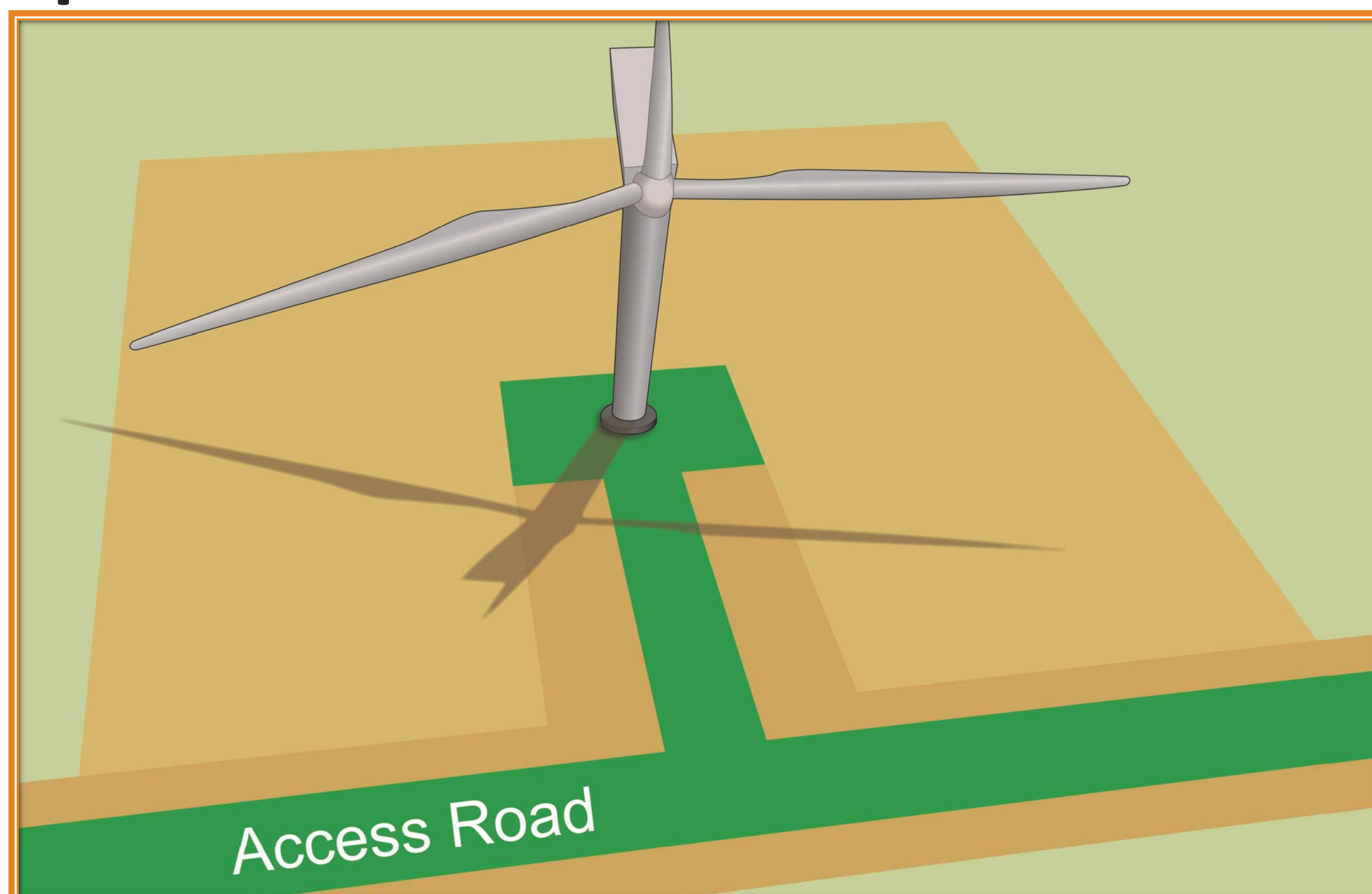
# ACCESS ROAD & TURBINE PAD

## Construction Phase – 2.5 acres / turbine (1 hectare / turbine)



A temporary turbine pad area of about 100 metres by 100 metres will be created at each turbine location, in order to deliver all the required turbine components to each turbine pad.

## Operational Phase – approximately 0.11 acres / turbine (0.05 hectares / turbine)



After construction, the access road width and the turbine pad will be reduced to limit impacts to agricultural use.



Turbine pad after construction

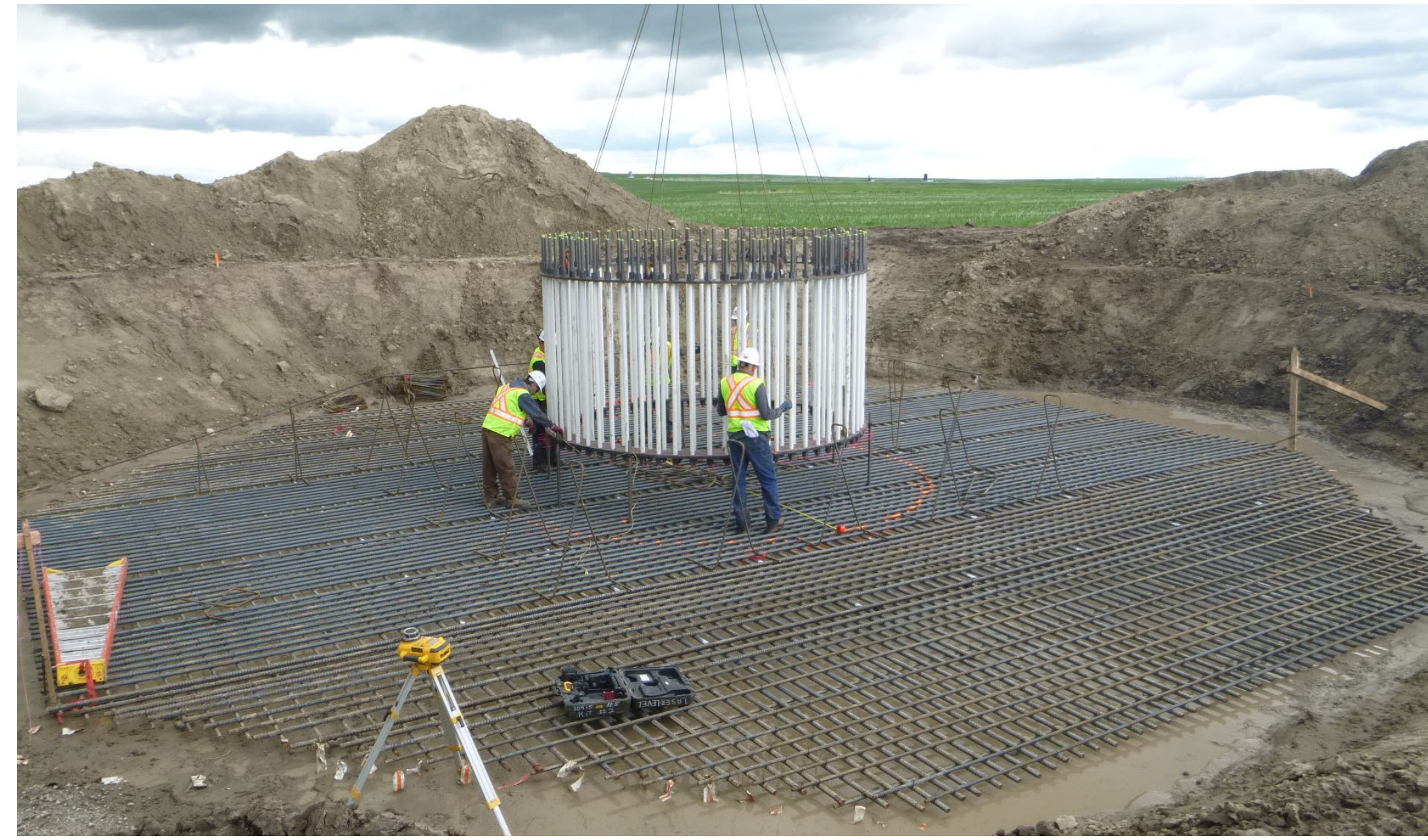
Access road and turbine pad during operations

# TURBINE FOUNDATION & ELECTRICAL SYSTEM CONSTRUCTION

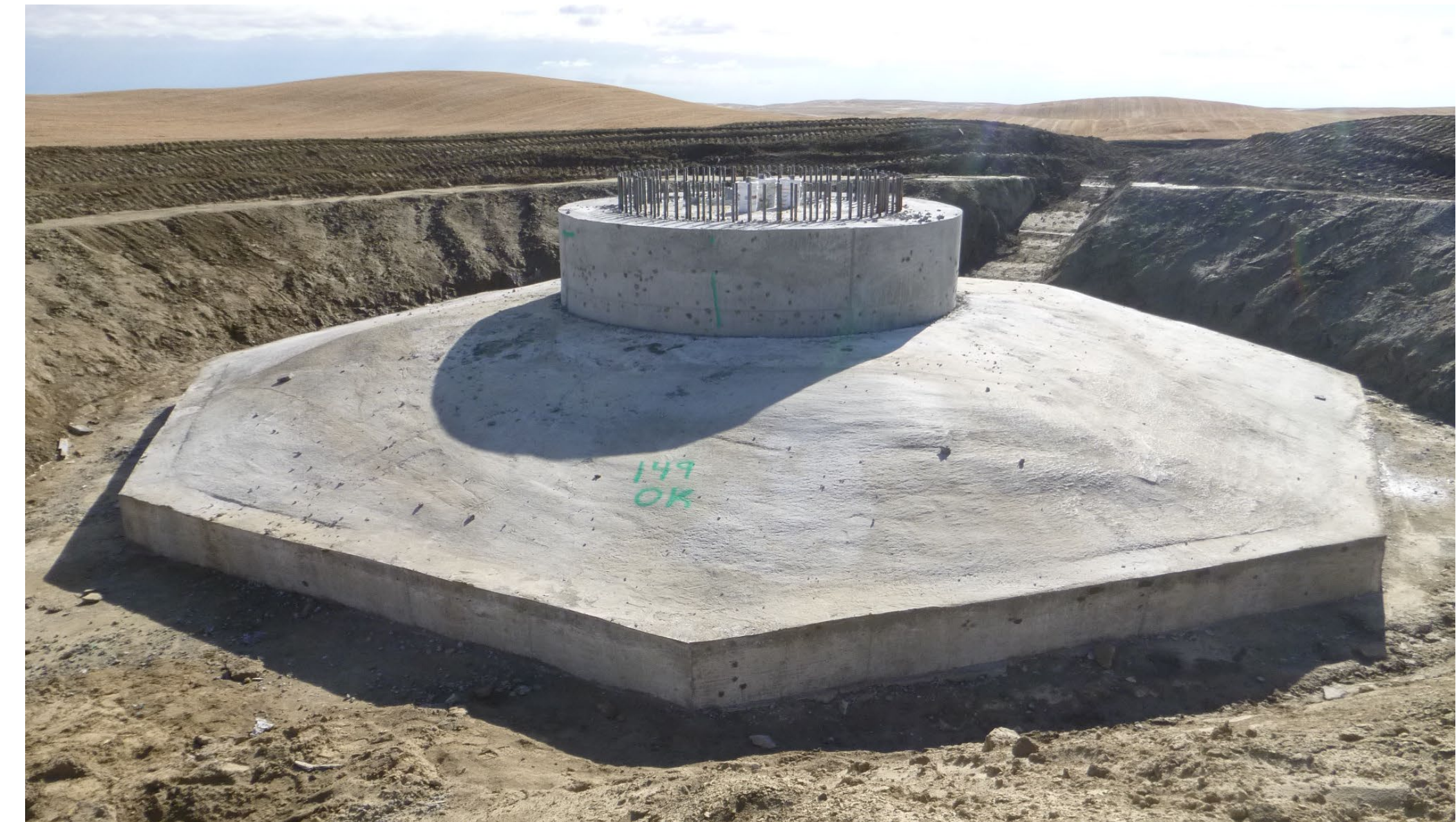
- The turbines will be installed on top of a buried, cast-in-place reinforced concrete foundation.



Foundation excavation. Diameter approx. 20 metres (m)



Reinforcing steel installation. Between 40-50 tons of rebar



Each foundation requires approx. 400-600 m<sup>3</sup> of concrete

- The electrical system will consist of underground cables or overhead lines and a project substation. The cabling will be buried at a depth that will not interfere with normal agricultural practices.

Buried collection system



Substation connecting a project to a transmission line



# TURBINE ASSEMBLY



## Transportation of turbine components

Approximately 12 trucks are required for the delivery of a complete turbine.



**Tower assembly**  
Up to 6 tower sections.



**Nacelle installation**  
The nacelle weighs about 59 tonnes.



**Blade assembly**  
The blades will be attached to the hub on the ground or lifted one at a time onto the hub.

# OPERATION AND MAINTENANCE BUILDING & PERMANENT METEOROLOGICAL TOWERS



- An operation and maintenance (O&M) building may be built or rented to allow operators to maintain the turbines and house spare parts.
- Wind speed, wind direction, temperature and humidity will be measured by permanent meteorological towers. We will permit up to nine but will install up to five permanent meteorological towers during project operations.



# DECOMMISSIONING & RECLAMATION



- The project is expected to be operational for up to 25 years
- At the end of the project's life, we will evaluate whether the project should be decommissioned or repowered
- Decommissioning:
  - The project is de-energized. Turbines and all other above-ground infrastructure is removed and the land is restored to its original or equivalent land use.
  - Construction equipment will be utilized to remove infrastructure.
  - Underground infrastructure including electrical collector lines will be removed above 1 metre, or an agreed upon depth at the time of decommissioning.
  - Decommissioning and reclamation will be completed based on the *Conservation and Reclamation Directive For Renewable Energy Operations* and any updates at the time.
- Repowering:
  - Turbines and/or other infrastructure is upgraded to extend the project's life.
  - This is often attractive to developers since there will be many years of historical wind resource data and production.
- Waste and debris generated during decommissioning activities will be collected and disposed at an approved facility.

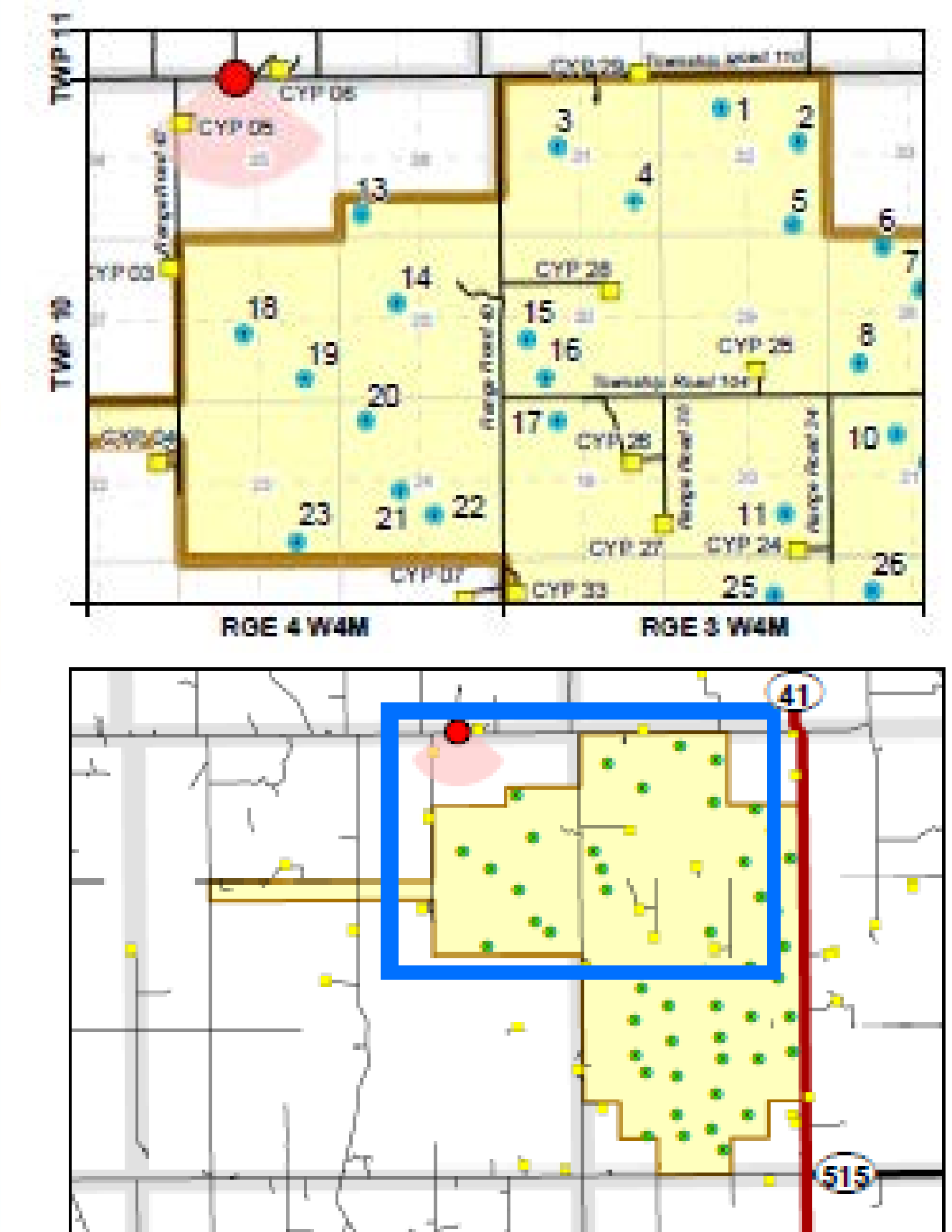
- In 2017, we identified aviation facilities nearby the proposed project area.
- We have integrated sufficient setbacks to ensure safe aviation operations.
- The Alberta Utilities Commission's (AUC) approval requires the completion of a number of federal-level processes. This requires approval from **Transport Canada** and **NAV CANADA** to ensure the wind project is visible and does not present a hazard to aviation safety.
- We will consult with all aviation facility owners near the project area to ensure safe operations of the wind farm and aviation facilities.

# VISUAL IMPACTS



## Location 1

View point: Facing South on Township Road 110 and Range Road 42



- Visual simulations are provided from multiple vantage points. These simulations include turbine model specifications.
- We acknowledge that visual impacts of the wind projects may be a concern for our neighbours in the community.

# CONSULTATION PROCESS

- Public consultation continues throughout the project lifecycle.
- EDF RC understands that there may be new neighbours in the project area after the Alberta Utilities Commission submission and throughout construction and operation stages of the project. We will include and engage with our new neighbours to provide updates on the project, and respond to any concerns they may have.





# PROJECT DESCRIPTION

<b>DEVELOPER</b>	CYPRESS RENEWABLE ENERGY CENTRE LIMITED PARTNERSHIP
<b>PROJECT NAME</b>	CYPRESS WIND POWER PROJECT
<b>HOST MUNICIPALITY</b>	CYPRESS COUNTY
<b>CONTRACT CAPACITY</b>	201.6 MW

## ENERGY

The project will generate sufficient electricity to power up to 100,000 homes

## LOCATION

Located on approximately 13,240 acres of privately owned land

## ELECTRIC SYSTEM

Each turbine will be linked to the project substation by a collector system that will be underground wherever practical. The location of the project substation is proposed to be located on NW-20-10-4-W4M.

## INTERCONNECTION

The project will be interconnected to the 240 kilovolt transmission line 983L in the area, which is owned and operated by AltaLink Management Ltd.

# PROJECT UPDATES



Based on your feedback and further technical analysis, we are now proposing to install a different turbine than those originally contemplated.

**We have now selected the Enercon E138 4.2 MW with 48 proposed turbine locations.**

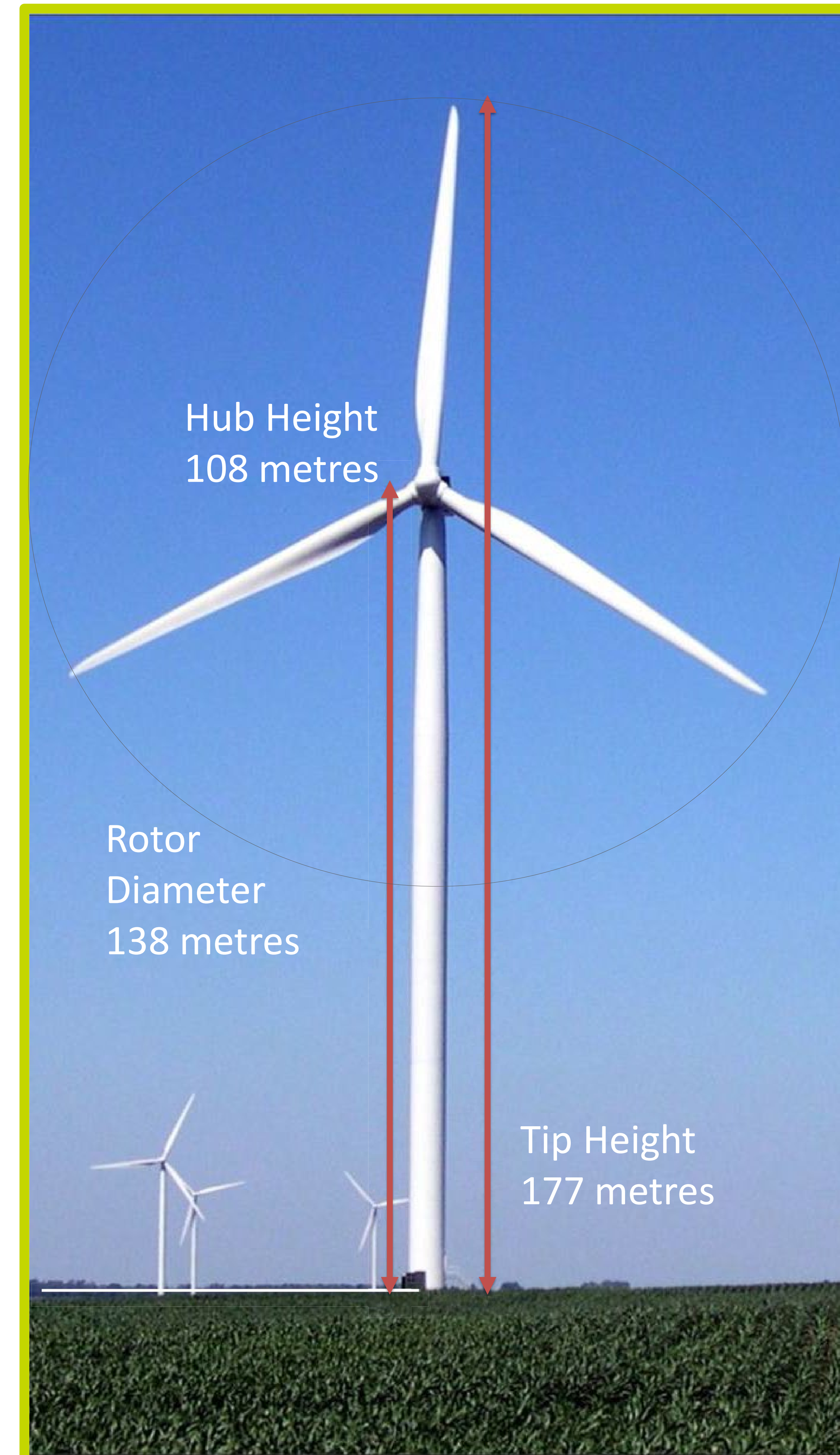
**We have updated the following:**

- **Turbine technology, turbine locations, collector system, access roads and substation location**
- **Project boundary modification**
- **Noise Impact Assessment, Visual Simulations and Shadow Flicker Analysis**
- **Environmental field studies**

	Fall 2017 PSIP	Winter 2019 PSIP	Change
<b>Turbine Type</b>	Vestas V136 4.2 MW or Gamesa G132 3.465 MW	Enercon E138 4.2 MW	Similar size capacity
<b>Number of Turbines</b>	56 Vestas or 61 Siemens-Gamesa	48 Enercon E138 4.2 MW	13 fewer turbines
<b>Hub Height</b>	82 metres (Vestas) or 84 metres (Gamesa)	108 metres	Taller towers
<b>Rotor Diameter</b>	136 m (Vestas) or 132 m (Siemens-Gamesa)	138 m	Slightly larger
<b>Total Project Capacity</b>	235.2 MW (Vestas) or 211.37 MW (Siemens-Gamesa)	201.6 MW	Smaller project capacity

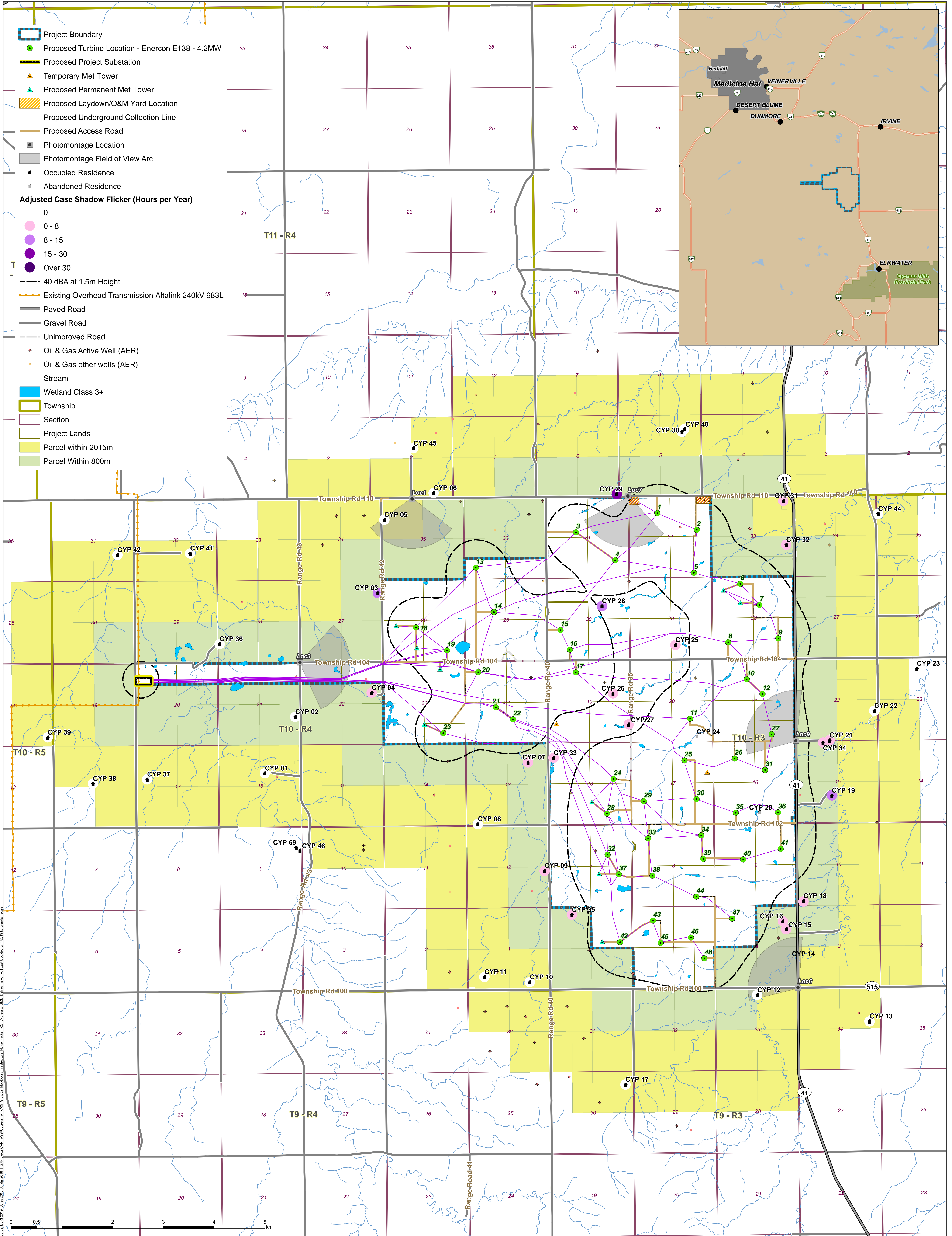
# PROPOSED PROJECT INFRASTRUCTURE

- Wind Turbine
  - Enercon Turbines
  - Blades (69 metres)
  - Hub Height (108 metres)
  - Rotor Diameter (138 metres)
  - Capacity (4.2 megawatts)
- Access Roads
- Temporary Laydown Area
- Collector System
- Project Substation
- Operation and Maintenance Building
- Temporary and Permanent Meteorological Towers
  - 9 proposed permanent locations and up to 5 installed permanent towers



# SHADOW FLICKER ANALYSIS

- Shadow flicker is caused when the turbine blades cast a shadow on nearby residences.
- We have completed a shadow flicker study and provided the results in the Project Layout, Adjusted Case Shadow Flicker and Noise Map. The shadow flicker results are presented on a colour scale that correlates with the annual hours of adjusted case shadow flicker.
- Residences within 2 km of the project were considered in the shadow flicker analysis.
- This study considers the probability of cloud cover, but it does not consider the orientation of residences or the location of windows in residences.
- All residences fall within internationally accepted thresholds.







Before



After

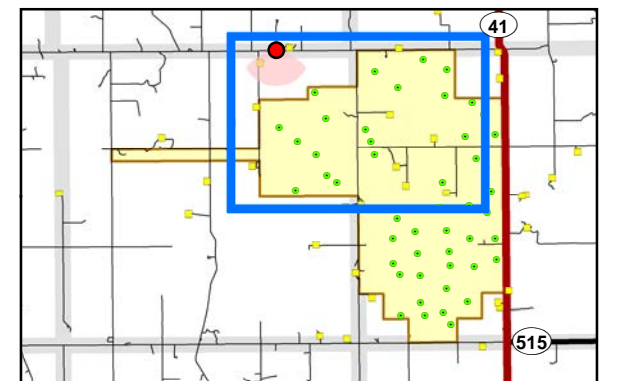
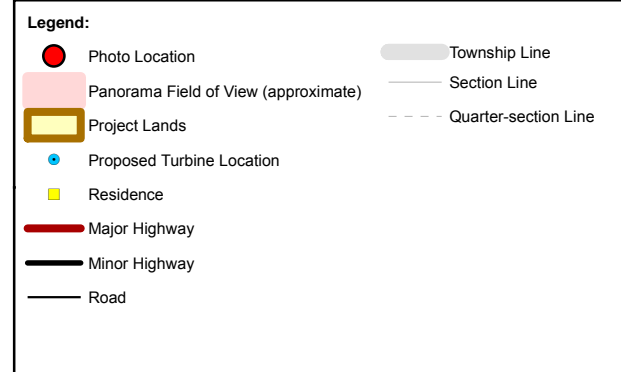
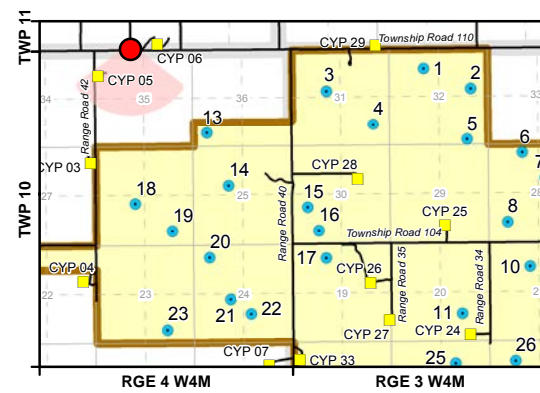
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	Version: 8

**Notes:**  
Photographs taken with Canon ESO 5D Mk II camera and Canon EF24-70mm f/2.8L lens set at 50 mm. Panoramic view compiled from multiple individual photographs. Photomontage simulated using Enercon E138 EP3 turbine with rotor diameter of 138 m and hub height of 108 m using 48 turbine locations (Layout LV22).

**Data Sources:**  
Populated places, roads, Alberta Township System, and municipal boundaries from AltaLIS, licensed under the Open Government Licence – Alberta.

**Prepared By:** WSP Canada Inc.  
**Author:** A. Medd  
**Reviewed:** S. Schnick  
**Approved:** R. Istchenko

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Before



After

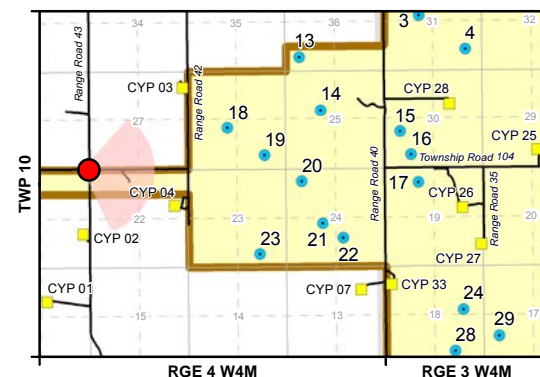
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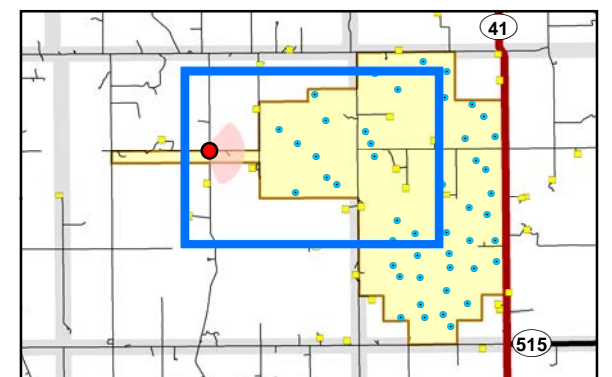
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**Legend:**

- Photo Location
- Panorama Field of View (approximate)
- Project Lands
- Proposed Turbine Location
- Residence
- Major Highway
- Minor Highway
- Road
- Township Line
- Section Line
- Quarter-section Line





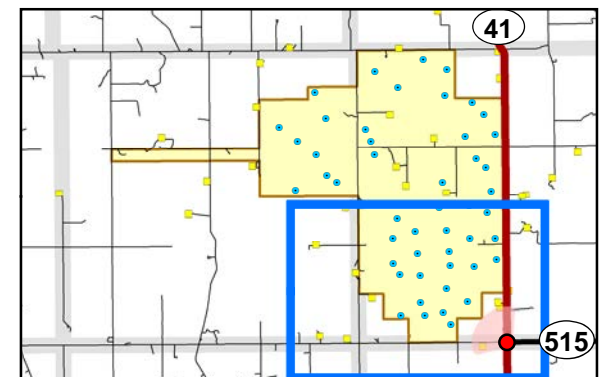
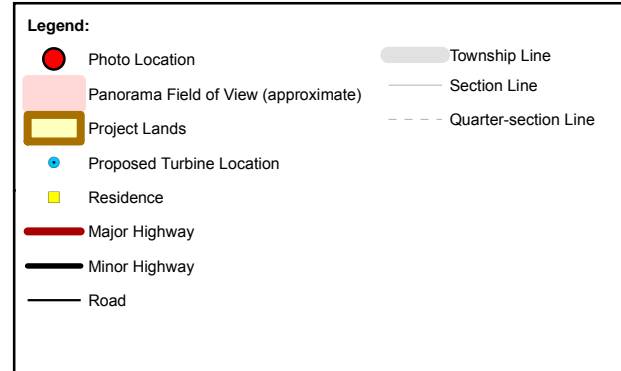
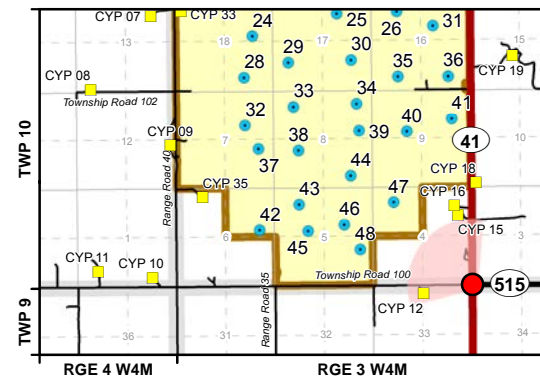
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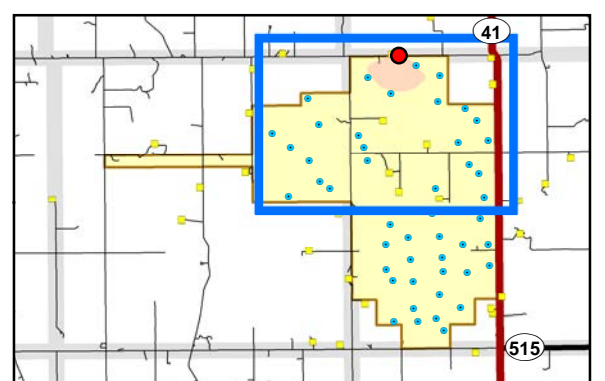
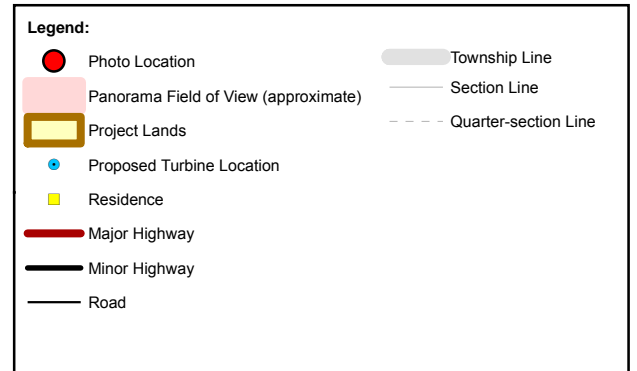
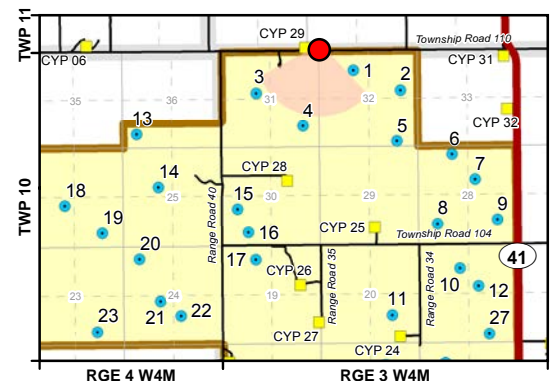
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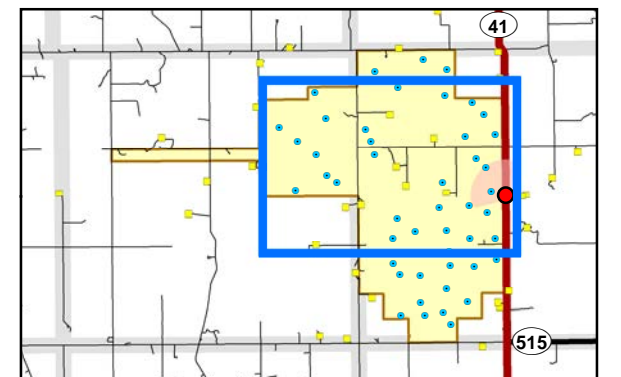
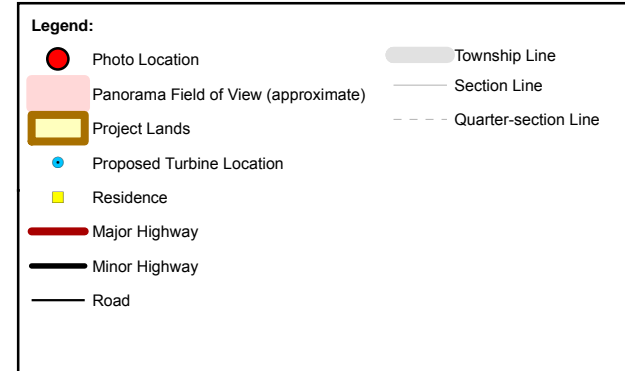
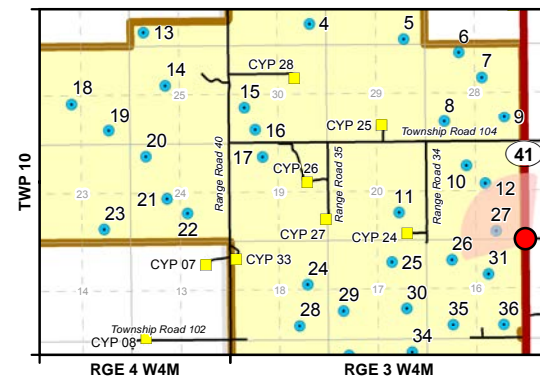
Title: Photomontage: Location 9 (E138)	
Project: Cypress Wind Project	
 	Datum: NAD 83 Projection: UTM Zone 12N
	Scale: N.T.S.
	Date: 2019-03-08
	Version: 8

**Notes:**  
Photographs taken with Canon ESO 5D Mk II camera and Canon EF24-70mm f/2.8L lens set at 50 mm. Panoramic view compiled from multiple individual photographs. Photomontage simulated using Enercon E138 EP3 turbine with rotor diameter of 138 m and hub height of 108 m using 48 turbine locations (Layout LV22).

**Data Sources:**  
Populated places, roads, Alberta Township System, and municipal boundaries from AltaLIS, licensed under the Open Government Licence – Alberta.

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