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TO: AUC Engage via email engage@auc.ab.ca

SUBJECT: AUC Engage Rule 007 Input

First, we would like to thank the AUC for the opportunity to provide input to Rule 007 in both a public meeting in May, 2024, and now in written form.

This Rule 007 feedback is focused on three topics:

1. Established approval process and the public interest

2. Best Practices and Risk Mitigation
    a. Ice Throw
    b. Fire Safety
    c. Turbulence, General Aviation and Wind Rights

3. Setback Recommendations & Justification

All of our experience and research to date has been on the topic of wind farms, so our comments exclude solar and other renewable energy power plant sources.

1. Established approval process and the public interest

"The AUC uses an established process to review social, economic and environmental impacts of facility projects to decide if approval of a project is in the public interest." (1)

Public interest refers to the common good or welfare of the general public, as opposed to the interests of a particular individual or group, and needs to affect a significant part of the public or community.

Clearly, the AUC strives to ensure that the concerns of Albertans that are locally impacted by wind farm projects are heard. Based on the Alberta Municipal Affairs 2023 Population List (2); the 47 AESO grid-connected wind farms in Alberta (3) directly impact 68,086 residents, in 15 rural municipalities (4), or 1.5% of the total provincial population of more than 4.4 million.

If the AUC looked solely at the net benefit to the majority of Albertans, based simply on electricity generation and cash flow, each application would be a slam dunk.

The process is transparent and accountable at the AUC level, but in our experience, this is not the case at a project proponent level.

Non-disclosure agreements (with landowners) and with impacted non-participating residents (in the form of monetary compensation in exchange for the agreement not to pursue nuisance claims if impacted by an approved project), are common. These agreements are not required to be negotiated using a licensed land agent; and no government review process is in place for these agreements to help ensure justice and fair treatment for all Albertans impacted by them.

The AUC does not appear to uphold standards of integrity that conflict with project commercial interests. Wind farms are developed on locations based on simple surface land availability, and private owner interest. Community ownership is not required, and benefits are limited primarily to property taxes and short-term construction work.

Worse, industry best practices are treated as guidelines.

The AUC does not require an explanation for why best practices are disregarded beyond risk metrics. This effectively transfers the risk inherent in not following "gold standards" to local residents and government bodies versus working to eliminate them by making the project better to start with.

Like many things, you pay up front, or afterwards – in its decisions, the AUC appears to rely on risk mitigation measures and after-the-fact enforcement and penalties.

"Prior to the submission deadline provided in the notice, formal submissions of outstanding concerns and unresolved objections about a project may be submitted to the AUC. To submit a concern, participants will need to register to participate in the proceeding, which involves providing a brief written statement called a statement of intent to participate. Submissions are filed electronically through the eFiling System. The information filed becomes part of the public record and is an important part of the process to ensure that outstanding concerns are heard, understood and considered." (5)

Concerned residents that register to participate in the AUC proceedings are compensated for legal counsel and reasonable costs associated with obtaining expert testimony, if a hearing is held, but this truly feels like an unnecessarily divisive, onerous, stressful and expensive process.

We believe most Albertans would far sooner trust that the AUC is making sure that industry best practices are being followed, rather than arguing degrees of risk, as vested amateurs, against people and corporations who do this to make a living.

2. Best Practices and Risk Mitigation

As previously stated, having reviewed several wind farm decisions, it appears that the AUC's current approval process is weighted to support a cost:benefit approach to wind power plant safety issues. Industry safety standards appear to be treated as negotiable items versus regarding community and public safety as core components to AUC decision-making.

a. Ice Throw

The Canadian Renewable Energy Association (CanREA) (6) recommends siting wind turbines at 1.5 x (hub height + rotor diameter).

HEIGHT MATTERS - the taller a wind turbine is, the longer distance ice will be thrown if shed from a moving turbine. This is a simple, easy to understand formula easily allows setbacks to keep pace with the reality of rapidly changing renewable technology.

If public safety is a core value, this should mean that no wind turbine would be placed closer than this recommend setback to a public road. Current provincial highway minimum setbacks are 70 m from the roadway centre line. (7); with municipal standards for local roads often lower.

Many AUC-approved wind farms have wind turbines that are more than 200 m tall. This is a public safety gap that the AUC could address by requiring this best practice to be respected, especially as more development is proposed in areas where chinook winds cannot be relied on to counter icing risk.

b. Fire Safety

Since wind turbines are large, stand-alone systems, fire damage within a wind farm may be limited to a single turbine. Automatic fire extinguishing systems are optional, at the time of turbine purchase.

Installation of automatic fire extinguishing systems is current (2022) best practice in Europe. (8) North American National Fire Protection Association Standard 850 (9) also identifies automatic fire extinguishing systems as recommended practice.

Wind farms are located in rural locations with no on-site staff, and very limited access to firefighting resources *(rural departments rely on volunteers)* and firefighting equipment (*to be able to access and pump water the height of a skyscraper would be out of the question even with co-response from nearby town fire departments).*

Automatic fire extinguishing systems should be a mandatory AUC requirement to help ensure fire safety for the residents in the communities surrounding wind farms.

In addition, the mandatory Emergency Response Plan for each wind farm should include protocols for either manual shutdown (on site) or automatic shutdown via protocols activated by local fire authorities, based on pre-defined conditions, such as extreme fire risk situations, during wildfire season.

(*In the same way ice is thrown from blade tips, live sparks can inadvertently be transferred through downwind turbulence by a wind turbine operating near an uncontrolled wildfire.)*

c. Turbulence, General Aviation and Wind Rights

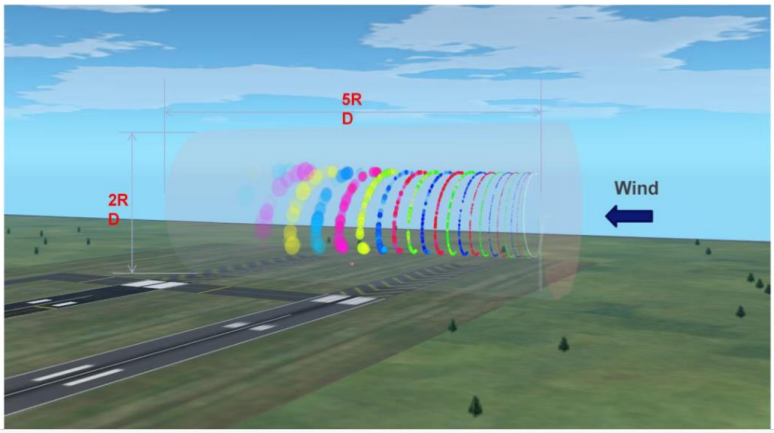
Turbulence

Wind turbines create electricity by rotating. **MOVEMENT MATTERS.**

When they move, turbine blades create a turbulence wake which is 2 rotor diameters high (vertical), and 5 rotor diameters long (downwind).

Source: CAA Policy and Guidelines on Wind Turbines, CAP 764 (10).

Figure 2: The cylindrical region downwind the rotor should be avoided. Its size is 5RD (downwind) by 2RD (vertical). Coloured helices indicate wake vortices and decay.



Movement matters - in addition to being hazardous for aviation and wildlife flying within this area, turbulence wake impacts also include:

a. direct impact on neighbouring landowner property wind rights
b. possible conduction of sparks contributing to unintended wildfire or turbine fire spread
c. and at ground level, conducting smoke or snow causing visibility, and potential drifting concerns on nearby roadways

General Aviation

Transport Canada publication TP1247E Aviation - Land Use In The Vicinity of Aerodromes (11) clearly outlines 4,000 m as the recommended obstacle limitation distance (**for objects taller than 45 m**) for aviation safety best practice for all aerodromes.

Transport Canada is the aviation safety expert, and their safety recommendations are being ignored. This can, and has resulted in unsafe outcomes, as evidenced by Decision 22736, for the Lafine Wind Project, where two wind turbines were proposed, approved and built in the direct flight path for the Oyen Airport.

This resulted in the disruption of air ambulance services for several months due to Alberta Health Services (AHS) pilot-identified safety concerns. (12) 24 hour air ambulance has been restored, though large, unanticipated capital investment by regional municipalities in an Automated Weather Observation Service (AWOS) and instrument approach systems at the Consort, Hanna and Oyen airports. (13)

This mitigation has not removed the aviation risk for other general aviation VFR (visual flight rules / non-instrument) pilots using these airports.

3. **Setback Recommendations & Justification**

The following table summarizes setback best practices detailed previously for Ice Throw, Fire Safety, Turbulence, General Aviation and Wind Rights.

The final column addresses setbacks for peoples' concerns regarding the impact an industrial wind farm will have on their ability to enjoy their property based on visual impact, annoyance and health concerns, which does not have an agreed upon Best Practice.

PEOPLE MATTER

We have included a setback range from a:

- minimum of 800 m / .5 miles to property line (based on an Alberta Agricultural Operations Practices Act distance for directly affected parties, for a confined feeding operation of 500 or fewer animals) (14) to a

- maximum of 10 x Turbine Height (the "Gold Standard" in Germany, where wind turbines have been operating for many decades.) For a 200 m tall turbine, this equals 2,000 m or 1.25 miles.

  Re: this 10 x H German standard – historically, for this setback no minimum community ownership was required. European countries are now looking at lowering this setback to allow more development, but are requiring minimum community ownership to help offset this by dramatically increasing the community benefit.

Somewhere in between – a minimum 1,600 m or 1 mile from wind turbine base to property line – is a manageable compromise we could support.

Setback Recommendations Based on Best Practices for an Industrial Wind Farm				
Infrastructure Type	Ice Throw	Fire Safety	Turbulence, General Aviation & Wind Rights	People Matter (visibility, annoyance, health concerns)
Occupied Structures				
Residence (rural)	1.5 x Total Height to property line (People use their yards for recreation)	5 x Rotor Diameter to property line	Minimum 5 x Rotor Diameter from property line (To protect non-participating landowner wind rights)	Minimum 800 m (.5 miles from boundary of land the wind turbine is situated on) Maximum 10 x Total Height from residence Recommended 1,600 m or 1 mile
Industrial Facility (rural) e.g. oil well lease	1.5 x Total Height	5 x Rotor Diameter		
Residence (town, village or hamlet)	1.5 x Total Height from municipal boundary	5 x Rotor Diameter from municipal boundary		10 x Total Height from municipal boundary (since many more people are impacted – need more setback)
Business or Industrial (within municipal boundaries)				
Hospital				
School				
Public Use Areas				
Parks & Recreational Areas	1.5 x Total Height	5 x Rotor Diameter		
Transportation				
Road (provincial highway or one that has high public usage – e.g. school bus route)	1.5 x Total Height to road allowance		5 x Rotor Diameter to road allowance (to mitigate reduced visibility (dust, snow) and/or loss of control due to drifting or gusts)	
Local Road	3.5 x Total Height to road allowance			
Railway	1.5 x Total Height to centre of tracks	5 x Rotor Diameter		
Aerodrome (obstacle clearance)			4,000 m from centre of runway	
General Aviation (in transit) and Avian Wildlife			Vertical Ground to 2x Rotor Diameter Horizontal 5x Rotor Diameter	

We are currently working at an MD level to have these safety issues addressed, but it would seem much more effective to have standards set provincially based on best practices, at the level of the energy experts – the AUC, versus by 69 member Councils of the Rural Municipalities Association (RMA), through ongoing bylaw amendments. This would also support the perception that the AUC's decision making process is in support of, and is fair to all Albertans, regardless of where they live.

Finally, in terms of market forces, this would level the playing field for all project proponents – the current system acts a disincentive for those who do better.

Thank you for your consideration.

Burt Hockey and Jackie Garvin

Information Sources

1. Alberta Utilities Commission (AUC), 2024 Review process for facility applications, *Overview* https://www.auc.ab.ca/facility-application-review-process-steps/

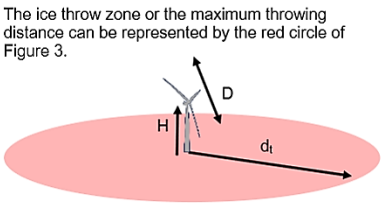
2. Alberta Municipal Affairs 2023 Population List https://open.alberta.ca/dataset/8dae0ffd-dbb7-46f7-89eb-efa64b2ce385/resource/cfc78859-cfe0-427a-ad22-d2ed407d0f95/download/2023-mapl-worksheets-for-website.xlsx

3. AESO Current Supply Demand Report, *August 31, 2024* http://ets.aeso.ca/ets_web/ip/Market/Reports/CSDReportServlet

4. Municipality has been identified based on the wind farm name taken from the AESO Current Supply Demand Report and public data on either individual corporate or Alberta Major Projects websites; *spreadsheet with analysis available upon request. (J. Garvin)*

5. AUC Review Process for Facility Applications, *Step 4 – Submissions to the AUC* https://www.auc.ab.ca/facility-application-review-process-steps/

6. Canadian Renewable Energy Association Operations & Maintenance, *Hazards Related to Icing, Ice Throw, Figure 3* https://renewablesassociation.ca/wp-content/uploads/2021/01/Best-Practices-for-Wind-Farm-Icing-and-Cold-Climate_June2020.pdf



7. Government of Alberta, Provincial Highway Roadside Development Permits, *Minimum setback,* https://www.alberta.ca/roadside-development-permits
"The general minimum setback for all development is 40 metres from the highway right-of-way boundary or 70 metres from the roadway/approach centreline, whichever is greater, except where these distances must be increased to allow for highway widening or other improvements."

8. The Confederation of Fire Protection Associations Europe (CFPA-Europe), Wind turbines fire protection guideline, *Section 5.2.2 Fire Fighting* https://cfpa-e.eu/app/uploads/2022/05/CFPA_E_Guideline_No_22_2022_F.pdf

9. National Fire Protection Association, NFPA 850 Recommended Practice For Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations, *Chapter 13 – Wind Turbines.* (2020) https://link.nfpa.org/free-access/publications/850/2020 (standards are also set here for other renewable power plants and storage)

10. Civil Aviation Authority, CAA Policy and Guidelines on Wind Turbines, CAP 764, Sixth Edition, 2016, Wind Turbine Wake Physics, Section 2.61, Figure 2 https://www.caa.co.uk/publication/download/14561

11. Transport Canada TP1247E - Aviation Land Use In The Vicinity of Aerodromes https://tc.canada.ca/en/aviation/publications/aviation-land-use-vicinity-aerodromes-tp-1247, (2013/14), Page 9, *1.3.1 Dimensions of Outer Surface*

12. Civil Aviation Daily Occurrence Reporting System (CADORS) https://wwwapps.tc.gc.ca/saf-sec-sur/2/cadors-screaq/q.aspx?lang=eng
Search for CADORS Number 2022C6750

CADORS Number	Occurrence Type	Occurrence Date	Aerodrome ID	Fatalities	Injuries
2022C6750	Incident	2022-10-05	CED3	0	0

Location: OYEN MUNI AB (CED3)

13. Special Areas Board website, Aug 30, 2023 post, *Air Ambulance Services Resume at Oyen Airport*, https://specialareas.ab.ca/2023/08/air-ambulance-resumes-oyen/?utm_source=rss&utm_medium=rss&utm_campaign=air-ambulance-resumes-oyen

14. The Standard, Environmental Standards for Alberta's Livestock Industry, Agdex-096-12, 2014 https://open.alberta.ca/dataset/71d7fca7-69e8-43d8-88bd-eb66e5704d66/resource/6e236886-7b69-4c8d-90b9-a9de352ca9ad/download/096-12-web.pdf