Alberta Wilderness Association
"Defending Wild Alberta through Awareness and Action"

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Alberta Utilities Commission
Proceeding 28906

Laramide Battery Storage Facility

The Alberta Wilderness Association (AWA) is writing to express our concerns and suggested mitigation for the Laramide Battery Storage Facility. Founded in 1965, AWA strives to help Albertans understand the intrinsic values that wildlife and wilderness provide, and encourage communities to participate in conservation initiatives that will ensure a legacy for future generations. With over 7,000 members and supporters in Alberta and across Canada, AWA is dedicated to conserving and protecting Alberta's wilderness.

The project proposes to develop a battery storage facility at SE-18-19-27-W4 in Foothills County, immediately north of the Frank Lake Important Bird Area. The project is reported to consist of lithium batteries, with 24-hour lighting. On reviewing the project information, AWA has the following concerns and recommendations:

- The proximity to Frank Lake IBA could threaten the wetland and the bird populations in the region. While we appreciate the project is outside the boundaries of the IBA, toxic components of battery storage systems could enter the environment and impact the area.
    - Ideally, developments should not occur within 1000m of an IBA. The decision to allow building of the substation and transmission lines has already impacted the wetland. It should not be an excuse to allow further development.
    - At minimum, batteries should follow the highest available safety standards, and provide robust contingency and remediation plans. Batteries must also be recycled or disposed of to limit possibility of toxic component leakage.
- Frank Lake is an important staging area for several migratory species. Light pollution can impact migration and habitat selection, and could negatively affect migratory populations.
    - Light pollution may be mitigated by dimming and extinguishing unnecessary lights, or turning off lights to allow trapped individuals to escape.
    - Shielding of lights, to direct light downwards, also reduced impact on bird populations. Lighting should be kept low to the ground as much as possible.
    - Thorough monitoring of wildlife populations must be implemented. This monitoring should include pre-construction surveys as well as mortality and behavioural changes after construction. Results from these surveys should be publicly available.
- Given the many unknowns associated with battery storage systems, AWA disagrees with the siting of the storage project in close proximity to Frank Lake. Should the project proceed, there must be extensive monitoring and mitigation of the project impacts on Frank Lake bird populations and other wildlife.

Similar concerns were submitted to Enbridge in March, although we feel our concerns were not fully addressed in their response. We are expanding on our concerns in the following paragraphs.

Alberta has a need for energy storage capacity to be incorporated into the grid, particularly as intermittent renewable energy sources grow. Battery energy storage systems (BESS) are one of the potential methods of storage, allowing power to be captured and released in a way that reduces power fluctuations and meets demand, while reducing carbon emissions, particulate matter and acidification caused by fossil fuel use. Despite this, Alberta currently lacks clear regulations and guidelines for battery storage placement with regard to wildlife and environmental impacts.

Battery storage systems still have environmental impacts. In addition to landscape disturbance, batteries are volatile, and can cause fires, as well as releasing toxic ions. These toxic ions can impact air, water and soil quality, directly impacting nearby organisms, ecosystems and human health[1]. While we acknowledge Enbridge's claim that siting has been done to minimize impacts, and that environmental impacts will be assessed, the proximity to Frank Lake remains a concern. At a minimum, batteries must follow the highest safety standards. Batteries, along with the surrounding environment, must be continuously monitored for any toxic leakage. There needs to be detailed contingency and remediation plans for potential leakage, as well as sufficient funds set aside for extensive reclamation work, as contamination of soil and water can cause considerable harm.

Production, use and consumption of batteries also produces waste, which must be properly disposed of. Mining of minerals for batteries, particularly lithium[2] and lead[3], can contaminate the environment, entering water and soil and causing human and wildlife mortality. Recycling of these minerals is difficult, with current technologies often inefficient and costly[4], and improper disposal leads to leaking of toxic minerals. A detailed plan, following the best available science, needs to be prepared for battery end-of-life, with details on containing toxic compounds from entering the environment. There remain significantgaps in our understanding and policies around battery safety, heightening the risk of adding battery storage facilities, particularly with the proximity to an Important Bird Area.

Frank Lake (South) Important Bird Area (IBA), also recognized as a Key Biodiversity Area (KBA), is an important area for migrating and nesting birds. In fall and spring migrations, 2.8% of the Trumpeter Swan population and 1.5% of Tundra Swans were found to stage at Frank Lake, along with thousands of ducks and hundreds of shorebirds. Several at-risk species have been sighted at Frank Lake, including bank swallows, Sprague's pipit, horned grebe and ferruginous hawk[5]. A 1000m setback is suggested for solar development in the *Wildlife Directive for Alberta solar energy projects*, although Alberta currently lacks a

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[1] Mrozik, W., Rajaeifar, M. A., Heidrich, O., & Christensen, P. (2021). Environmental impacts, pollution sources and pathways of spent lithium-ion batteries. Energy & Environmental Science, 14(12), 6099-6121.

[2] Flexer, V., Baspineiro, C. F., & Galli, C. I. (2018). Lithium recovery from brines: A vital raw material for green energies with a potential environmental impact in its mining and processing. Science of the Total Environment, 639, 1188-1204.

[3] Tong, S., Schirnding, Y. E. V., & Prapamontol, T. (2000). Environmental lead exposure: a public health problem of global dimensions. Bulletin of the world health organization, 78(9), 1068-1077.

[4] Tabelin, C. B., Dallas, J., Casanova, S., Pelech, T., Bournival, G., Saydam, S., & Canbulat, I. (2021). Towards a low-carbon society: A review of lithium resource availability, challenges and innovations in mining, extraction and recycling, and future perspectives. Minerals Engineering, 163, 106743.

[5] eBird. 2022. *Frank Lake (general location) Sightings.* Retrieved Feb 29, 2024 from: https://ebird.org/hotspot/L728322?yr=all&m=

similar directive with regards to battery energy storage. Installation of a battery storage facility less than 1 kilometer from the IBA could threaten the Frank Lake ecosystem.

There is currently little understanding of how battery storage facilities may impact wildlife populations. In addition to the toxicity of battery energy storage systems, there are concerns with light pollution, particularly as 24-hour lighting is proposed for the project. Artificial light can impact migration patterns, attracting and disorienting migrants, and impacting their behaviour and movement[6]. Disorientation can result in migrants colliding with structures, circling for longer and using energy reserves needed for migration, or choosing lower quality stopover sites. These behaviours can have population-level impacts, lowering survival and fecundity and causing population decline. Since Frank Lake IBA is a major staging area for many migrant birds, the addition of significant artificial light may alter migration patterns and could negatively impact already struggling populations.

To mitigate these impacts, lights should be turned off when possible. Dimming of lights, as well as using blinking rather than continuous light, has also been found to reduce attraction of birds[7]. We appreciate that Enbridge has stated lighting will be facing downwards, as directing light downwards helps to reduce upward radiance and reduce disorientation for migrating species. However, we feel that additional measures could further reduce glare, especially where light is expected to reflect off concrete. Shielding of light is a simple technique involving the installation of an opaque layer over or around light, which can significantly reduce glare directed skywards. Finally, population monitoring is vital to understanding the impacts of battery storage on migrant bird populations. Population monitoring should be continuous throughout the lifespan of the project, and results should be transparent and publicly available.

Frank Lake IBA is an important wetland in southern Alberta for migrating and nesting birds. Given the risks associated with battery storage systems, as well as the gaps in knowledge, we are concerned with the development of a battery energy storage system in close proximity to the IBA. Should the development proceed, there need to be mitigation strategies to contain the toxic systems, as well as to reduce the impacts of light pollution on wildlife populations.

Thank you for considering our comments. We look forward to seeing our feedback incorporated in the development of the Laramide Battery Storage Facility.

[6] Adams, C. A., Fernandez-Juricic, E., Bayne, E. M., & St. Clair, C. C. (2021). Effects of artificial light on bird movement and distribution: a systematic map. Environmental Evidence, 10, 1-28; Horton, K. G., Buler, J. J., Anderson, S. J., Burt, C. S., Collins, A. C., Dokter, A. M., Guo, F., Sheldon, D., Tomaszewska, M.A. & Henebry, G. M. (2023). Artificial light at night is a top predictor of bird migration stopover density. Nature Communications, 14(1), 7446.

[7] Rebke, M., Dierschke, V., Weiner, C. N., Aumüller, R., Hill, K., & Hill, R. (2019). Attraction of nocturnally migrating birds to artificial light: The influence of colour, intensity and blinking mode under different cloud cover conditions. Biological Conservation, 233, 220-227; Burt, C. S., Kelly, J. F., Trankina, G. E., Silva, C. L., Khalighifar, A., Jenkins-Smith, H. C., Fox, A.S., Fristrup, K.M. & Horton, K. G. (2023). The effects of light pollution on migratory animal behavior. Trends in Ecology & Evolution.

Sincerely,

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