



# Hand Hills Wind and Solar (Hybrid) Project

## Information Session

May 9, 2024

Delia Community Centre



# Hand Hills Wind and Solar

- ATCO Value Moment
- ATCO EnPower
- Project Rational
- Project Overview
- Project Schedule
- Siting Criteria and Considerations
- Environmental Field Surveys
- Preliminary Site Layout
- Typical Project Layout and Visualizations
- Reclamation and Decommissioning
- Community Benefits

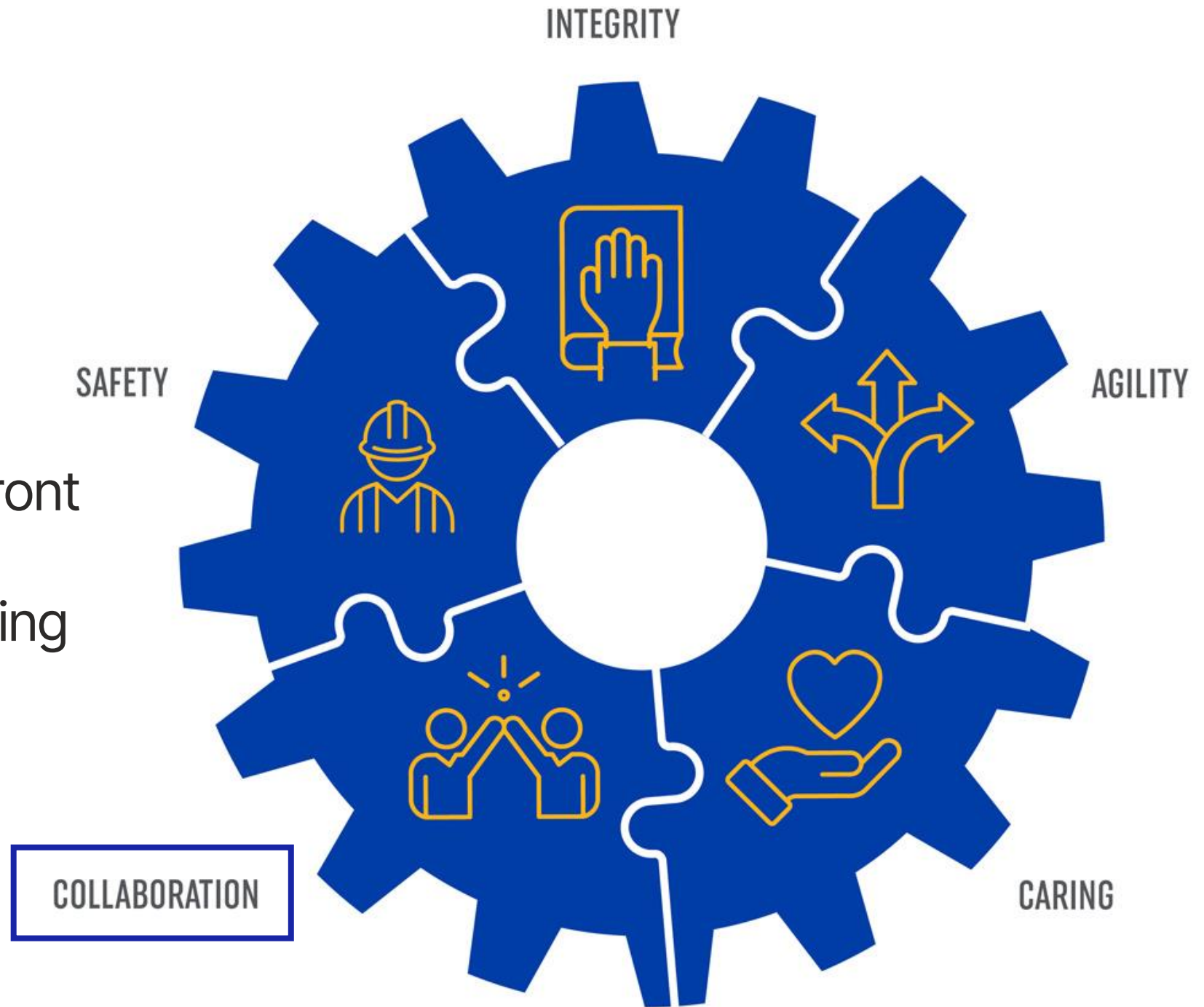




## ATCO Value Moment

### Early Engagement

- Transparency
- Identify Needs Upfront
- Set Expectations
- Mutual Understanding
- Benefits to all



## Creating Inspired Energy Solutions for a Sustainable World

### **Renewable energy**

Developing and integrating renewable energy and storage solutions

### **Cleaner Fuels**

Supporting the transition to a low-carbon energy system by enabling the switch to cleaner fuels.

### **Energy storage**

Developing and modernizing our storage solutions, including the carbon capture utilization and storage (CCUS).

### **Energy Efficiency**

Implementing solutions for more efficient energy to use, to reduce emissions while also creating economic benefit.





# Project Rational



**Strong Wind and Solar Resource** | Consistent wind patterns and solar irradiance.



**Desirable Siting Conditions** | Plenty of suitable land for construction once all wildlife, environmental and land constraints are considered.



**Diversified Power Generation** | Adding low marginal cost generation to the supply mix.



**Sustainability Targets** | Working towards sustainability commitments made by ATCO and the Alberta Government.



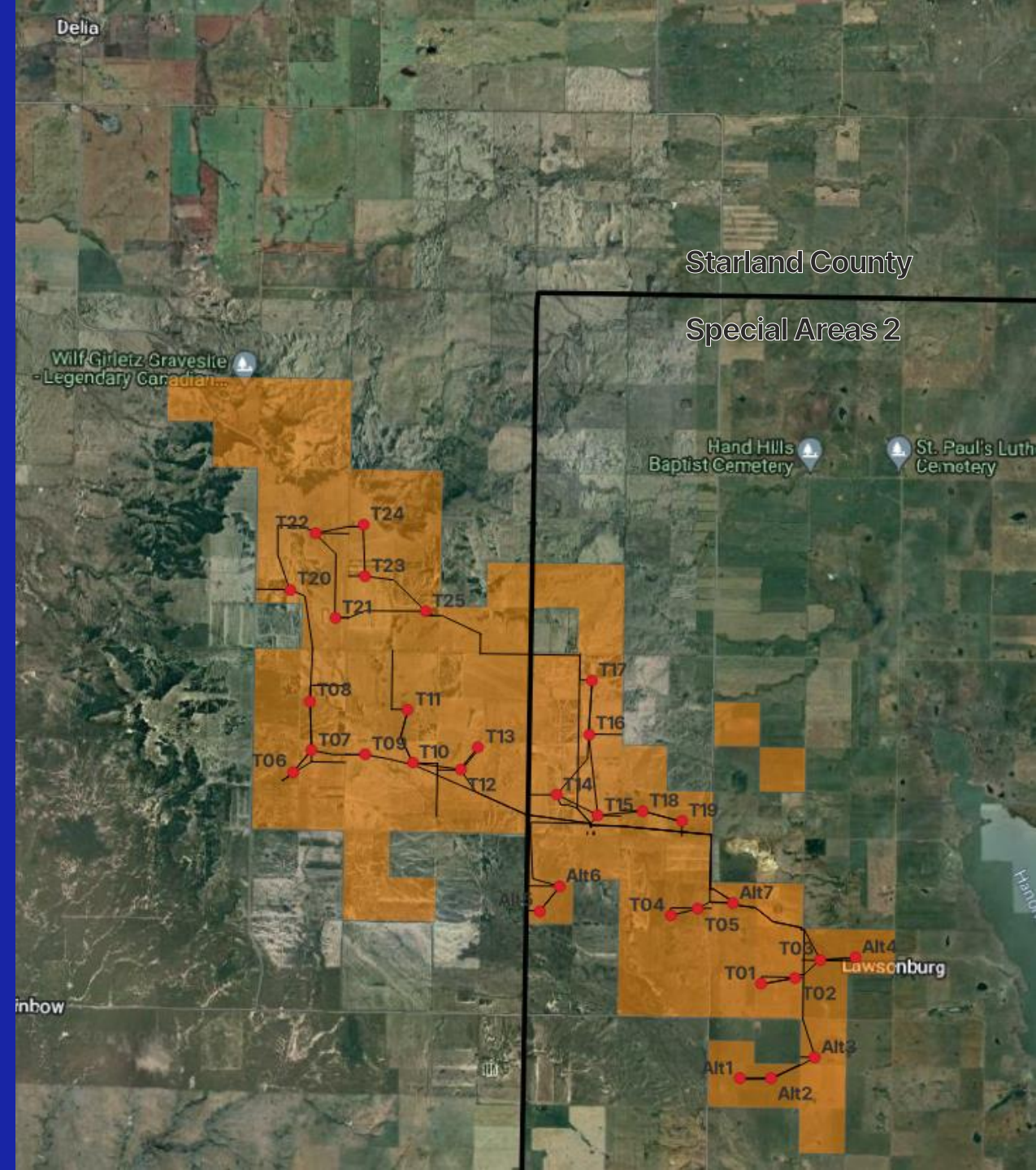
**Carbon Liability Mitigation** | Generating offsets to support emissions reduction targets in the Oil and Gas industry.



## Project Overview

# Hand Hills Wind

- 180 MW: Up to 30 turbines based on MW Capacity
- Wind infrastructure: turbines, collector lines (underground), access roads, substation, operations building, possible future battery storage
- Leases held on approximately 6,192 hectares (ha) / 15,300 acres (97 quarter sections)
  - Construction Footprint ~187 ha (462 acres)
  - Operations Footprint ~88 ha (217 acres)
- Spans Starland County and Special Area No. 2
- Stage 2 of AESO Cluster Study
- AIES Interconnection – 5.5 km 240 kV transmission line connecting to existing line

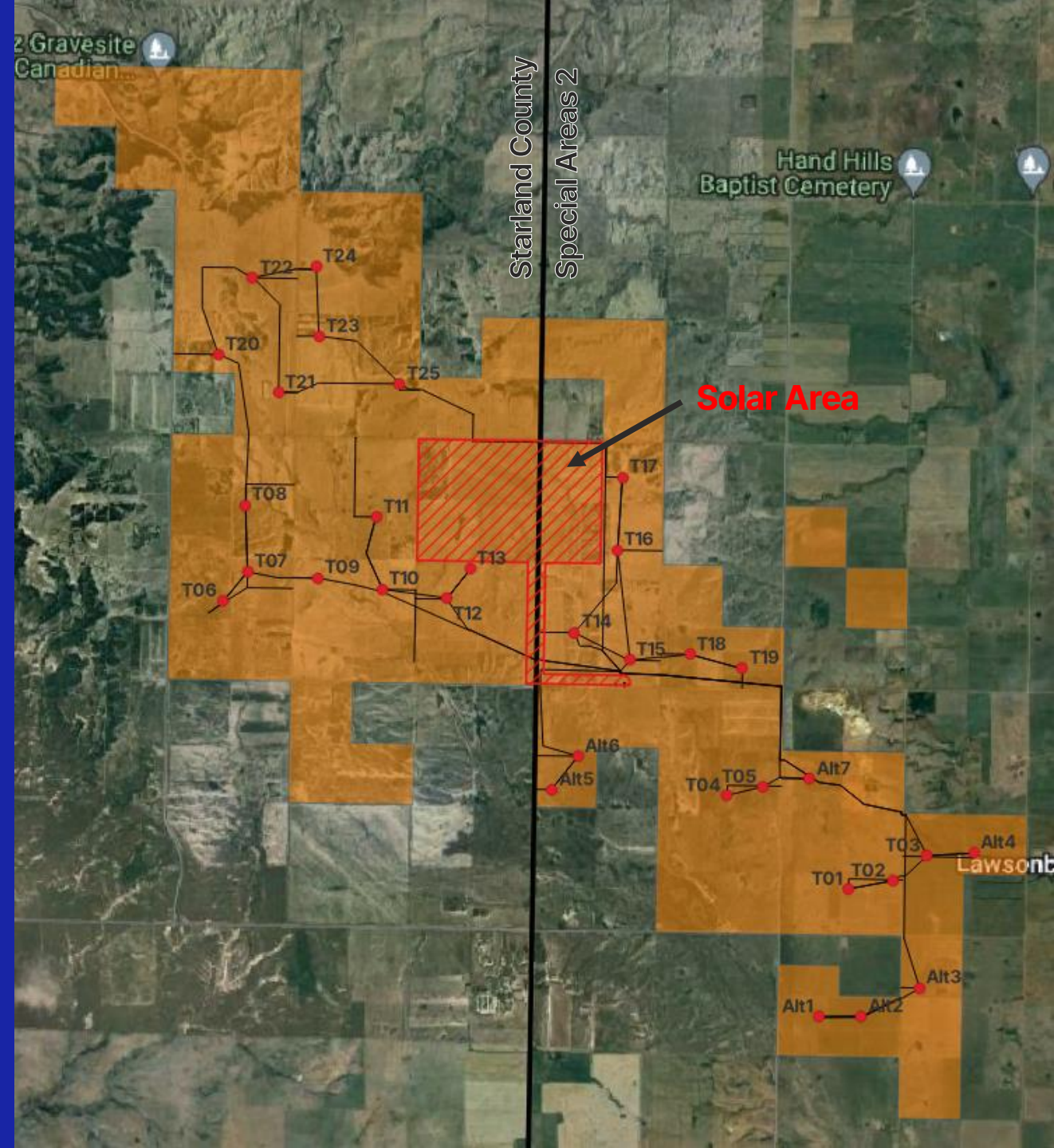




## Project Overview

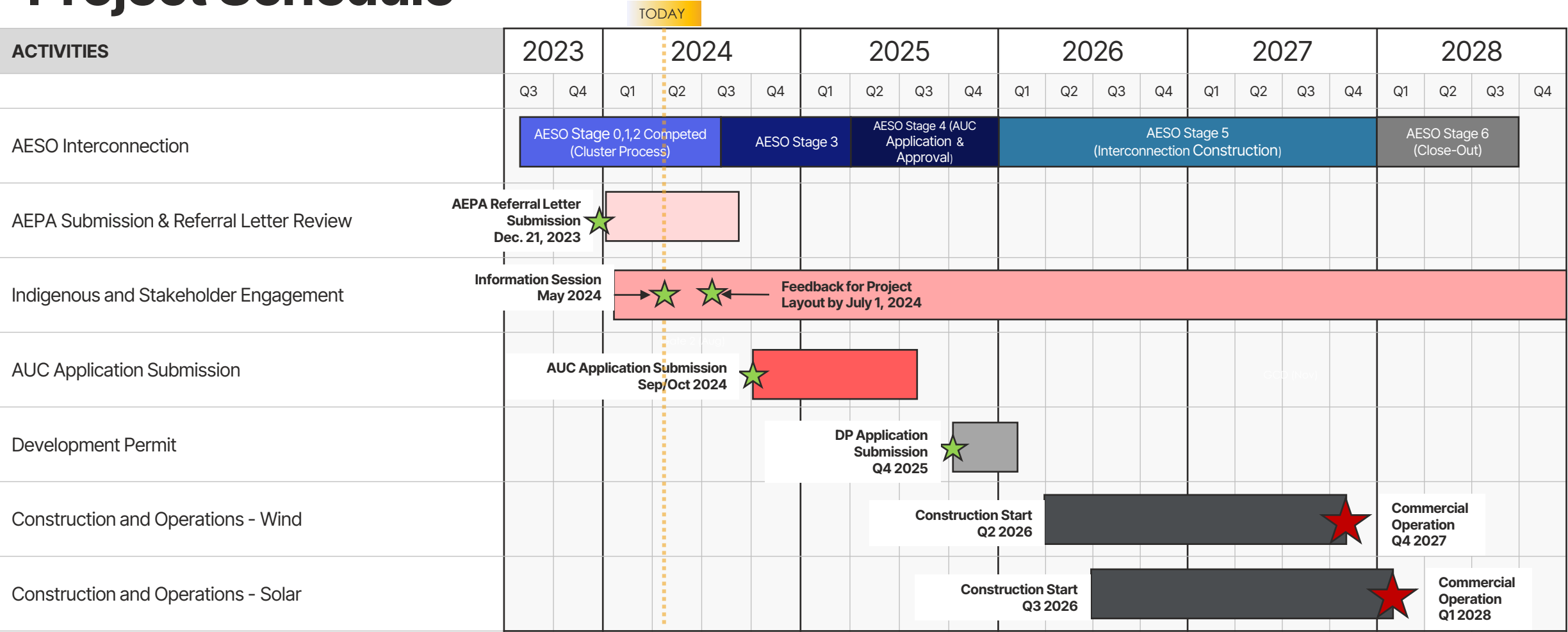
# Hand Hills Solar

- 120 MW
- Solar infrastructure: panels, racking/piles, inverter stations, collector lines (underground), access roads, shared substation with wind
- Leases held on approximately 442 ha / 1,092 acres (6 quarter sections)
  - Construction footprint ~350 ha (864 acres)
  - Operations footprint ~338 ha (835 acres)
- Spans Starland County and Special Area No. 2
- Same interconnection line to transmission grid as Hand Hills wind





# Project Schedule



# Wind and Solar Development Siting Guidelines

## Constraint (Avoid)

- ✗ Occupied residences and businesses
- ✗ Native grassland, native parkland, forested, coulees
- ✗ Known active nests, dens, leks + 100 m to 1 km around
- ✗ Water – wetlands, water bodies, or streams + 45 to 100 m around
- ✗ Steep terrain
- ✗ Contaminated / not remediated land
- ✗ Airports or air navigation infrastructure
- ✗ Named lakes plus 1,000 m around
- ✗ Important bird areas (wind and solar) plus 1,000 m around (solar)
- ✗ Pristine views
- ✗ Special access zones
- ✗ Grizzly bear zones
- ✗ Key wildlife and biodiversity zones – river valleys

## Opportunity (Build)

- ✓ Good wind and solar resource area – historical records showing steady wind and solar resource
- ✓ Supportive landowners and stakeholders
- ✓ Previously disturbed land
- ✓ Adjacent to disturbed land
- ✓ Cultivated land (Class 3+ agricultural capacity)
- ✓ Soils with low water and wind erosion risk
- ✓ Close to transmission or distribution grid in area with capacity for a renewable facility connection
- ✓ Existing municipal / county road network

## Special Areas Board No.2

### Land Use Order Setbacks WECS

- Preliminary project layout was developed based on setback distances in Land Use Order MSL:007/15
- ATCO also implementing setbacks as outlined by AER directives, pipeline rules, AER industry practices

Feature	Setback (m)
Public Road allowance and turbines	$30.48 + 85^* = 115.5$
Municipal road and collector lines	30.48
Municipal road intersections and access roads	91.44
Urban Areas	2,000
Property Line in development area	7.62
Property Line outside development	550
Residences	800
Communication tower	122.5
High voltage transmission lines	220**
Abandoned or reclaimed oil and gas well	60
Active oil and gas well	220**
Pipeline ROW	93.5^
Industrial facility	93.5^

\* 85 m blade length

\*\* 1.1 times 200 m turbine height

^ 1.1 times 85 m blade length



# Starland County

## Land Use By Law Setbacks

- Preliminary project layout was developed based on setback distances in Land Use Bylaw 1125
- ATCO also implementing setbacks as outlined by AER directives, pipeline rules, AER industry practices

Feature	Setback (m)
Public Road and Turbines	220*
Public Road and fences	7.5
Residences	1,000
Communication tower	122.5
High voltage transmission lines	220*
Abandoned or reclaimed oil and gas well	60
Active oil and gas well	220*
Pipeline ROW	93.5^
Industrial facility	93.5^

\* 1.1 times 200 m turbine height

^ 1.1 times 85 m blade length

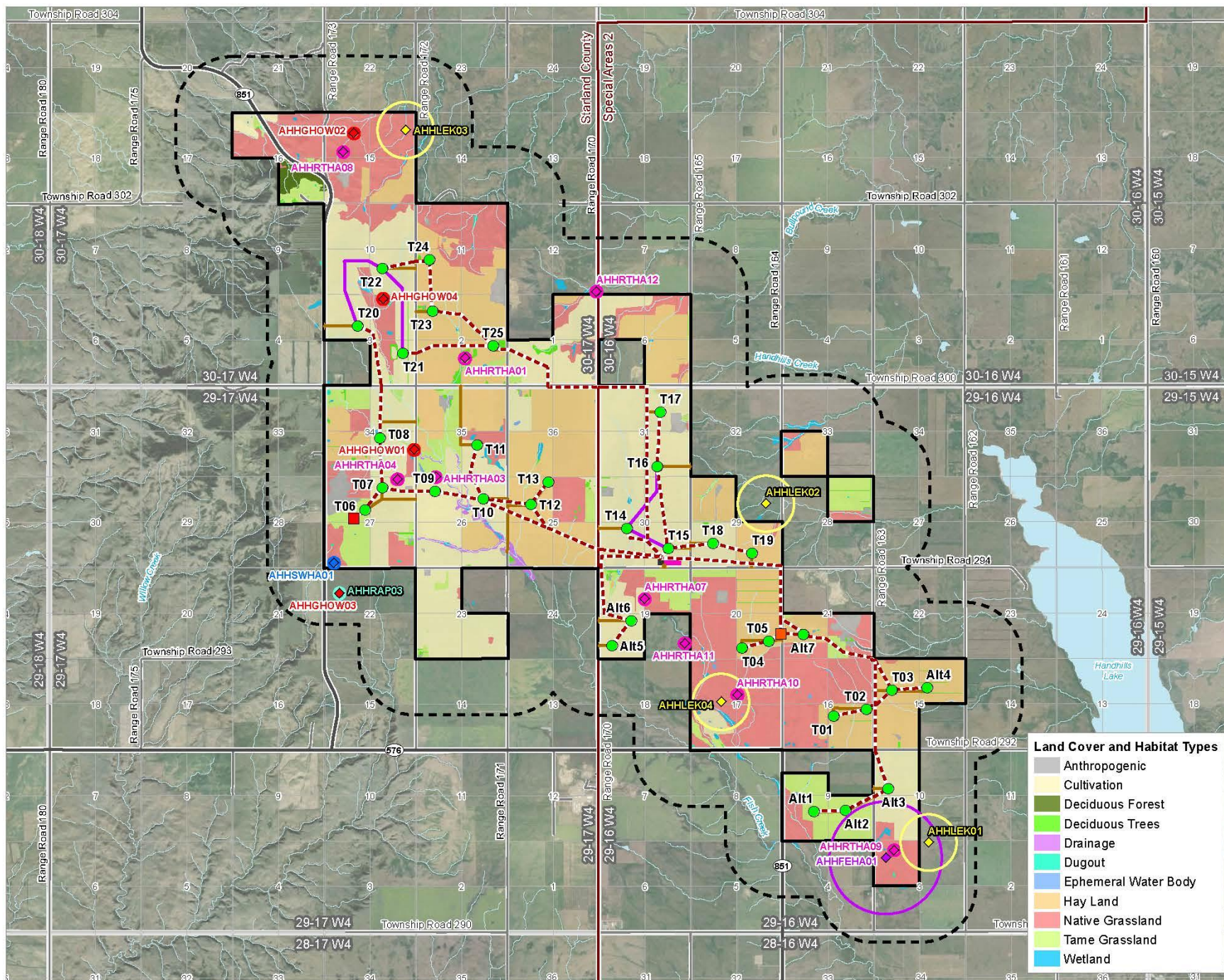
# Environmental Field Surveys

- Maskwa Environmental Consulting completed surveys in 2023 as required by Alberta's *Wildlife Directive for Wind Energy Projects in Alberta* and Alberta's *Wildlife Directive for Solar Energy Projects in Alberta*
- One active ferruginous hawk nest, three active great-horned owl nests, nine active red-tailed hawk nests, and four active sharp-tailed grouse leks were noted during the surveys
- The wind and solar facility components have been sited outside of the required setbacks for the nests and leks

Survey	Dates
Raptor nest searches	April 11 to 14, 2023 April 24 to 28, 2023 May 8 to 10, 2023 May 29 to June 2, 2023
Sharp-tailed grouse lek	Round 1 - April 11 to 14, 2023 Round 2 - April 25, 26, and 28, 2023
Burrowing Owls	May 29 to June 2, 2023
Migratory birds - spring	Round 1 – April 11 to 14, 2023 Round 2 – April 24 to 28, 2023 Round 3 – May 9 to 10, 2023
Migratory birds - fall	Round 1 – August 15 to 16, 2023 Round 2 – September 18 to 19, 2023 Round 3 – October 16 to 17, 2023
Breeding birds	Round 1 – June 5, June 12 to 14, 2023 Round 2 – June 21 to 23, 2023
Bat acoustic - spring	May 1 through May 31, 2022
Bat acoustic - fall	July 15 through October 15, 2021
Wetlands and landcover	September 5 to 12, 2023 August 14 to 16, 2023



## Wildlife Features



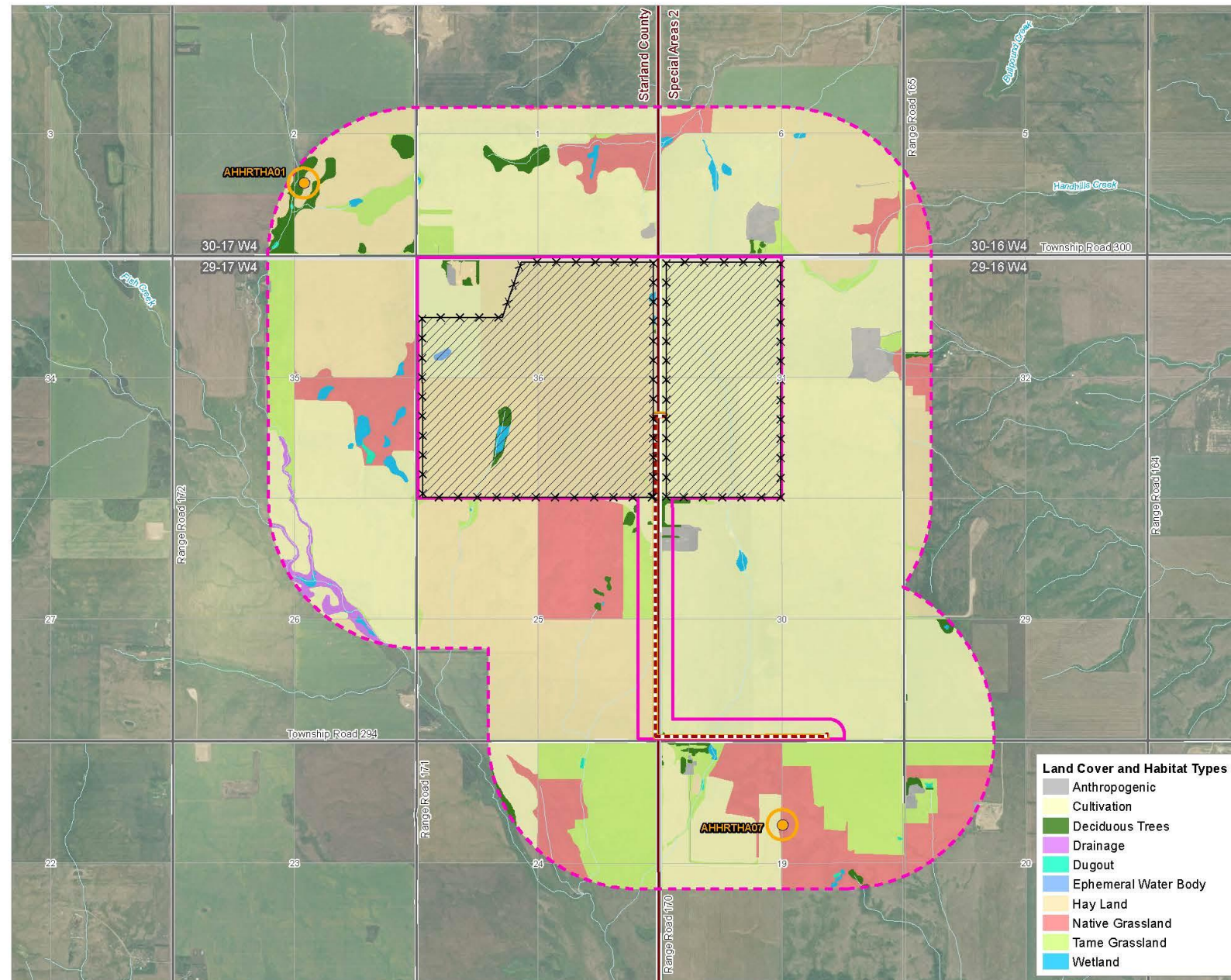
**MASKWA ENVIRONMENTAL CONSULTING**





## Wildlife Features

- Red-tailed Hawk Nest Location
- Red-tailed Hawk Nest 100 m Setback
- Project Area
- Project Area 1,000 m Setback
- Road
- Watercourse (Altalis)
- Administrative Boundary
- Water Body (Altalis)
- Project Layout**
  - Access Road
  - Collector Line
  - Fence Line
- Project Footprint**
  - Solar Block - Permanent Footprint
  - Permanent Footprint
  - Temporary Footprint





### Preliminary Site Layout with Buildable Areas

- Solar Buildable Area
- Solar Project Area
- Wind Turbine Buildable Area
- Wind Project Area
- Highway
- Road
- Watercourse (Altalis)
- Administrative Boundary
- Hand Hills Ecological Reserve
- Important Bird Area
- Hand Hills Lake 1,000 m Setback
- Water Body (Altalis)

#### Solar Project Layout

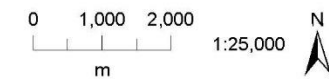
- Collector Line
- Fence Line
- Solar Block - Permanent Footprint
- Permanent Footprint
- Temporary Footprint

#### Wind Project Layout

- Junction Box
- Meteorological Tower
- Wind Turbine Generator
- Access Road
- Collection Line
- Crane Walk Path
- Underground Power and Fibre
- Laydown Area
- Project Substation
- Permanent Footprint
- Temporary Footprint

#### Land Cover and Habitat Types

- Anthropogenic
- Cultivation
- Deciduous Forest
- Deciduous Trees
- Drainage
- Dugout
- Ephemeral Water Body
- Hay Land
- Native Grassland
- Tame Grassland
- Wetland



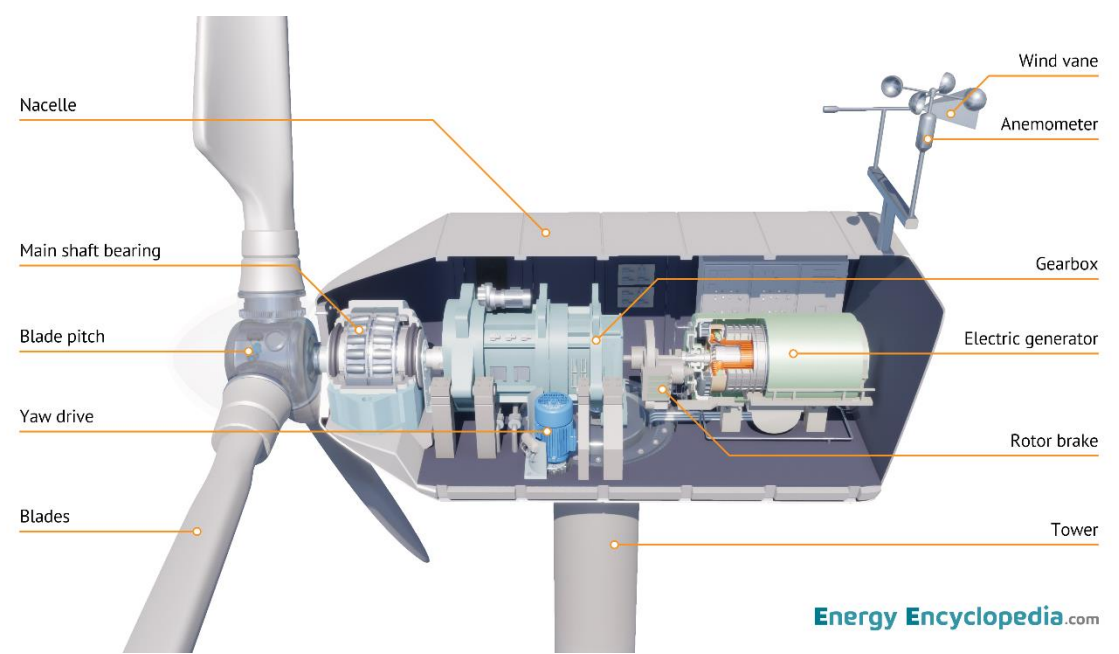
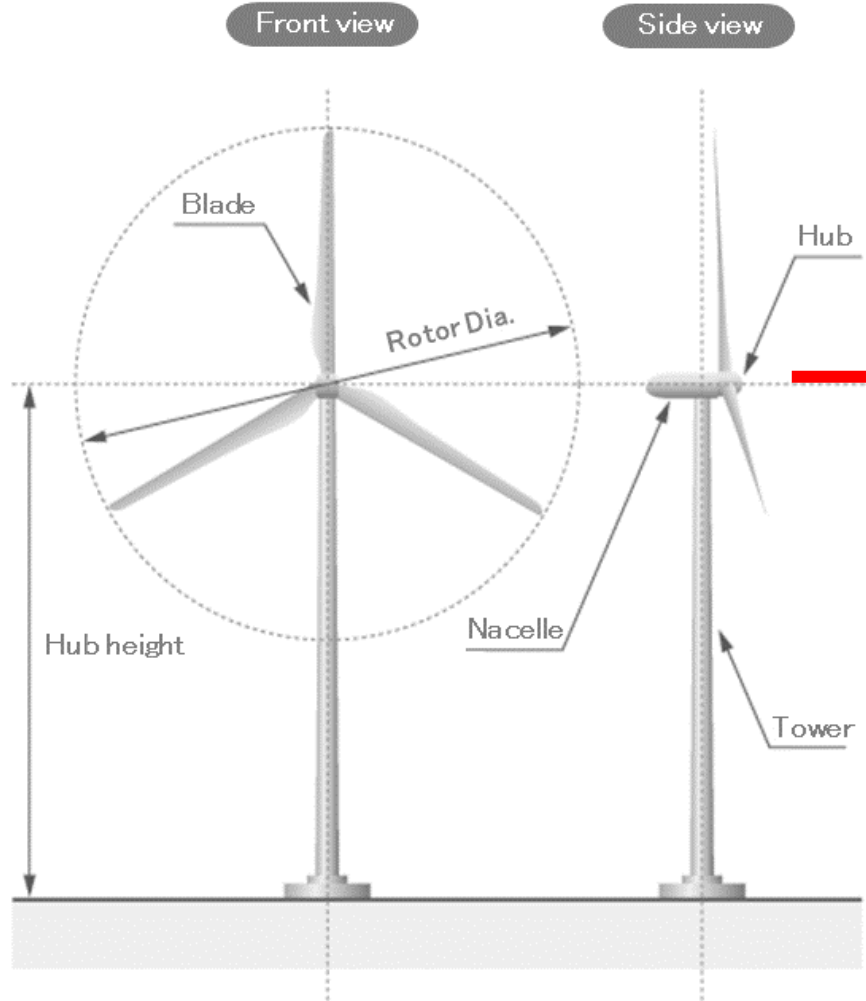
Produced For: ATCO EnPower Map Creator: J. Fanson

Map Date: May 1, 2024 Map # ATC24049-035 Rev. 0

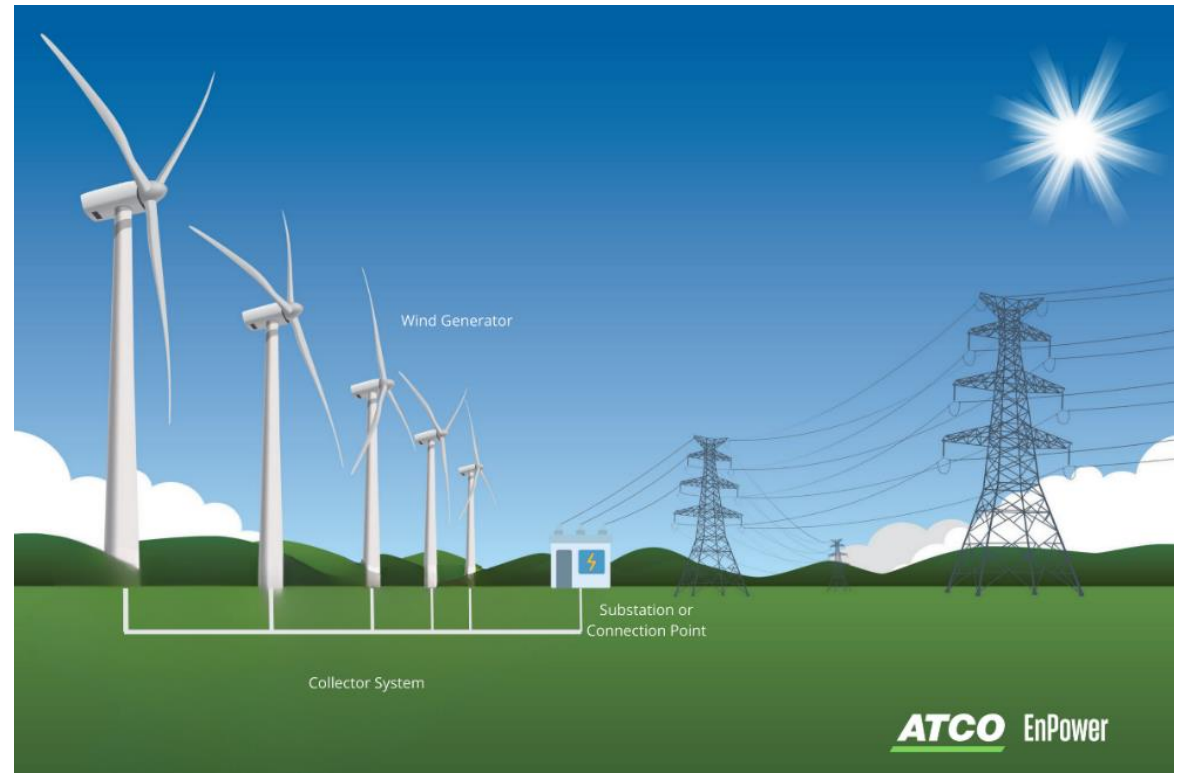
This document is created solely for the use of client named Maskwa Environmental Consulting Ltd. and is not to be used for any other purpose. No representations are made in this drawing. Although there is no reason to believe that there are any errors associated with the data used to create this map product, users of this data are advised that errors may be present. Scale of the map is 1:25,000, when printed at 11" by 17". Coordinate System: NAD 1983 UTM Zone 12N



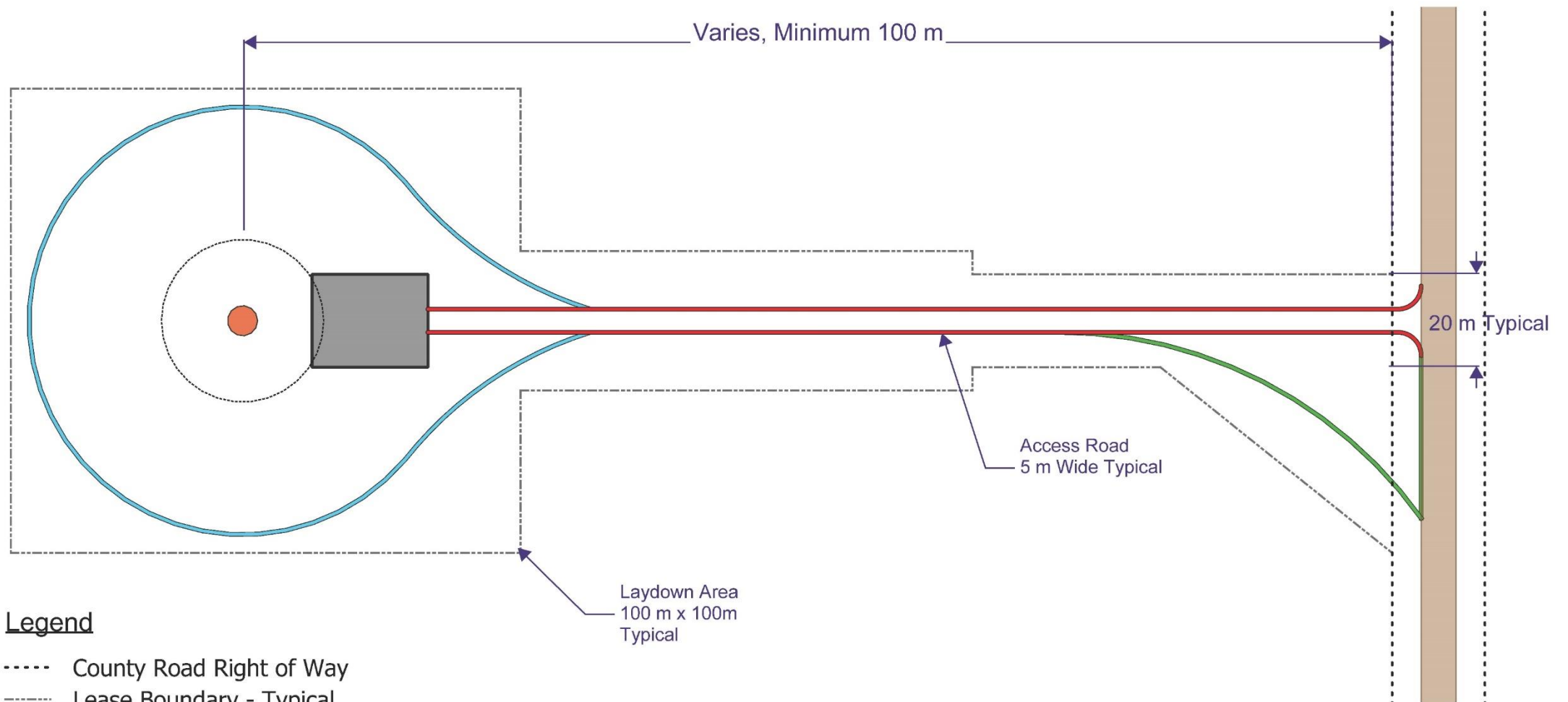
# Wind Facility Components



Energy Encyclopedia.com





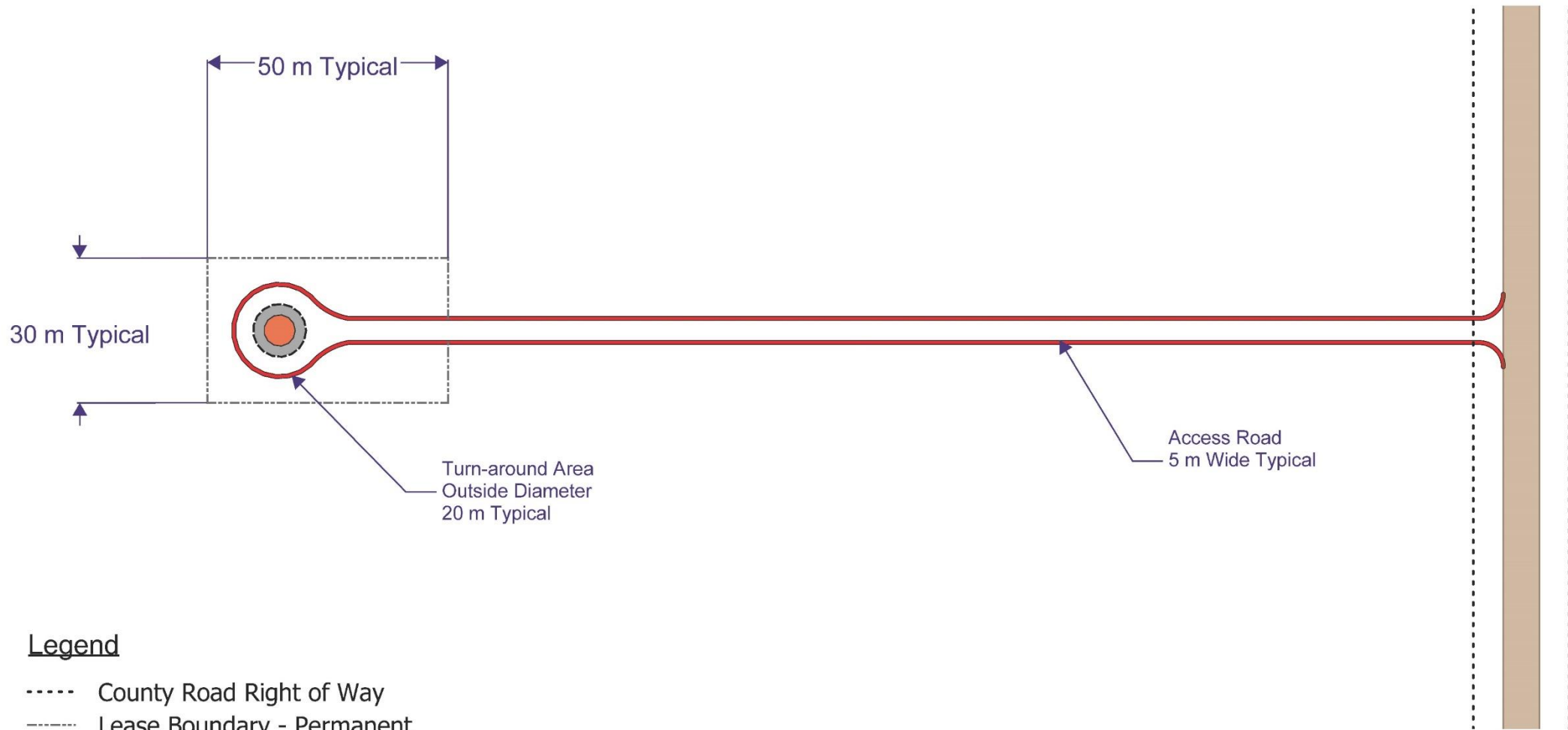


### Legend

- County Road Right of Way
- ..... Lease Boundary - Typical
- Existing County Road
- Turbine Foundation Excavation Extents
- Road - During Construction
- Intersection Improvement (Temporary)
- Turbine Assembly Area (Temporary)
- Crane Pad (Temporary)
- Turbine Foundation Pedestal

**ATCO** EnPower

Typical Wind Turbine Area Layout  
Construction Period



### Legend

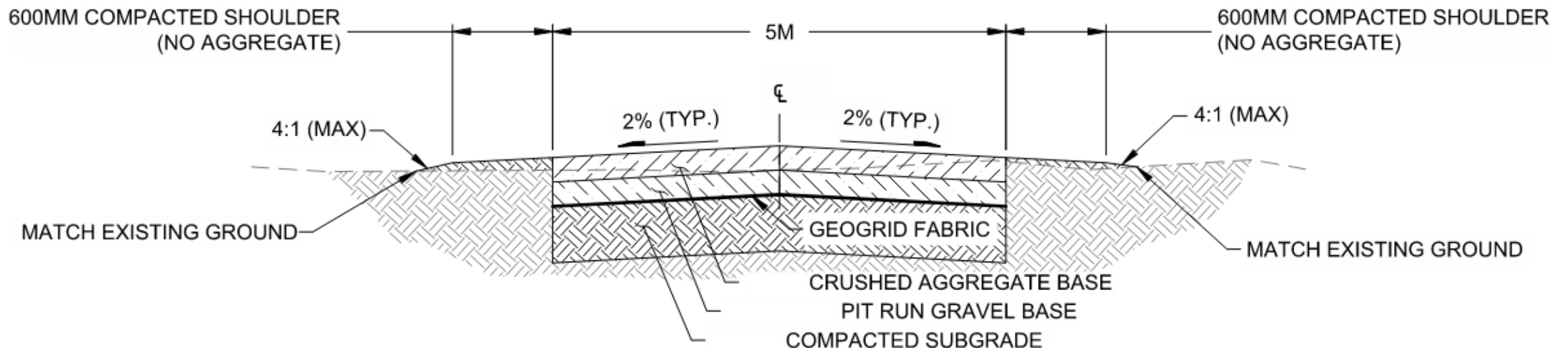
- County Road Right of Way
- Lease Boundary - Permanent
- Existing County Road
- Turbine Foundation Pedestal
- Road - Permanent
- Insulating Gravel

**ATCO** EnPower

Typical Wind Turbine Area Layout  
Operational Period (Post Construction)

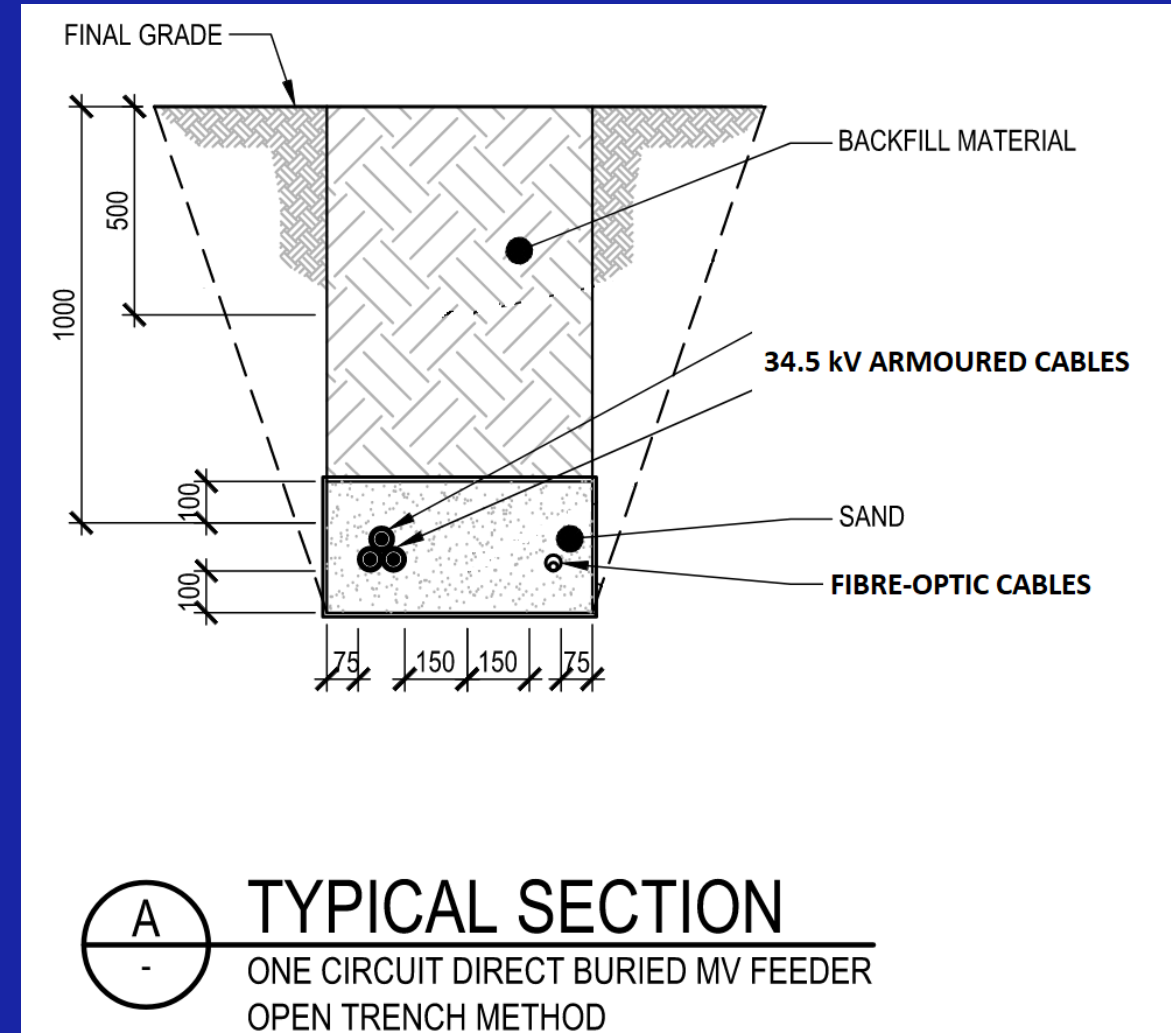
# New Access Roads

- New permanent roads to wind turbines and substation
- “Road at Grade” design
  - To minimize impact to agricultural activity
  - Road is blended with existing grades where feasible
- Drainage designed to maintain natural drainage paths



# Collector Cables

- Topsoil stripped and stockpiled to avoid mixing with subsoil
- Collector cables buried to depth according to Canadian electrical code
- Imported sand surrounds cables
- Final grade blended to existing
- Topsoil replaced to pre-construction thickness
- "Warning tape" installed above all cables to mitigate risk of accidental exposure or contact





Reclaimed Collector Lines



Collector line locations at ATCO Forty Mile Wind one season after construction





Solar Facility Components



Solar Array of Piles and Racking



Inverter / Transformer Unit Installed on Piles



Solar Panels Installed on Racking and Piles



# What will the Project look like?





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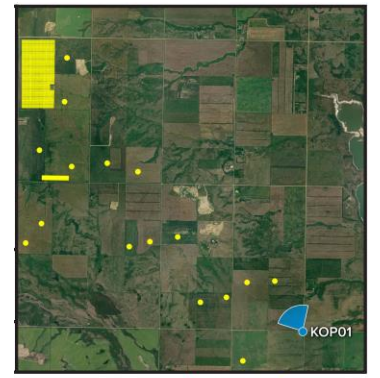
## **Current View**

KP01 - Intersection of Range Road 162 and Township Road 292



## **Proposed View**

Looking northwest towards turbines  
Closest turbine is 1.3 km away





# What will the Project look like?



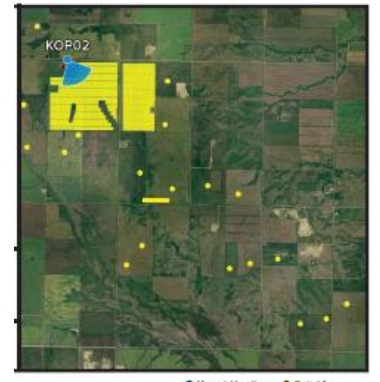
## **Current View**

KP02 – East of intersection of Township Road 300 and Range Road 171



## **Proposed View**

Looking southeast towards solar panels and wind turbines. Closest turbine is 1.7 km south of the viewpoint

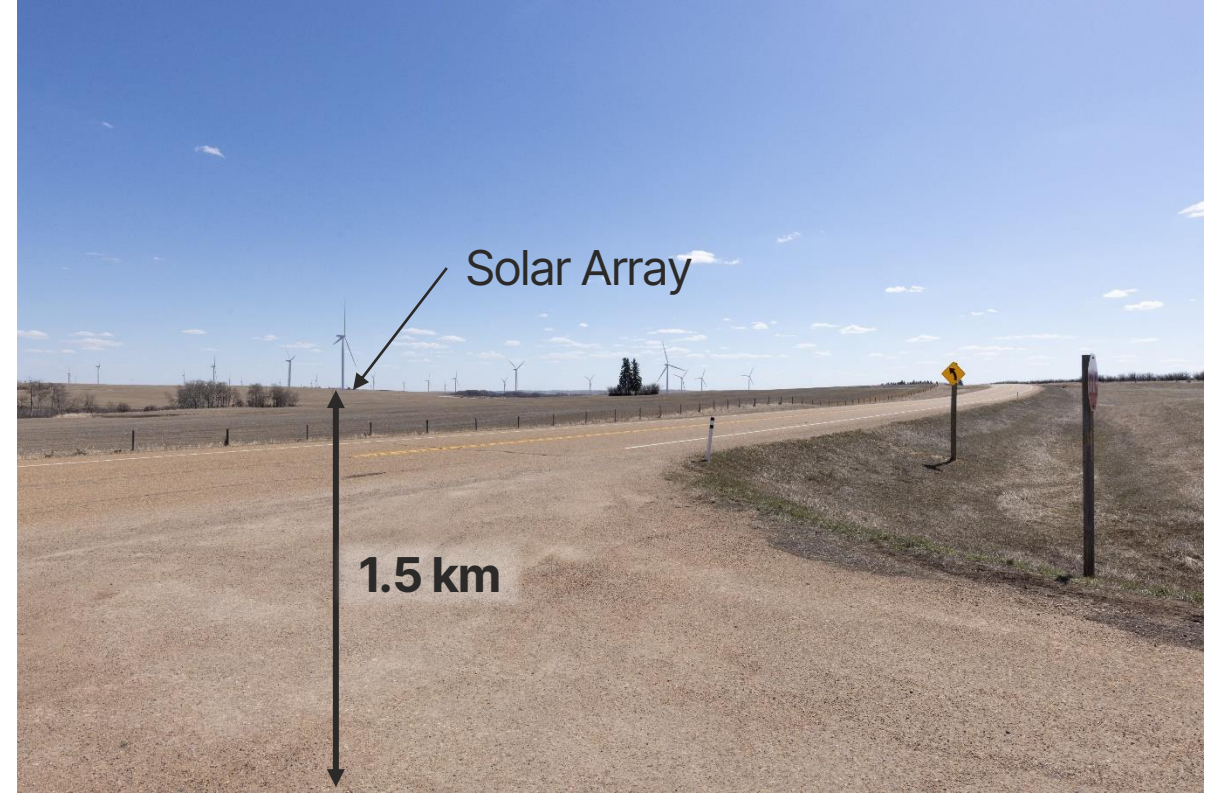




# What will the Project look like?



**Current View**  
KP03 – Highway 851



**Proposed View**  
Looking southeast towards wind turbines  
Closest turbine is 1.5 km from viewpoint

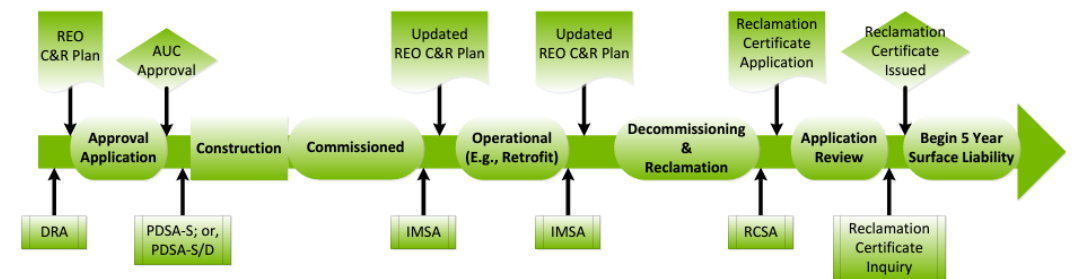




# Reclamation and Decommissioning

- At the end of the serviceable life of the turbines (usually 30 to 35 years) the Project will be decommissioned or repowered following the requirements in the Government of Alberta's Conservation and Reclamation Directive for Renewable Energy Operations.
- Solar above ground equipment will be dismantled and removed. Wind turbines, O+M building, and substation components will be removed.
- Concrete wind turbine foundations up to a depth of 1.2 m below grade removed.

## CONSERVATION AND RECLAMATION DIRECTIVE FOR RENEWABLE ENERGY OPERATIONS Alberta Environment and Parks



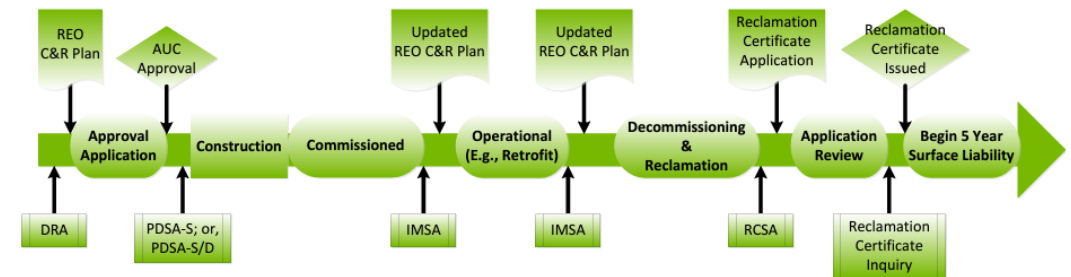
Abbrev. AUC: Alberta Utilities Commission; C&R: Conservation and Reclamation; DRA: Desktop Review Assessment; PDSA: Pre-disturbance site assessment; PDSA-S: PDSA using shallow soil assessment; and, PDSA-S/D: PDSA using shallow and deep soil assessment; IMSA: Interim monitoring site assessment; RCSA: Reclamation certificate site assessment; REO: Renewable Energy Operation.

Figure 1. Schematic showing conceptual process from application to closure for C&R plans (and updates), monitoring, assessment, and reporting requirements for REOs (timeframe is not to scale).

# Reclamation and Decommissioning (cont'd)

- Buried infrastructure such as the collector lines will be deenergized and cut or capped off.
- Buried infrastructure above 1.0 m depth removed while buried infrastructure below 1.0 m will remain in place permanently based on landowner requirements.
- Gravel will be removed from the Project site and the Project operations footprint will be seeded based on the landowner's preference and requirements at the time.

## CONSERVATION AND RECLAMATION DIRECTIVE FOR RENEWABLE ENERGY OPERATIONS Alberta Environment and Parks



Abbrev. AUC: Alberta Utilities Commission; C&R: Conservation and Reclamation; DRA: Desktop Review Assessment; PDSA: Pre-disturbance site assessment; PDSA-S: PDSA using shallow soil assessment; and, PDSA-S/D: PDSA using shallow and deep soil assessment; IMSA: Interim monitoring site assessment; RCSA: Reclamation certificate site assessment; REO: Renewable Energy Operation.

Figure 1. Schematic showing conceptual process from application to closure for C&R plans (and updates), monitoring, assessment, and reporting requirements for REOs (timeframe is not to scale).

# Decommissioning Costs – Paid by ATCO

- ATCO is liable for the costs of decommissioning and reclamation under the terms of the lease agreements with host wind and solar facility landowners
- ATCO will engage a qualified third party with experience in renewable energy facility reclamation to study and evaluate the cost of reclaiming the Project site.
- The estimated decommissioning and reclamation costs will be placed into a form of decommissioning security such as a letter of credit, parent company guarantee, or reclamation bond.
- Funds will be withdrawn from the decommissioning security to cover the costs for final reclamation and decommissioning and the funds will be accessible to the landowners, AUC, or the Government of Alberta in case the tenant is unable to meet its decommissioning obligations
- ATCO will comply with reclamation and decommissioning requirements as outlined in AUC Rule 007 at the time of submission of the AUC Rule 007 applications for the Project



Photo source: Wind Europe <https://windeurope.org/newsroom/press-releases/what-happens-when-wind-turbines-get-old-new-industry-guidance-document-for-dismantling-and-decommissioning/>



# Community Benefits

- Power produced per year enough to power 115,000 homes and offset 360,000 tonnes of carbon dioxide
- 300 to 500 temporary jobs during construction
- Local services required for food, accommodations, other services
- Estimated County tax revenues an average of **\$7 million per year**
- ATCO Community Investment Program





# Questions





# Thank you

[ATCO.com/EnPower](https://atco.com/EnPower)

[www.atco.com/handhills-hybrid](https://www.atco.com/handhills-hybrid)

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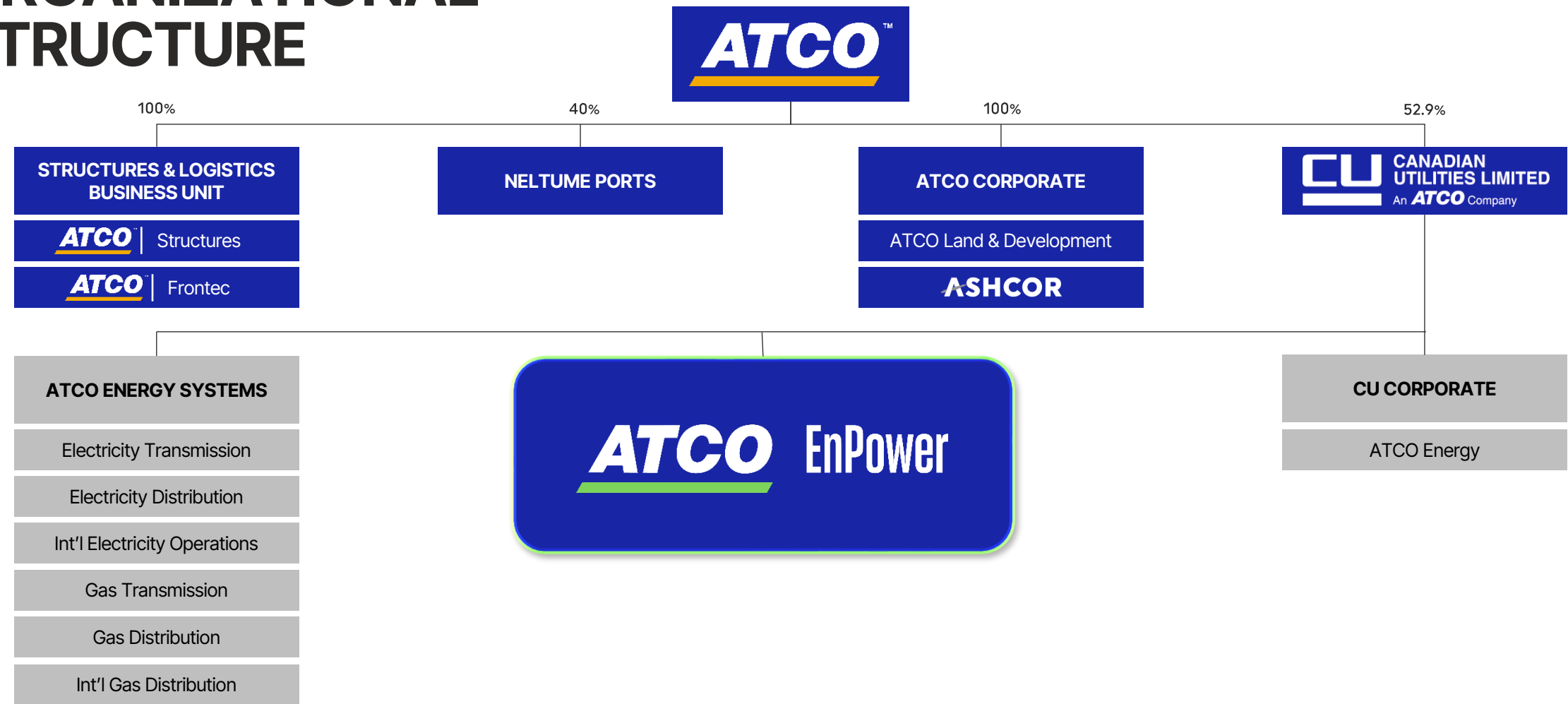






# Supplemental Slides

# ORGANIZATIONAL STRUCTURE









# ATCO HAS MADE A PUBLIC COMMITMENT TO ACHIEVE NET-ZERO EMISSIONS BY 2050





ATCO will either emit zero GHGs from our operations or through our customers' use of our products and services, or we will offset residual emissions.

Strategic 2030 ESG Targets

Supporting the energy diversification and reducing GHG emissions

-  Reduce GHG emissions to earnings intensity by 30%
-  Reduce our customers' GHG emissions by 2 million tonnes
-  Own/develop/manage over 1000 MW of renewable energy
-  20% of revenues from transitional products and services

Promoting inclusive growth in our workforce and communities

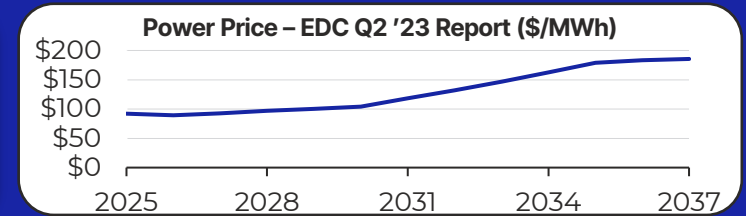
-  40% net economic benefit increase for Indigenous partners
-  Achieve and maintain at least 30% female representation
-  Achieve and maintain at least 25% minority representation
-  Lead in health and safety practices and performance

1. Above targets established at the ATCO Ltd. level with an expectation that all portfolio companies, including Canadian Utilities Limited, contribute to the achievement of these targets.

# Focus within the Attractive Alberta Renewables Market

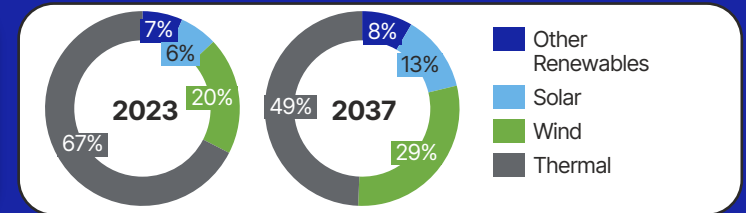
## Favorable Market Structure

- Open and deregulated energy-only market
- Market enables bilateral corporate VPPA; increases financeability
- Zero-congestion policy



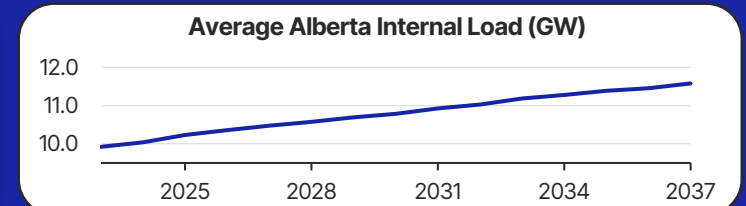
## Supportive Fuel Mix

- Alberta Renewable Energy Act target of 30% (~5GW) renewable generation by 2030, along with expected 2023 coal retirements, present a compelling case for renewable generation



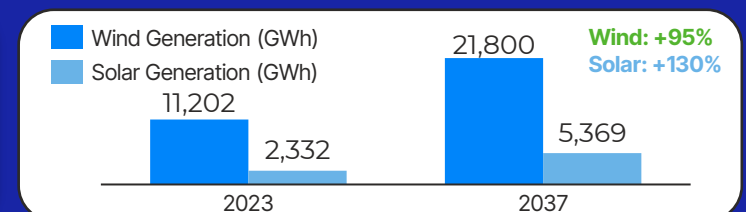
## Visible Growth Drivers

- Federally mandated carbon price rising to \$170/t by 2030 creating demand for environmental attributes
- Substantial load growth expected



## Compelling Market Outlook

- Alberta has one of the strongest wind and solar resource profiles in the country





# WHY RENEWABLE GENERATION?

We continue to grow our renewables portfolio, as this is critical to both our business strategy and sustainability commitments.

Wind and solar are well-suited to scalable development, providing incremental power to the grid to meet new demand. Hydro plays an important role, providing a steady and predictable baseload of power.

## Climate Change And Environment Stewardship

As we look to reduce the carbon intensity of our electricity systems globally, solar and other renewable sources of generation have a key role to play.

## Indigenous And Community Partnerships

ATCO EnPower has fostered partnerships with Indigenous Communities at four of the renewable generation sites: Deerfoot and Barlow Solar (51% Chiniki and Goodstoney First Nations), Oldman River Hydro (25% Piikani First Nation), and Adelaide Wind (25% Aamjiwnaang First Nation). These partnerships help generate economic returns for the Indigenous communities and contribute to the lasting prosperity of the Nations for future generations.

## What Renewables Bring To The Market



**Broad Access To Clean Energy From Renewable Sources**



**Elimination Of Tons Of Carbon Production Every Year**



**Energy Flexibility In Remote Areas**



**Cost Savings**

# RECENT CANADIAN RENEWABLE PORTFOLIO ACQUISITION

- In January 2023, Canadian Utilities acquired 2 operating wind assets and a development pipeline of wind and solar projects.
- The acquisition includes a majority interest in the 40 MW Adelaide wind facility in Ontario, the new 202 MW Forty Mile wind project in Alberta, and a development pipeline with more than 1,500 MW of wind and solar projects at various stages of development, including several late-stage projects.
- Concurrent with the close of the acquisition, Canadian Utilities entered into a 15-year renewable energy purchase agreement (REPA) with Microsoft Corporation for 150 MW of offtake at Forty Mile Wind.
- Adelaide is also contracted under a long-term power purchase agreement.



## Purchase Price

\$713 million

## Transaction Close

January 3, 2023

## ESG Alignment

Clear path towards achieving our ESG target of owning, developing or managing over 1,000 MW of renewable energy by 2030 and furthers our target of increasing net economic benefits to our indigenous partners by 40 per cent.



# Growing Renewables Portfolio

**360 MW**

WIND + SOLAR IN  
ALBERTA AND ONTARIO  
IN OPERATION

**220 MW**

SOLAR - PLANNED FID IN  
Q3 2024

**59 MW**

RUN-OF-RIVER HYDRO  
IN ALBERTA & MEXICO

**+2,000 MW**

DEVELOPMENT PIPELINE  
(WIND/SOLAR/STORAGE)



# ALBERTA PORTFOLIO

Project	Status	Size (MW <sub>AC</sub> )	COD Potential
Barlow Solar	Energized	27	Q2 2023
Deerfoot Solar	Energized	37	Q3 2023
Empress Solar	Energized	39	Q4 2023
Forty Mile Solar	Pre-Construction	220	2026
<b>Hand Hills Wind/Solar</b>	<b>Development</b>	<b>300</b>	<b>2027</b>
Alberta BESS 1	Development	23	2025
Craig Lake Wind	Development	246	2027
Alberta BESS 2	Development	23	2027
Kitscoty Wind	Development	174	2028
Confidential Wind+Solar	Development	800+	2027-2030
Forty Mile Wind Phase II	Development	200	2028-2030
Silver Sage Solar	Development	20	2030-2032
Red Deer Solar	Development	200	Post-2030
Prairie Rose Solar	Development	250	Post-2030
Copper Creek Solar	Development	20	Post-2030
<b>Total</b>		<b>2,479</b>	

## Development Asset Map

