

Welcome to the Riplinger Wind Power Project Stakeholder Open House

Please 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.

This engagement session is presented as part of our ongoing consultation and engagement. We welcome your feedback.



Thank you for attending and for taking time to learn more about the Riplinger Wind Power Project

Who is TransAlta?



- TransAlta has over 111 years of generation experience
- Owner of Canada's first commercial wind farm located in Pincher Creek
- The first company in Canada to responsibly decommission a wind site at end of life
- TransAlta owns and operates a diverse generation fleet comprising of natural gas, wind, hydro, solar, and coal* facilities for a total net capacity of over 8,700 MW across North America and Western Australia
- Owns and operates 23 wind facilities generating 1,895 MW of clean renewable power across Canada and the US

*Note: TransAlta is currently transitioning out of coal with the only remaining facility, Centralia in the USA, expected to be decommissioned in 2025

TransAlta is Canada's largest wind power generator



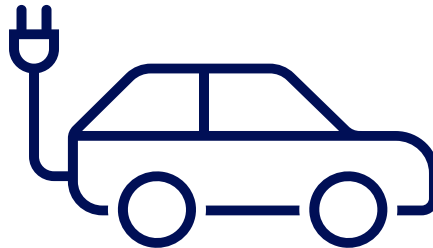
How Much Energy Could Riplinger Produce?

In an average wind year, Riplinger would be able to produce 1,000 Gigawatt/hour (GWh), which equates to:

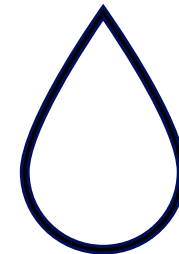
Enough power for 138,000 households



Enough power to charge and drive an EV 4.5 billion kilometers



Enough power to boil 9.9 billion liters or 3,960 Olympic swimming pools of water



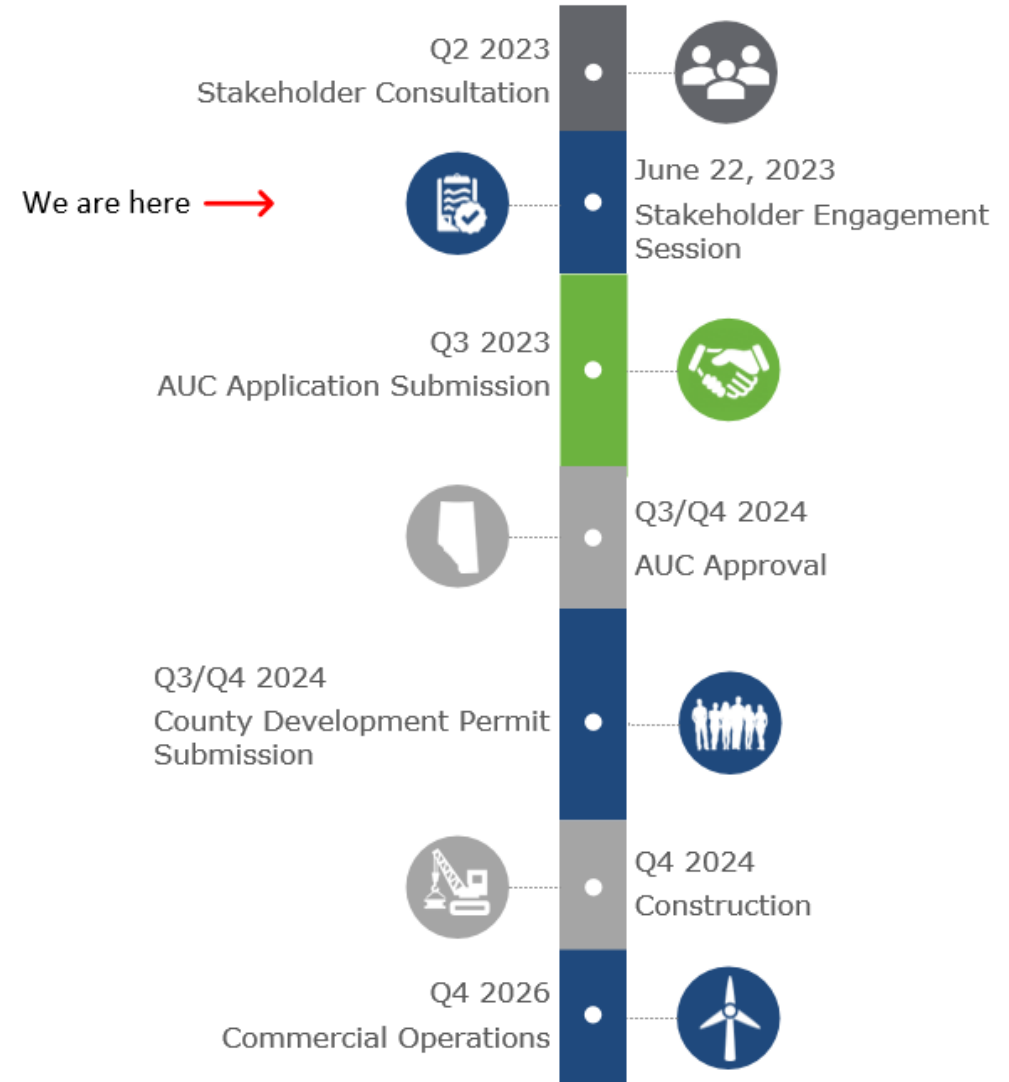
@ 600kWh/household/month, 0.101kWh/L, 0.22kWh/km, 0.0503t/GJ NG @7.0 MHR

Riplinger would offset 352,000 metric tons of carbon dioxide (CO₂)



What's New?

- We are waiting for our risk rating from **Alberta Environment and Projected Areas (AEPA)** following our submission in April 2023
- We have tentatively selected our turbine technology allowing us to select **47** of the 56 previously communicated locations. This number may change slightly as the project develops.
- **Project boundary** changed to be 0.8km farther from Hill Springs based on community feedback
- Updated **project layout** for roads and collection system showing 2.2km of new roads
- Our **Electromagnetic Interference (EMI)** study is underway and draft results are available
- **Community benefits assessment report** completed and summary sheets available
- The **project schedule** has been adjusted with construction starting Q4 of 2024 and Commercial Operation Date (COD) of Q4 2026.



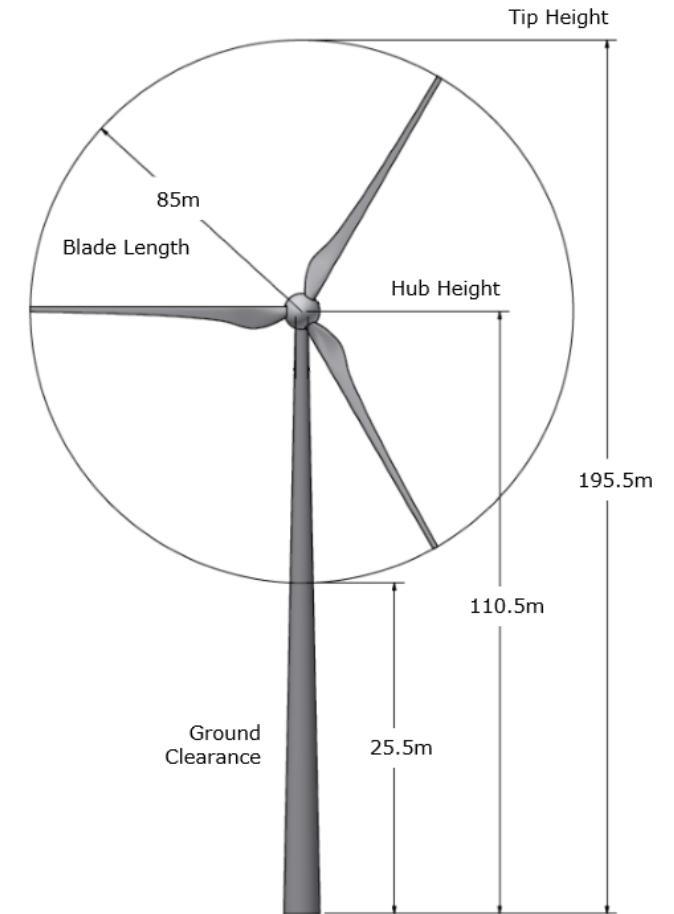
Updated Project Timeline



What does the Project Involve?

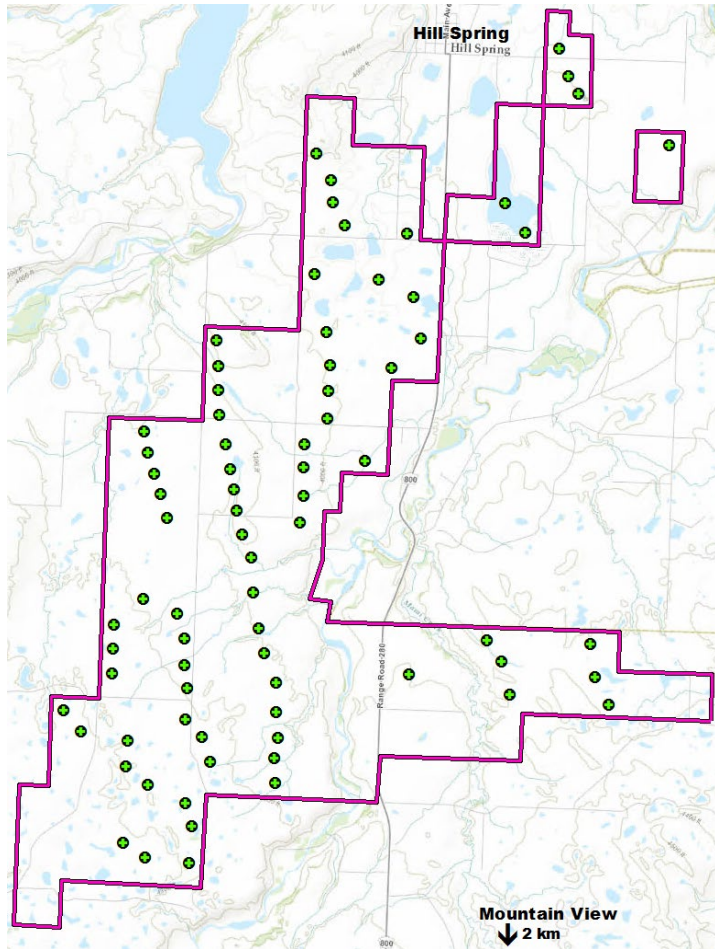
*Information subject to change as development work advances

- **47 turbines**, each with a generating power of 6.6 MW and with a tip height of just over 195 meters
- **One or two permanent meteorological tower(s)** used to gather information on the weather to understand how the turbines are performing
- An **underground collector system** to bring the power generated by the turbines to a central substation
- A **transmission line** that is roughly 45 km long to connect the Project to the existing electrical grid east of Pincher Creek
 - The transmission line is managed as a separate application process as required by the AUC
- We plan to use existing roads and access points as much as possible. Where necessary, we will seek approval to upgrade and use County roads. Any new roads required will be designed to minimize environmental impacts and support continued agricultural activities.

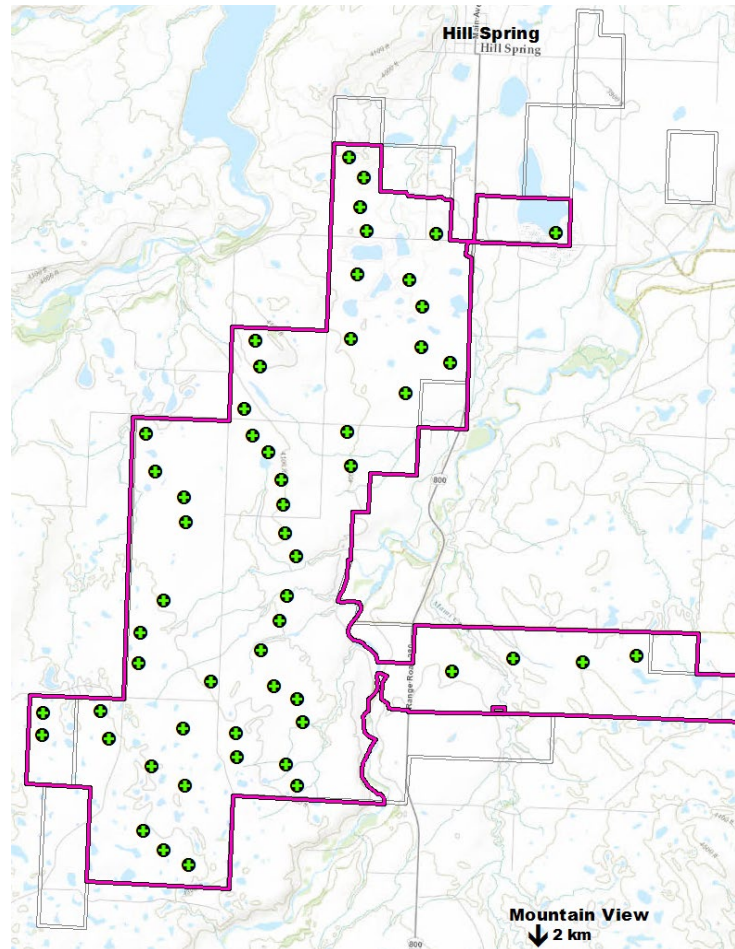


How has the Development Evolved?

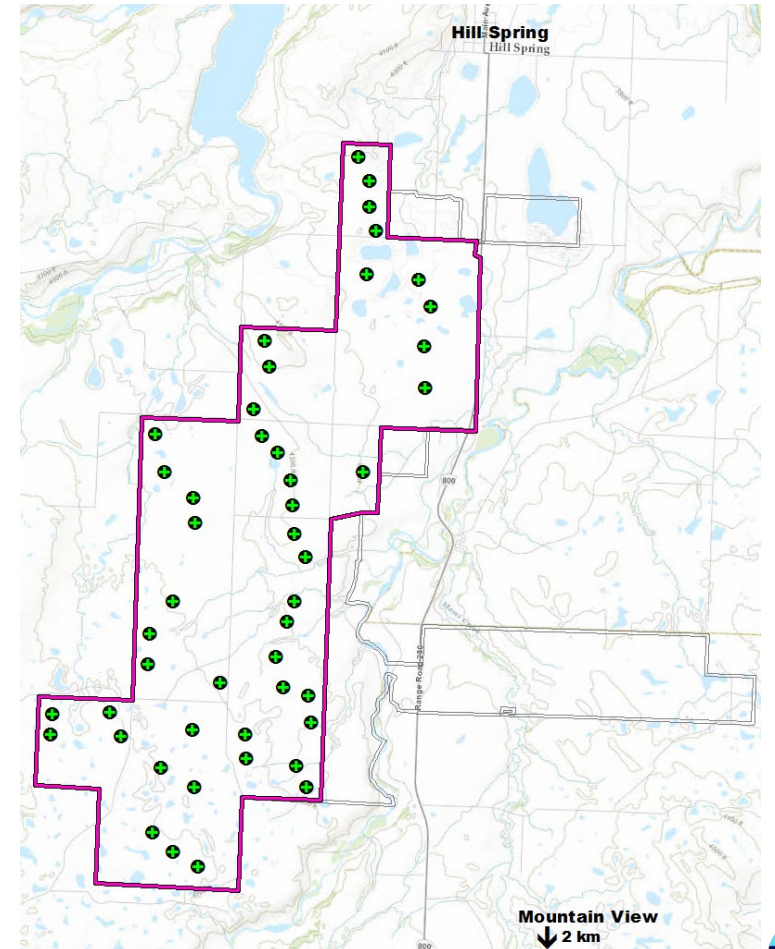
- Early 2022, about 98 quarters
- ~60, 5 MW turbines



- Early 2023, about 85 quarters
- Up to 50, 6.2-7.2 MW turbines



- Current, about 62 quarters
- 47, 6.6 MW turbines



Community Engagement

Today's session is our second open house in the Hill Spring area.

Please use the comment cards and exit surveys to provide feedback, ask questions, or request follow-up information.

You can also contact us at:

Toll-free number: 1 (877) 547-3365, extension 1

Email: canadian_projects@transalta.com

Please reference the Riplinger Wind Power Project in the subject line of your email.



James Graham
Sr Advisor,
Stakeholder and Indigenous Relations



Project Benefits



Community Benefits

At the last Riplinger Wind Power Project Open House, we received suggestions for ways that TransAlta can support the local community.

These included:

- Sponsoring a music festival
- Paving roads
- Building bike paths

Your input is valuable in these discussions, and we appreciate you taking the time to give us your thoughts.



We want to hear from you! Please put your suggestions in the box provided.

Environmental Assessments: Birds and Wildlife

These surveys were conducted in 2021 and 2022 by a third-party consultant in accordance with the Wildlife Directive for Wind Energy Projects in Alberta (Wildlife Directive) released by Alberta Environment and Protected Areas (AEPA). Certain surveys, like sharp-tailed grouse and raptor surveys, need to be conducted every two years until the project is constructed.

Surveys completed:

- Spring and Fall Bird Migration
- Spring and Fall Acoustic Bat Monitoring
- Breeding Birds
- Sharp-tailed Grouse
- Raptors
- Wetland Mapping and Classification
- Habitat Mapping



Environmental Assessments: Siting



Siting Considerations:

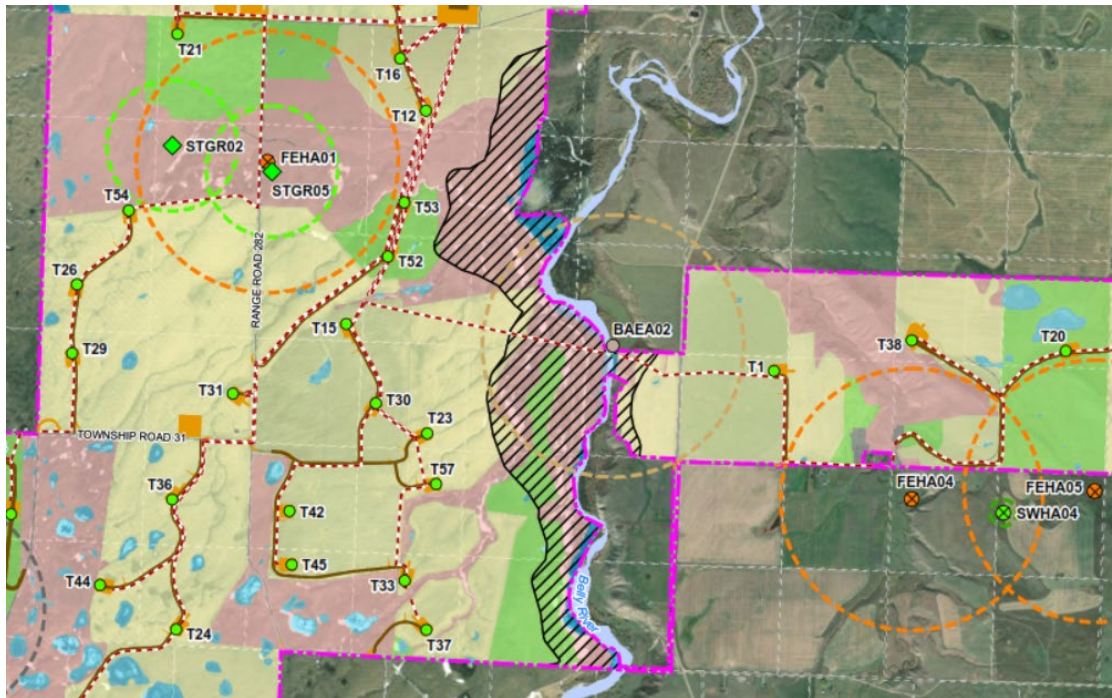
- Land is mostly agricultural which is compatible with wind turbine technology; farming can continue along side the turbines
- Turbines are sited completely on cultivated or tame grassland (i.e. previously disturbed) and avoid native prairie
- Project infrastructure has been sited to avoid recorded environmental features (e.g. sharp-tailed grouse leks and waterbodies)
- Permanent project infrastructure (i.e. access roads and turbines) has been sited to avoid Class III and higher wetlands

Environmental Avoidance and Mitigation

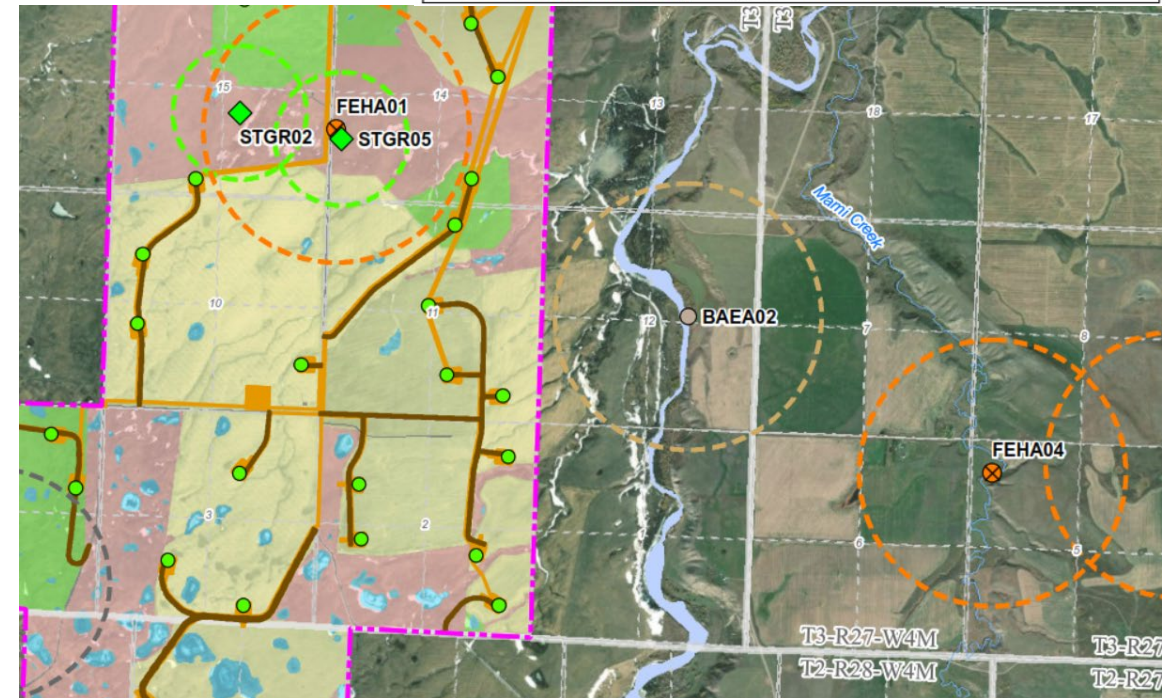
Turbines east of the Belly River

- 4 turbines were removed from the layout to reduce impacts to birds and native grassland
- Waterton Biosphere Buffer Zone is also avoided

January 2023



June 2023



• Green dots are turbine locations

Wildlife Features	Wildlife Feature Setbacks
● Bald Eagle (BAEA) Nest	○ Bald Eagle (BAEA) Nest 1000 m Setback
⊗ Bank Swallow (BANS) Nest	○ Bank Swallow (BANS) Nest 100 m Setback
⊗ Ferruginous Hawk (FEHA) Nest	○ Ferruginous Hawk (FEHA) Nest 1,000 m Setback
⊗ Great Horned Owl (GHOW) Nest	○ Great Horned Owl (GHOW) Nest 100 m Setback
● Osprey (OSPR) Nest	○ Osprey (OSPR) Nest 750 m Setback
⊗ Red-tailed Hawk (RTHA) Nest	○ Red-tailed Hawk (RTHA) Nest
◆ Sharp-tailed Grouse (STGR) Lek	○ Sharp-tailed Grouse (STGR) Lek 500 m Setback
⊗ Swainson's Hawk (SWHA) Nest	○ Swainson's Hawk (SWHA) Nest 100 m Setback
■ Trumpeter Swan Waterbody	○ Trumpeter Swan 800 m Setback

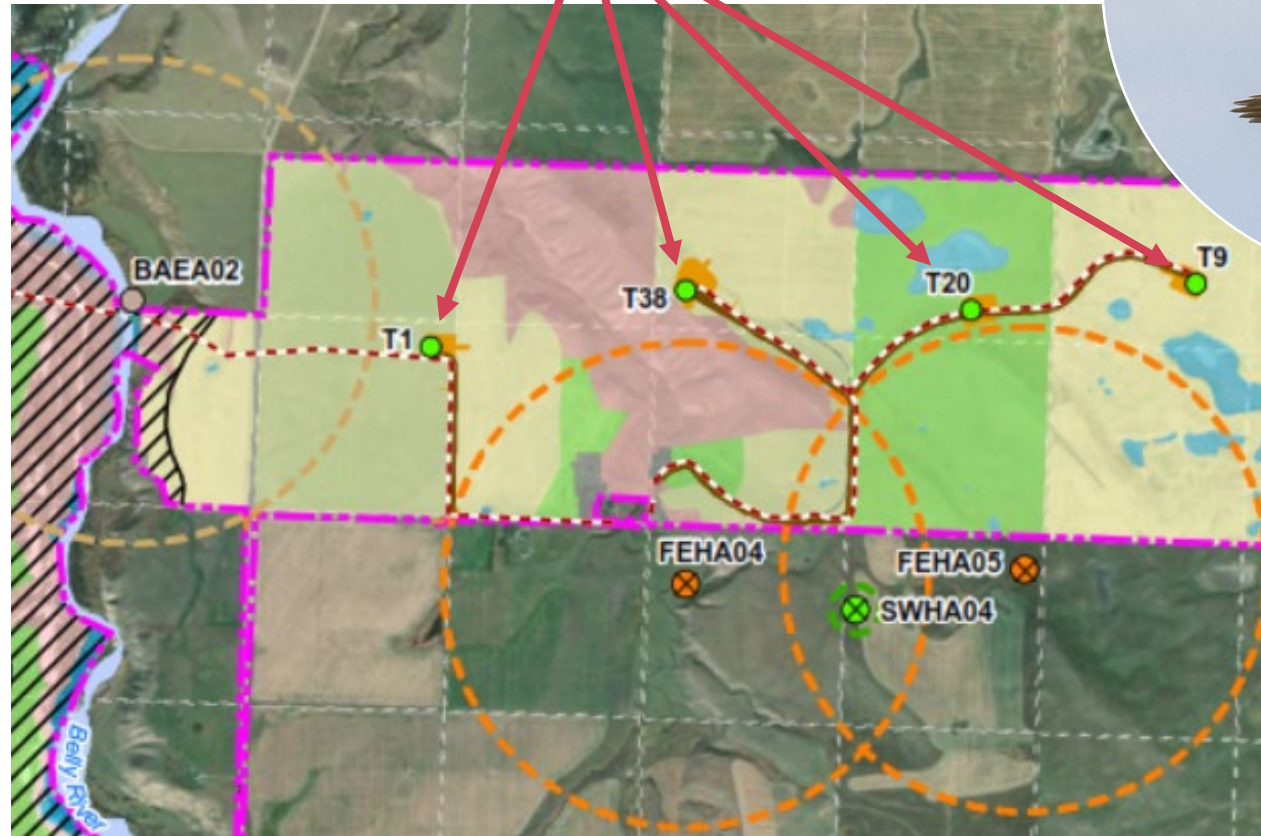


Environmental Avoidance and Mitigation

Birds and Bird Nests:

- Turbines have been moved to avoid areas near endangered bird nests
- We have significantly increased the distance to turbines for:
 - 2 ferruginous hawk nests
 - 1 bald eagle nest
 - 1 Swainson's hawk nest

4 turbines were removed



Ferruginous
Hawks



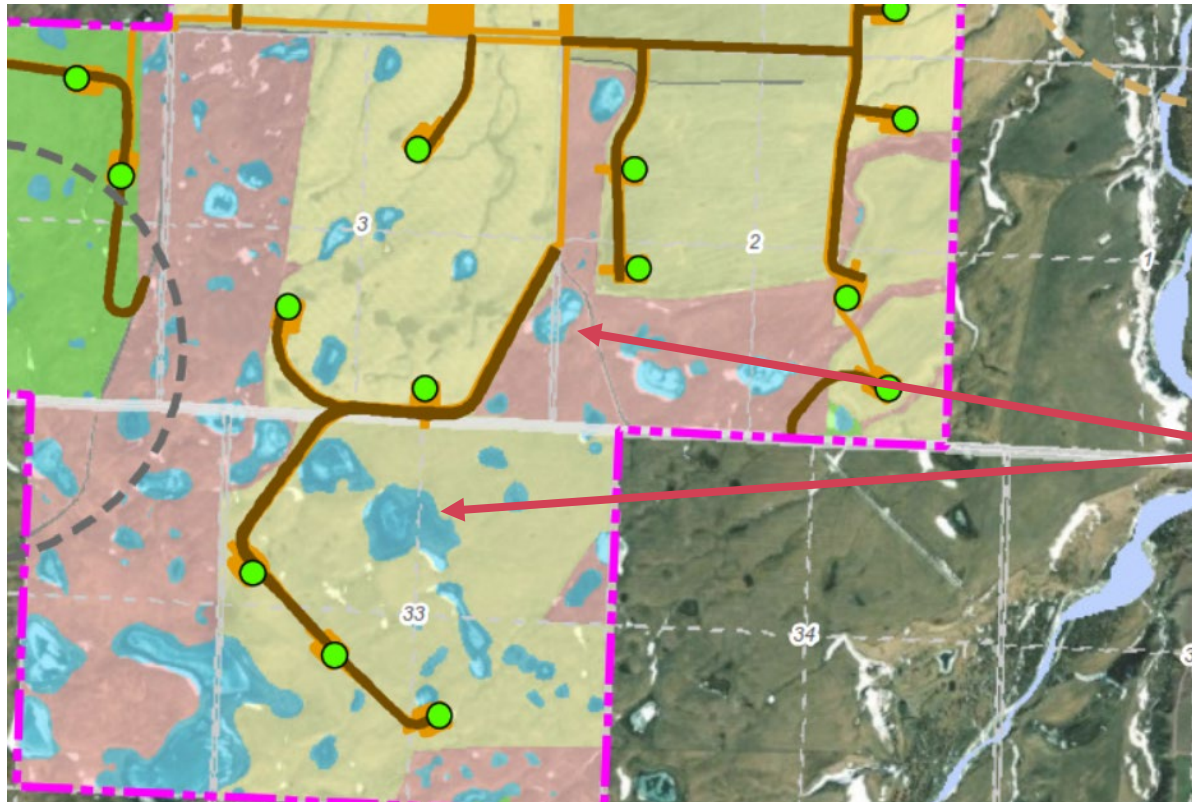
Dashed circles are buffer areas around Wildlife features



Environmental Avoidance and Mitigation

Wetlands:

- Permanent project infrastructure (i.e., access roads and turbines) has been sited to avoid Class III and higher wetlands



Wetlands are avoided

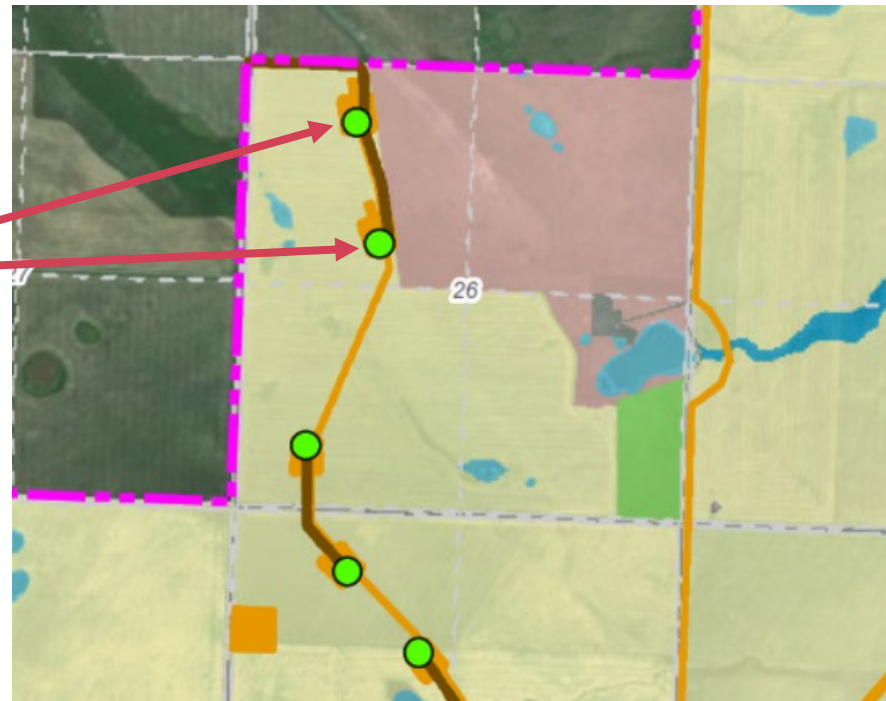
Environmental Avoidance and Mitigation

Native Grasslands:

- Permanent project infrastructure (i.e., access roads and turbines) has been sited to avoid native grasslands (pink areas on the map)
- Removing turbines east of the Belly River avoids impacts to native grasslands in two locations. The total area of impacts avoided is 7,379 square meters.



**Native
Grasslands are
avoided**



Alberta Environment and Protected Areas



Where there are potential impacts to wetlands or wildlife, appropriate mitigation measures will be implemented, or permits acquired through consultation with AEPA.



The results of the environmental surveys were provided to AEPA in April 2023 as part of our Renewable Energy Project Submission Report under the Wildlife Directive. AEPA is reviewing this information and will identify the potential environmental risks associated with the Project. When they are done their assessment, they will rate the Projects' environmental risk to wildlife as either **low, moderate or high**.



TransAlta will include the AEPA's assessment in our Project application to the AUC.

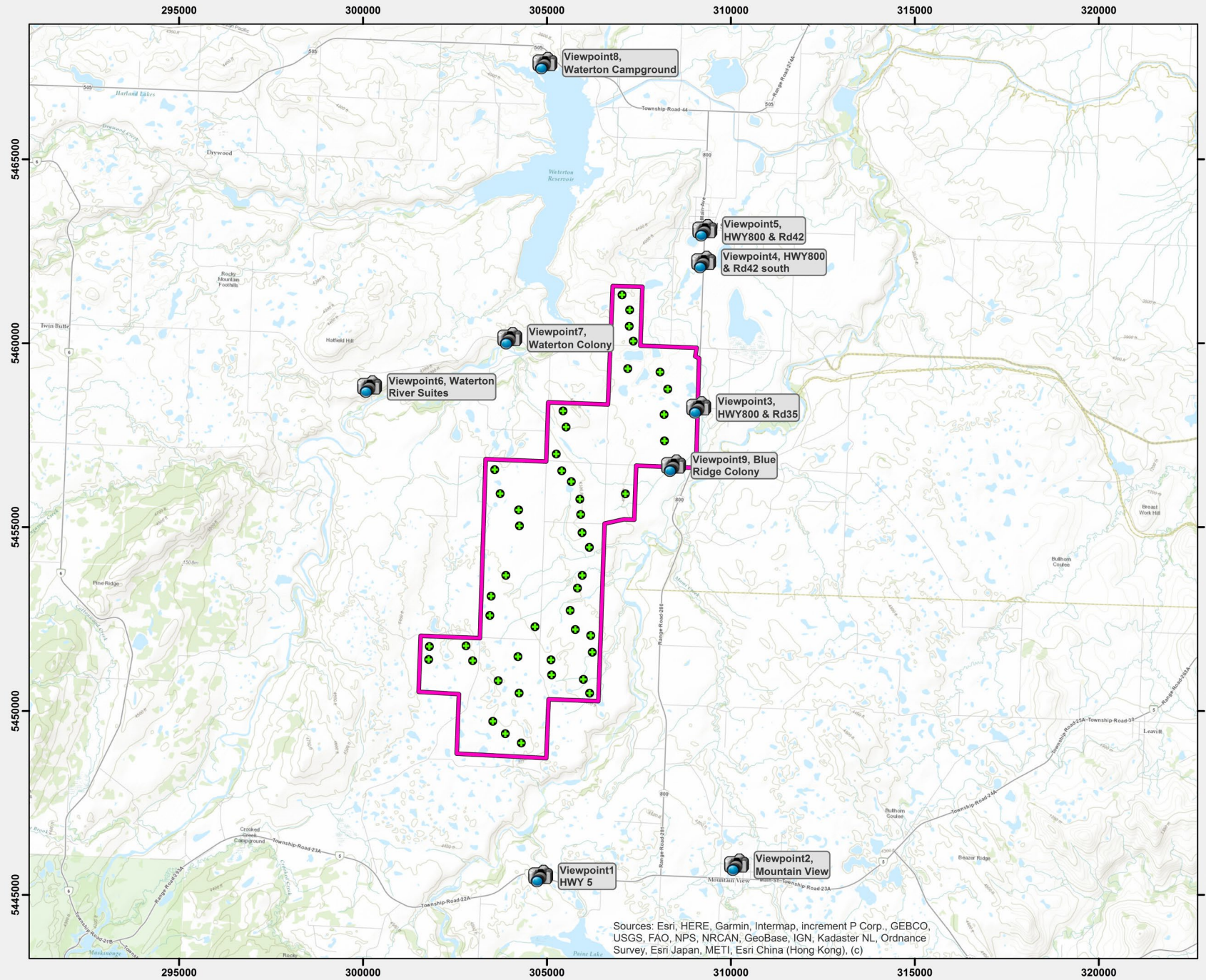
Visual Impact



As part of project design, visual simulations using specialized software have been created at various 'viewpoints' in and around the Project site. These simulations provide a representative depiction of the wind turbines on the landscape.

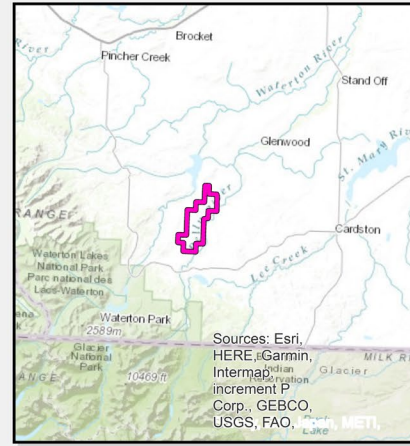
TransAlta representatives have examples of these simulations, made to represent viewpoints within the Project, available for discussion.

Turbines are painted an off-white colour, which is found to be the least intrusive under the widest variety of light conditions. Transport Canada requires a subset of turbines to be lit for aircraft safety. A lighting plan that considers the minimum impact from nighttime lighting by the Project will be vetted in consultation with Transport Canada prior to construction.



Legend

- █ Project Boundary
- Wind Turbine
- Viewpoint



0 1 2 4 6 Km

Riplinger Photomontage Locations

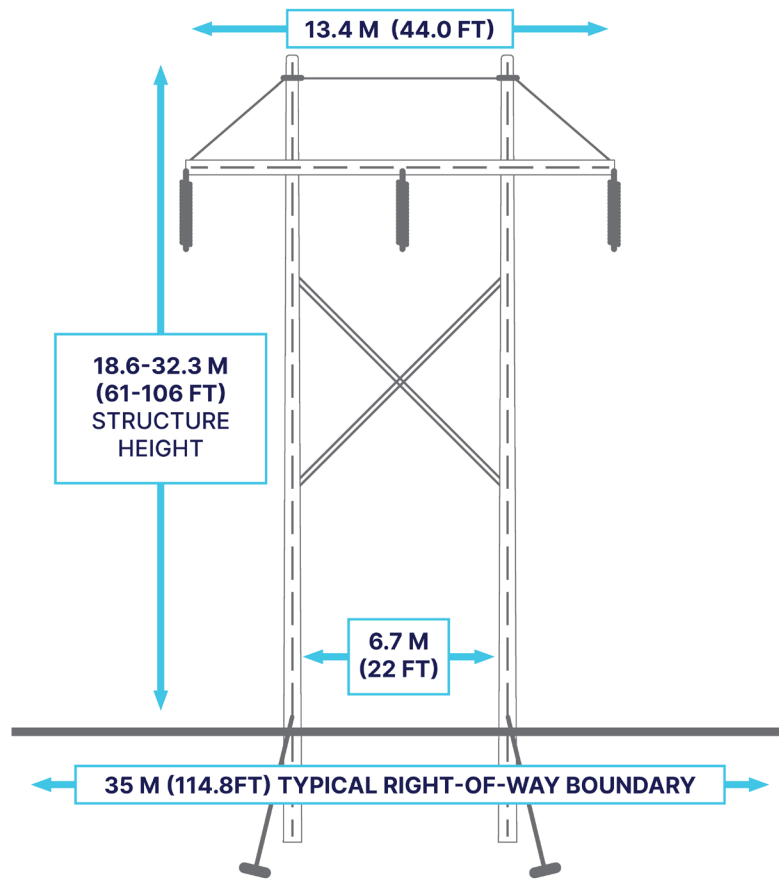
Date: June 15, 2023
 Projection: UTM Zone 12, NAD83
 Source: NTDB 1:50,000, Altalis ATS data and TransAlta
 Created By: TransAlta Corporation
 Scale: 1:100,000

Confidential and Subject to Change

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)



Transmission Line



Transmission Interconnection

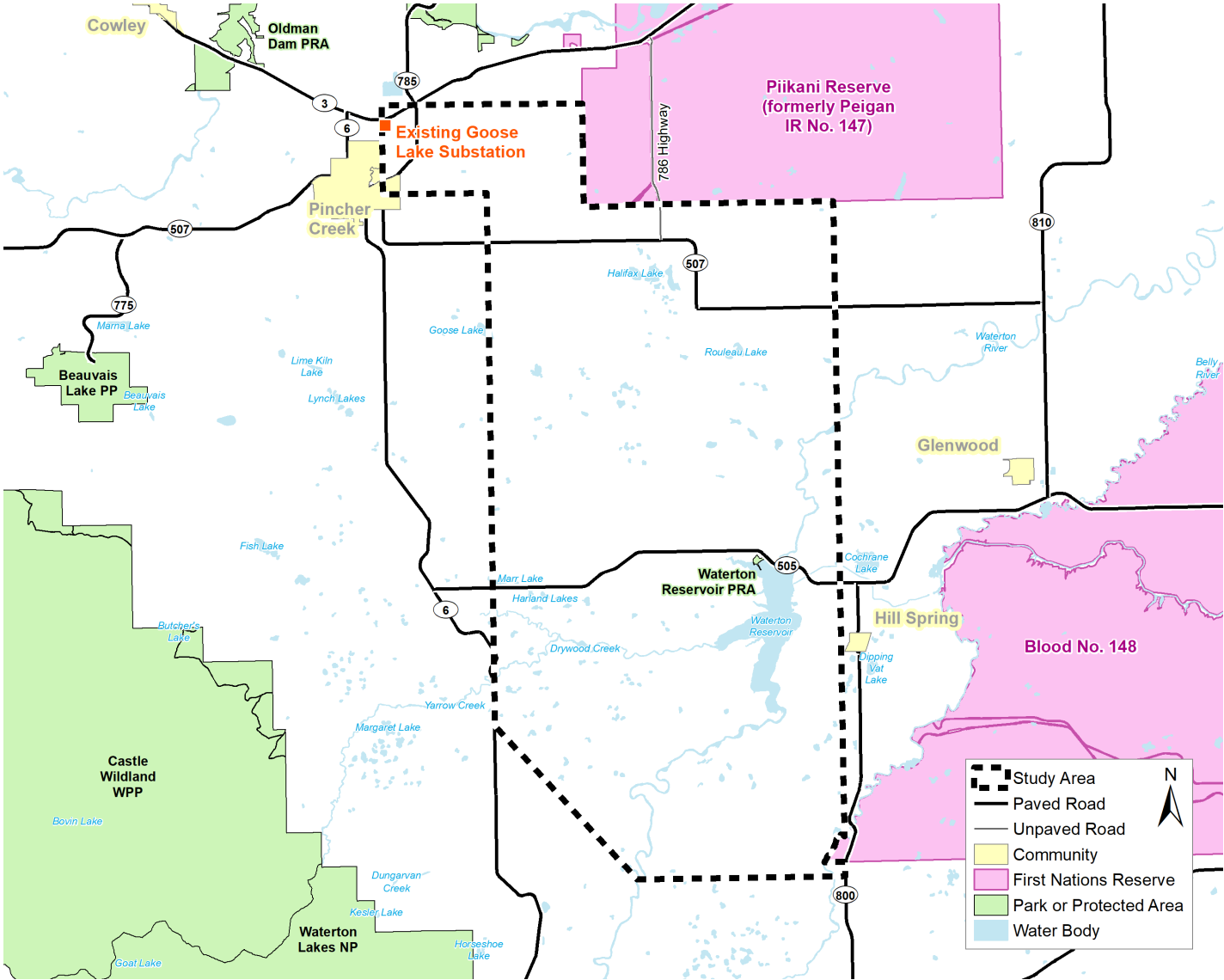
The construction of an approximately **45km long transmission line** will connect the Project to the Alberta Interconnected Electric System. The transmission line will enable power generated by the Project to reach Alberta's electricity grid.

The Riplinger Transmission Line Project will be a **separate and distinct regulatory, permitting and stakeholder engagement process** commencing later this year. To assist with this, TransAlta has contracted a third-party consultant, **Maskwa Environmental Consulting**, to support the work related to environmental evaluation, route selection, design, and public and Indigenous engagement.

Information packages about the Riplinger Transmission Line Project will be distributed separately and a stakeholder engagement session will be held regarding the Project transmission interconnection in July.



Transmission Line Routing & Siting Study Area



Transmission Line Schedule and Contact Info

Schedule

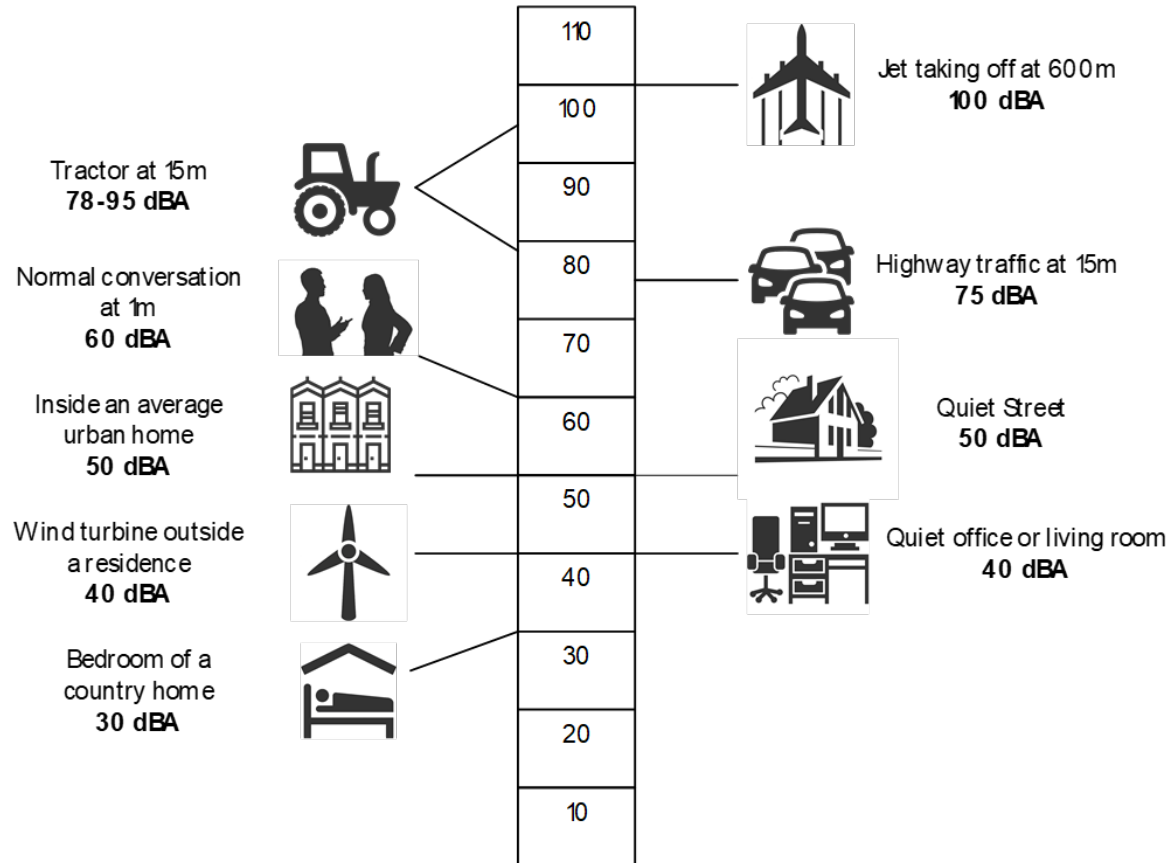
- Transmission Mailout #1 – late June 2023
- Transmission Stakeholder Engagement Sessions – mid-July 2023
- Transmission Mailout #2 – late August 2023
- Facility Application filing with the AUC – late 2023

Transmission Line Project Contact Information

- Email: riplingertransmission@maskwaenv.com
- Phone: 1-888-893-4980



Sound Levels



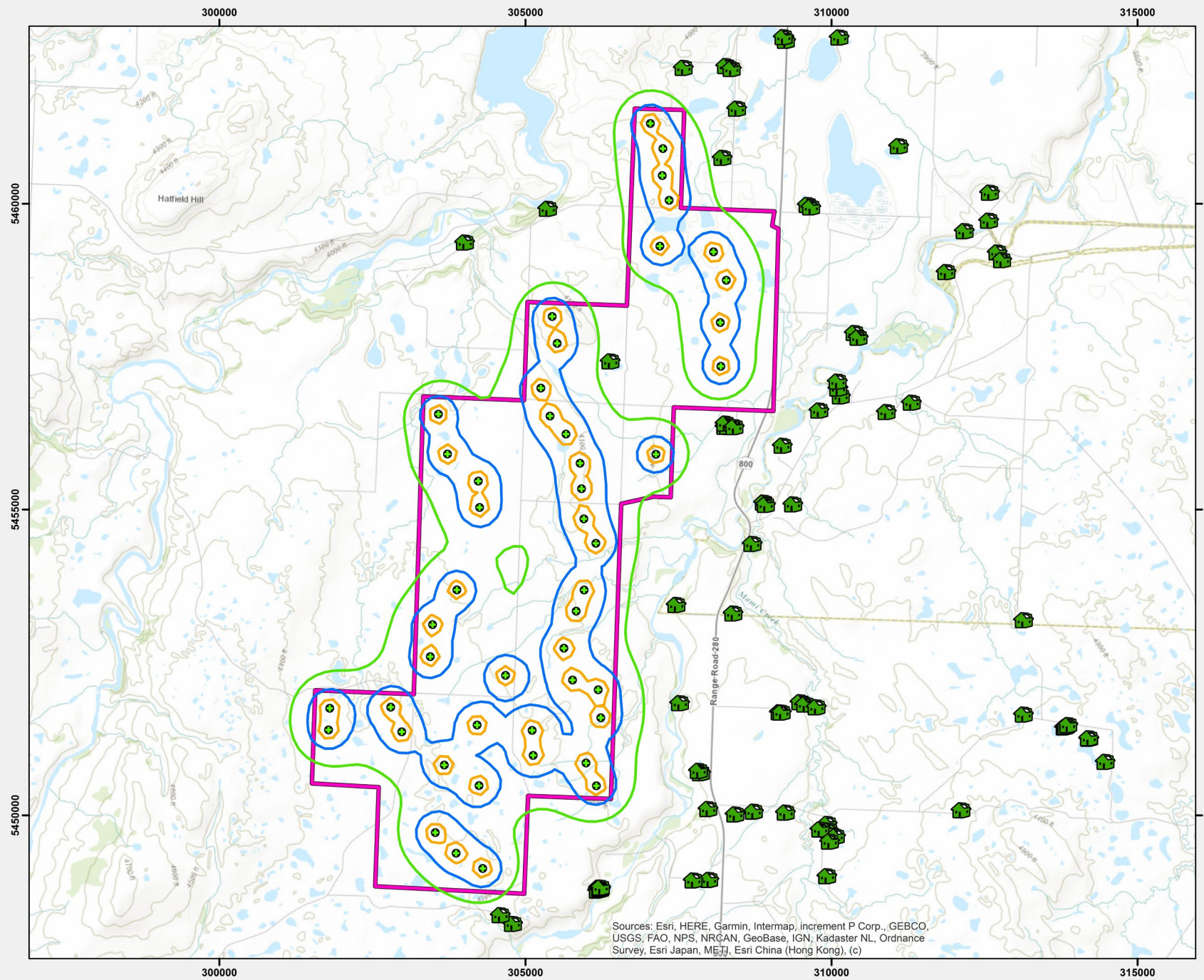
The sound from wind projects must meet strict AUC (Alberta Utilities Commission) regulations. AUC Rule 012: Noise Control states that the project must not exceed 40 dBA outside residences during nighttime.

TransAlta representatives have a figure available for discussion showing representative noise isoclines, which are a visual representation of how far out sound carries from the turbines.

Predicted noise levels are crucial for siting wind turbines. Our wind farm meets AUC requirements, and no residences in the project area exceed permissible sound levels.

When siting turbines, TransAlta maintains a minimum of 800m from houses regardless of the expected noise output





Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

Legend

- Project Boundary
- + Wind Turbine
- 🏠 Dwelling
- 40 dBA Noise Isocline
- 45 dBA Noise Isocline
- 50 dBA Noise Isocline

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

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0 1/2 1 2 3 Km

Riplinger Updated Project Boundary

Date: June 15, 2023
 Projection: UTM Zone 12, NAD83
 Source: NTDB 1:50,000, Altalis ATS data and TransAlta
 Created By: TransAlta Corporation
 Scale: 1:60,000

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Shadow Flicker

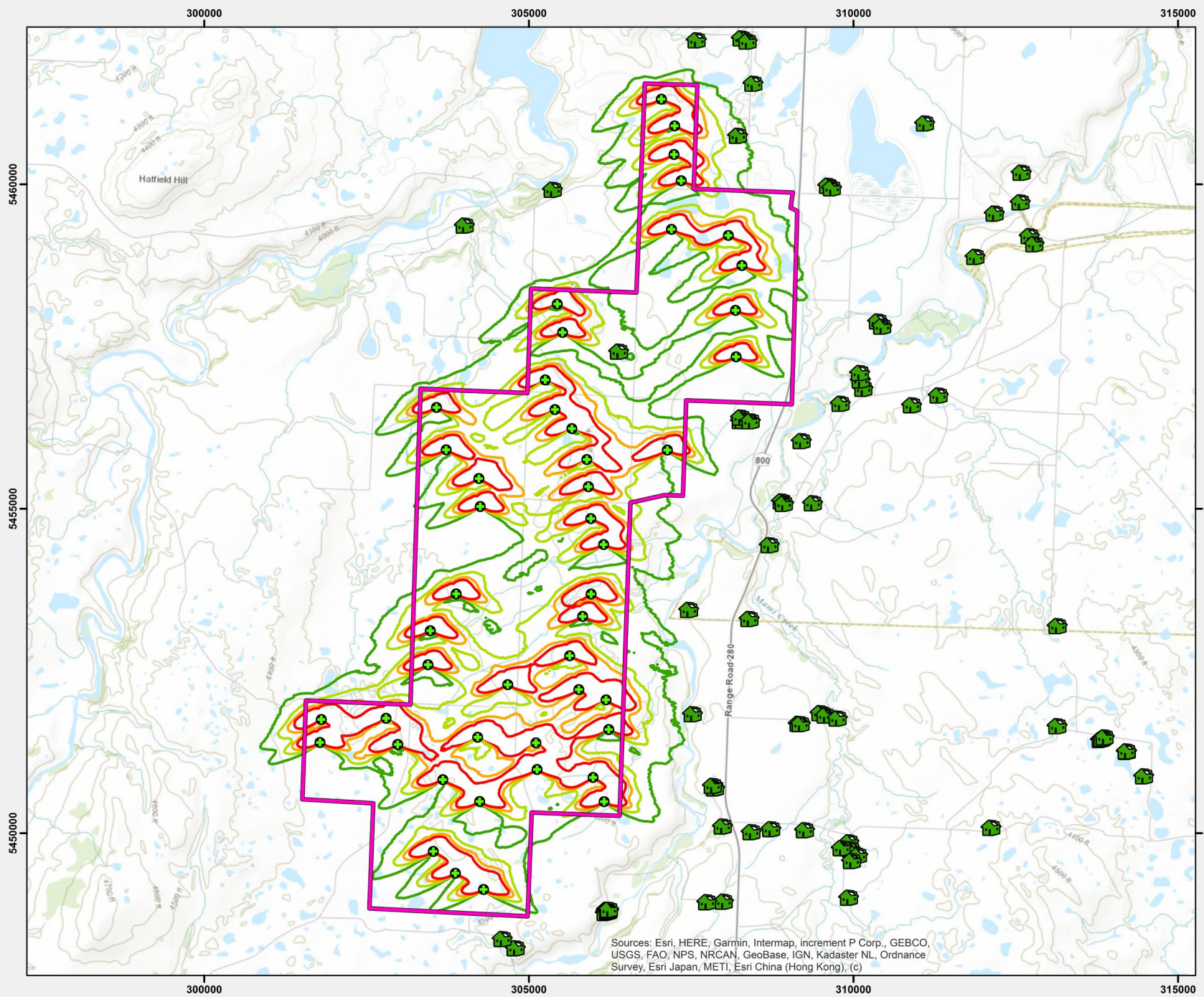
Shadow flicker is the effect of the sun shining through the blades of a wind turbine as they rotate, casting a moving shadow on the landscape.

It is perceived as a “flicker” due to the rotating blades repeatedly casting a shadow during certain times of the day.

During midday, the shadows are close to the turbine, however the shadows extend farther away near sunrise and sunset.

Please view the Shadow Flicker map adjacent to this storyboard for more information.

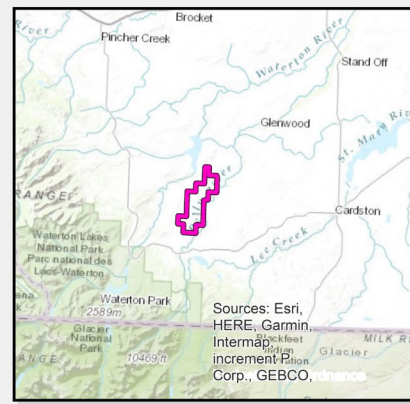




Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

Legend

- █ Project Boundary
- Wind Turbine
- Shadow Flicker**
- █ 30 hours / year
- █ 60 hours / year
- █ 90 hours / year
- █ 120 hours / year



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0 1/2 1 2 3 Km

**Riplinger
Shadow Flicker Analysis**

Date: June 15, 2023
 Projection: UTM Zone 12, NAD83
 Source: NTDB 1:50,000, Altalis ATS data and TransAlta
 Created By: TransAlta Corporation
 Scale: 1:56,971

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Light

Turbines must have aviation lighting to be compliant with Transport Canada regulations.

These are needed on perimeter turbines of the project layout (~50% of turbines).

In recognition that nearby Waterton Lakes National Park is a Dark Sky Reserve, TransAlta is pursuing lighting technology to reduce light pollution.

The **Technostrobe Lighting Intensity Dimming Solution (LIDS)** is a made-in-Canada product that varies its light output intensity based on local visual clarity conditions.

This technology minimizes light output when the skies are clear but keep pilots safe when things get blurry.

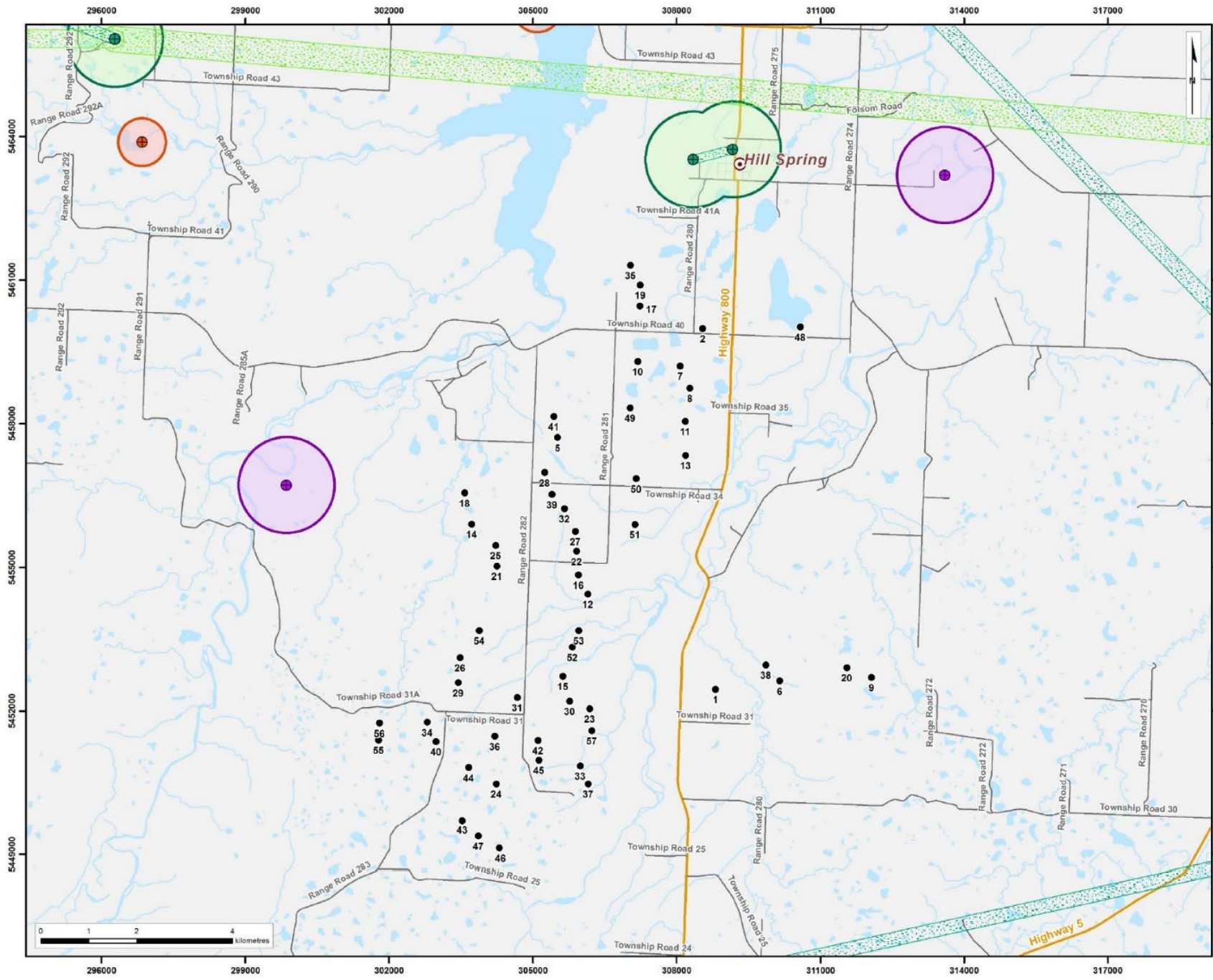
Removing turbines East of Belly River will reduce the number of required lights.



Radiocommunications and Radar

- TransAlta is undertaking a Radio Communications and Radar Systems Inventory and Impact Assessment
- **Why?** While wind turbines themselves do not emit electromagnetic waves they can physically disrupt external signals
- **What?** Systems such as:
 - Point-to-point communication systems, Radio broadcast transmissions,
 - Cellular networks, Satellite systems,
 - Aeronautical stations and radionavigational aids,
 - Weather radar systems, and radiolocation systems.
- **Where?** Each system has a consultation zone for impact assessment ranging from
 - 500m (satellite receiver) to
 - 100km (DND Air Defense Radars).
- **Result?** Draft results are positive with no impact to the agencies that have responded so far.
 - We have assessed a low risk of interference to over-the-air digital TV signals (rarely used) and issues can be typically remedied through the use of antenna upgrades as needed.





Legend

- Riplinger Wind Turbine (56)
- ~ Watercourse
- ~ Waterbody
- Arterial Road
- Collector Road
- Local Street

Radiocommunication Systems

- Fixed Station
- Land Mobile Radio - Analog
- Satellite Station

Consultation Zones

- Fixed Station (1 km)
- Point-to-Point Link > 0.89 GHz
Blade + 3x Max. of 1st Fresnel Zone
- Point-to-Multipoint Link > 0.89 GHz
Blade + 3x Max. of 1st Fresnel Zone
- Land Mobile (1 km)
- Satellite Station (500 m)



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Riplinger Wind Project

RADIOCOMMUNICATION SYSTEMS
- LOCAL -

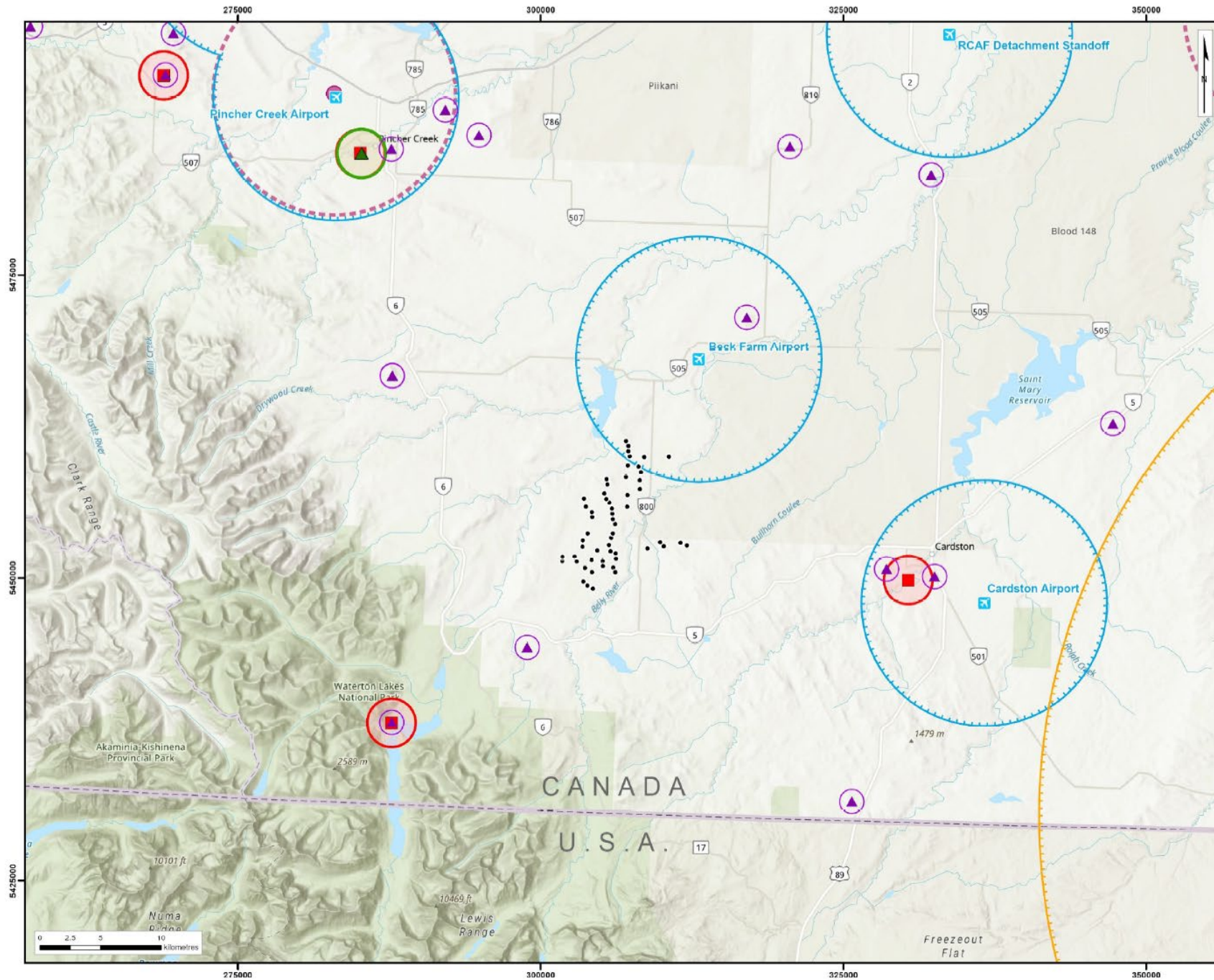
1042100-250071-E

April 27, 2023

DNV

Projection: UTM Zone 12, NAD83
Source: CanVec, ArcGIS Online
Innovation. Science and Economic Development Canada Spectrum Management System





Legend

- Riplinger Wind Turbine (56)

Radiocommunication Systems

- ✈ Airport
- Non-Directional Beacon (NDB)
- ▲ Cellular Tower
- ▲ FM Station
- TV Station

Consultation Zones

- ✈ Airport (10 km)
- NDB (10 km)
- Cellular (1 km)
- FM (2 km)
- TV (2 km)
- ★ Weather Radar (50 km)



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Riplinger Wind Project

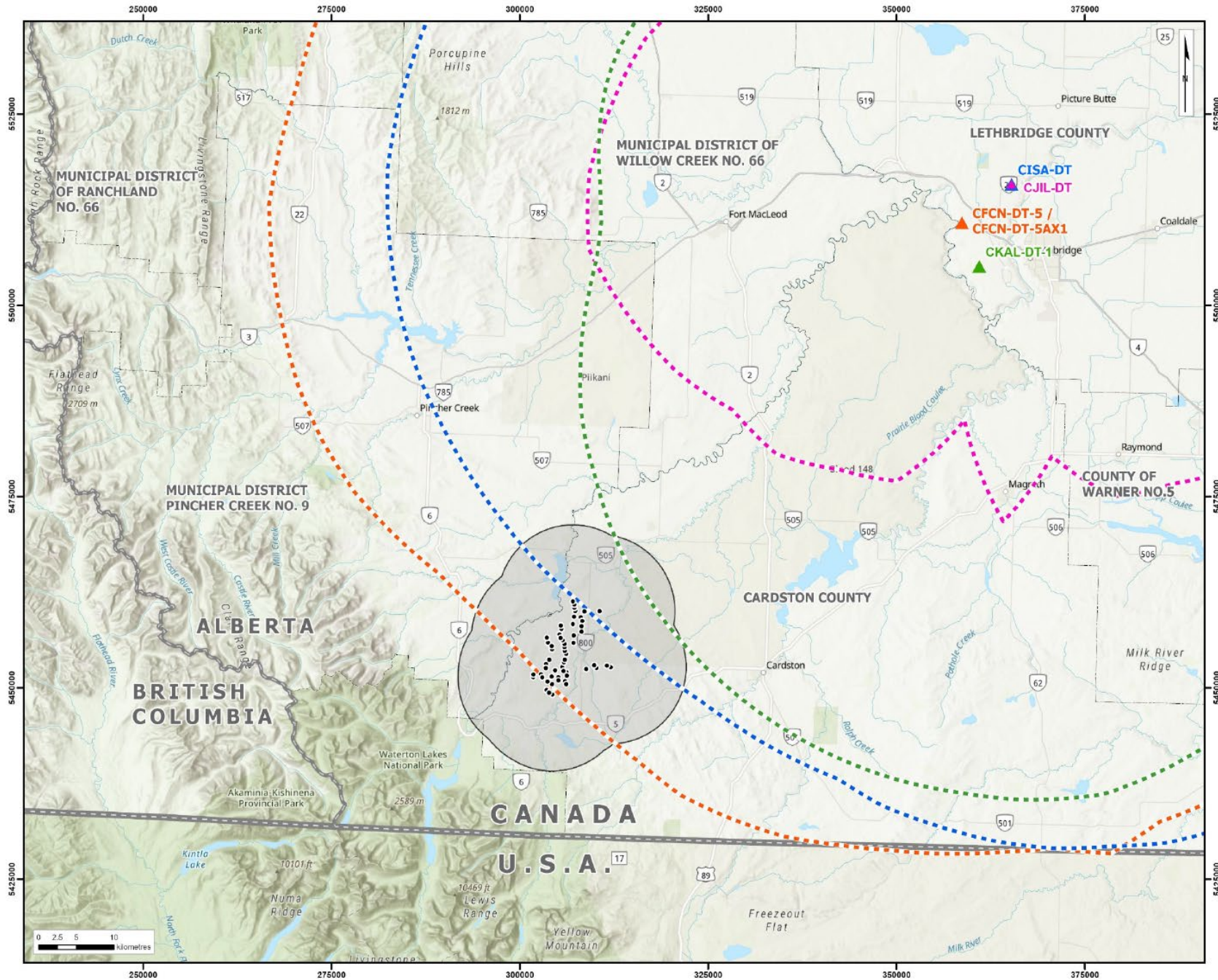
RADIOCOMMUNICATION SYSTEMS - REGIONAL -

May 5, 2023

DNV

Project: UTM Zone 12, NAD83
 Source: CanVec, ArcGIS Online
 Innovation, Science and Economic Development Canada Spectrum Management System





Legend

- Riplinger Wind Turbine (56)
- International Boundary
- Provincial Boundary
- ▭ Alberta County

Consultation Zone

- ▭ TV Broadcasting Consultation Zone around Turbines (10 km)

TV Systems (Digital)

- ▲ CFCN-DT-5 / CFCN-DT-5AX1
- ▲ CISA-DT
- ▲ CJIL-DT
- ▲ CKAL-DT-1

Noise-Limited Bounding Contours

- CFCN-DT-5 / CFCN-DT-5AX1
- CISA-DT
- CJIL-DT
- CKAL-DT-1

Area Shown

transaltaTM

Riplinger Wind Project

TV BROADCASTING SYSTEMS

102/104-0010-010
May 15, 2023

DNV

Projection: UTM Zone 12, NAD83
Source: Canvec, ArcGIS Civilian Atlas
Innovation, Science and Economic Development Canada Spectrum Management System



Wind Project Construction

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 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 and performing preventive maintenance and repairs on the turbines and other components of the facility.



Windrise
Construction



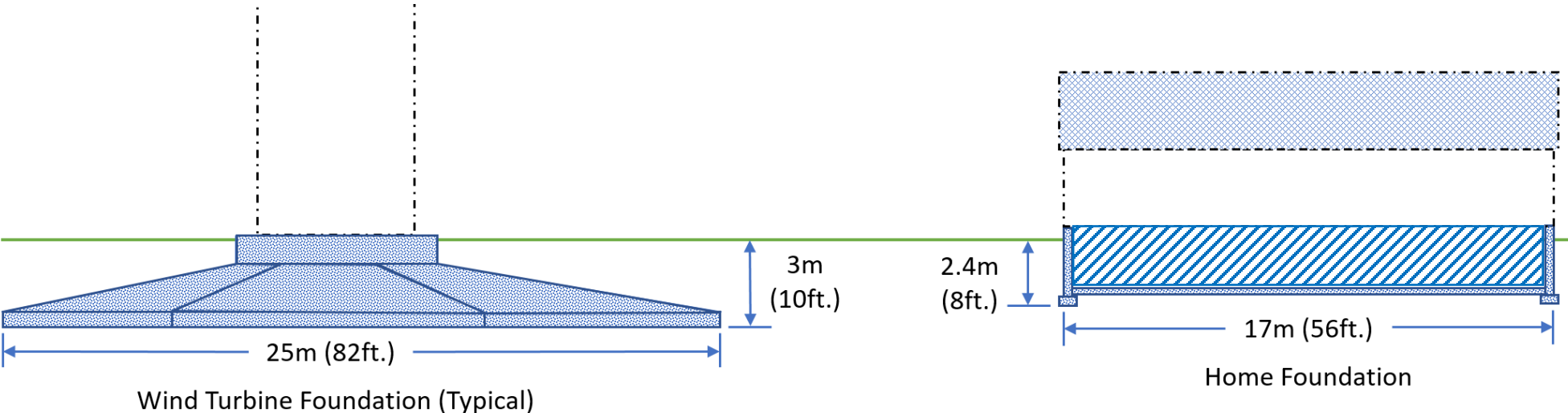
Foundations

The Riplinger project will use "gravity raft" foundations which are a spread type foundation. This design utilizes a large, shallow base that is covered in soil to distribute the turbine forces over a large area. The depth of the base does not go much deeper than that of a typical home basement.

The diagram below shows a typical foundation size for our proposed turbine model compared to a typical home foundation.



Different onshore wind turbine foundation types



Decommissioning and Reclamation



TransAlta is the first company in Canada to fully decommission a wind farm

A wind farm usually lasts between 30 and 35 years. We have to submit a conservation and reclamation plan for the Project as part of our application to the Alberta Utilities Commission (AUC). This includes a commitment to return the land to its equivalent state.

Cowley Ridge was the first wind farm developed in Canada and was safely decommissioned by TransAlta in 2022.

Wind turbines are 85-95% recyclable

Wind turbine blades can be recycled by cutting them up into small pieces and then shredding them. The shredded material can then be used in making cement or even thick plastics. Fibreglass can also be recovered and repurposed. Most of what remains (steel, iron, aluminum, copper, and electronic components) is also completely recyclable through existing programs.



Project Team



Engineering
CARL FENIAK



Construction
RYAN GRANT



Interconnection
DMITRIY TETERKIN



Communications
MATTHEW GRAY



Director
KEITH YASINSKI



Exec. Sponsor
CRAIG ASHTON



Analyst
REBECCA KELLY



Stakeholder Engagement
JAMES GRAHAM



Land Coordination
KEVIN KOE



Indigenous Relations
CORINNE CHISHOLM



Third-Party Consultants



Maskwa Environmental Consulting Ltd. (Maskwa) is a leader in regulatory, project permitting, public engagement, planning, GIS/mapping, Indigenous engagement, and environmental services supporting project development in the natural resources, energy, land development and government sectors throughout Western Canada.



Hatch Ltd. is an employee-owned company which was founded in 1955 in Toronto; today it has over 9,000 employees working in 78 offices around the world. Hatch provides process and business consulting, technology and engineering, project and construction management (EPCM) services to clients in the energy, mining & metals and infrastructure sectors.



Ausenco Sustainability Inc. is a team of highly respected, multi-disciplinary professionals with recognized expertise in environmental sciences, social sciences, and engineering. We are Canada's leading environmental services provider to the renewable energy industry, with consultants across Canada who have permitted or helped to operate over 16 GW of renewables projects.

