

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

Introduction

1) I am a resident of the Hamlet of Blackie. I have been highly involved with proceeding 27486, 28501, 28542, and rule 007 consultations: May 29(online), and June 3rd, 2024(online). All in which I have submitted documentation, provided evidence, oral hearing and workshops in said proceedings. I'm here to provide the AUC with hard facts, in why BESS units must have setbacks to residential homes, agricultural land and wildlife sensitive areas, like IBAs and KBAs. If the AUC do not provide updated regulations to a BESS project specific, it will kill someone or cause huge amounts of environmental damage to sensitive areas.

Thank you for your time in reading my submission for rule 007 update.

What are IBAs and KBAs?

2) What are Important Bird and Biodiversity Areas (IBAs) are:

- Essential habitat for important bird populations.
- The Important Bird and Biodiversity Areas (IBA) program is a worldwide effort to identify, monitor and conserve the world's most important sites for birds and biodiversity.
- Places of international significance for the conservation of birds and biodiversity.
- Recognized worldwide as practical tools for conservation.
- Distinct areas amenable to practical conservation action.
- Identified using standardized criteria.
- Across Canada, IBAs have been used to design conservation reserve networks and to prioritize lands for acquisition.
- They have also been used by governments in assessing impacts and establishing guidelines for proposed development projects.
- Alberta has 47 IBAs designation sites.
- These sites are recognized as internationally and nationally significant for migratory waterfowl and shorebirds or critical habitat for bird species at risk.
- Every province in Canada and most of these programs are run by provincial nature conservation organizations.
- Environment Canada recognizes conservation areas.

3) What are Key Biodiversity Areas (KBAs)

<https://www.keybiodiversityareas.org/about-kbas>

- The Key Biodiversity Area Partnership - an ambitious partnership of 13 global conservation organizations - is helping prevent the rapid loss of biodiversity by supporting national efforts to identify these places on the planet that are critical for the survival of unique plants and animals, and the ecological communities. They are Birdlife International, ABC Birds (American Bird Conservancy), IUCN,

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

ASA (Amphibians Survival Alliance), Conservation International, Critical Ecosystem Partnership Fund, GEF, Nature Serve, Rainforest Trust, re: Wild, RSPB: Giving Nature a Home, WCS, and WWF.

- Safeguarding sites works—we have 40 years of case studies illustrating the value of identifying and safeguarding biodiversity. To date, the partnership and other interested groups have mapped more than 16,000 KBAs worldwide, safeguarding important populations of more than 13,100 species of conservation concern.
- KBAs are home to critical populations of the world's threatened species. By mapping and protecting KBAs, we can ensure the conservation of the largest and most important populations of these species – and give them a real chance of survival.
- There are also areas that are hot-spots of life, where gatherings of different species exist, particularly those with small ranges, and the loss of these sites would have a disproportionate impact on multiple species. These special sites have their own KBA criteria so that they can be identified.
- KBAs use already established IBAs boundaries when IBAs are turned into KBAs. This is due to already per-existing legislation and or conservation efforts within these boundaries. See in IUCN: A global Standard for identification of Key Biodiversity Areas
- Frank Lake IBA 079 being upgraded to a Key Biodiversity Area gives this area more of an internationally designated importance, due to the significance of 7 different bird populations to the global conservation efforts; to save and protect this important management site and safeguard this biodiversity in the eyes of the international community which recognized the importance of Frank Lake IBA on the world stage.

BESS Projects need set Setbacks

4) BESS units must have setback from IBAs and KBAs, like they do in wildlife directive for solar 200.1.1, 1000m away from the wetland base IBA boundaries. They must also have setback from residential homes of 1600m as well. This will all be supported with the evidence that will follow. And in why they belong in areas that have the correct resources and infrastructure to support BESS units. I will be using the Frank Lake IBA and KBA,(27486), as an example, foothills county and its resources. I hope this will provide the AUC with context on the need for setbacks with BESS units, while also providing justification as to why. Wetland base IBAs already have setback from renewable energy projects: Wildlife directive for Solar energy 200.1.1, 1000m way from wetland base IBA boundaries, they should also include BESS with a minimum of 1600m, due to risks and to be consistent with regulations already in place.

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

<https://www.businessinsider.com/tesla-megapack-battery-fire-burns-four-days-testing-australia2021-8>

5) With the link above, took 150 firefighters, 30 fire fighter trucks, and 4 days to put out this battery fire. Our county does not have 150 firefighters, nor 30 fire fighter trucks, this is out in the middle of class 2 agricultural land, right beside an internationally recognized and sensitive wildlife biodiversity ecosystem. We would be requesting fire support from neighbouring counties, and who knows their response times. By the time you get any resources to be able to properly deal with said fire, the damage is done to unimaginable cost to homes, *wildlife, flora, fauna and of course humans*. And the AUC must remember, the provincial government has declared drought and now water supply issues.... Where is the water coming from for such a fire when no water for such a large scale project emergency is in sight? All must be trucked in, from where?

6) The smoke from battery fires is comprised of hydrogen fluoride, hydrogen chloride and hydrogen cyanide, as well as carbon monoxide, sulphur dioxide and methane among other dangerous chemicals. All these chemicals are highly toxic to wildlife and people. And when you have this right beside a provincially, federally, and internationally recognized IBA and KBA, which also contain federally and provincially protected birds. The damage is unimaginable to already struggling wildlife species and a mass death event can occur with these birds. The resulting fire is also a risk to surrounding prime agriculture land for growing, which is now all contaminated. Please see the links below for all this evidence.

<https://youtu.be/2AvBs3CI8pg?si=dphIxFlwUaMy7mQ9>

7) *Hydrofluoric acid. Out of various hazardous gases released from LIBs to air, HF is of the highest concern and must be treated with high caution. It can enter the human body via the skin or respiratory systems and causes severe corrosive effects and systemic toxicity. Inhalation of just a few ppm of HF can result in serious toxic effects. HF readily penetrates the skin and moves quickly to the deeper tissue layers where it releases the freely dissociable fluoride ion. This ion is extremely toxic, due to its strong reactivity. Moreover, HF gas is hygroscopic and readily soluble in water. Concentrated solutions of HF are highly corrosive to the skin and underlying tissues and accidental dermal exposure has been reported to cause death in humans."*

<https://pubs.rsc.org/en/content/articlehtml/2021/ee/d1ee00691f>

8) *The potential negative effect of three battery materials: lithium iron phosphate (LFP), lithium titanium oxide (LTO) and lithium cobalt oxide (LCO) was studied utilizing mouse bioassays.¹⁸⁸ The mixed metal oxides present in the cathodes of LIBs could release particles small enough to penetrate the lungs and induce inflammation. The extent of the impact varies depending on the chemistry of the LIB. From the materials tested by Sironval et al. (2018), LTO was the least harmful, whereas LCO induced the strongest inflammation. As a result, the fibrotic responses were observed in cells with higher inflammation rates.¹⁸⁸*

9) *Another generator of dust and particles are explosions and fires. During thermal runaway the particles are first ejected from the safety vent together with other gases, resulting in heavy smoke with black colour.^{189,190} After cooling down, they settled as surface dust. The composition of these powders from lithium nickel cobalt manganese (NMC) cells was mainly C, O, Al, Mn, and F. This result suggests that it is mostly the negative carbon particles of the battery, as well as the oxidized positive substances of the electrode, that are ejected during gas venting.¹⁹⁰ Another study¹⁹¹ found that thermally abused prismatic automotive NMC cells released PM that contained heavy metals. The authors found that nickel and copper*

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

were detected in all collected fractions (1.45 to 500 μm) whereas zinc and chromium settled with bigger fractions (50 to 500 μm). Ni had the largest mass percentage followed by Cu, Zn and Cr. In terms of the total emitted quantity, PM accounted for 1.7% of the cell mass. Once settled, such particulates may interact with surrounding waters and soil and ultimately be of threat to crops.

<https://pubs.rsc.org/en/content/articlehtml/2021/ee/d1ee00691f>

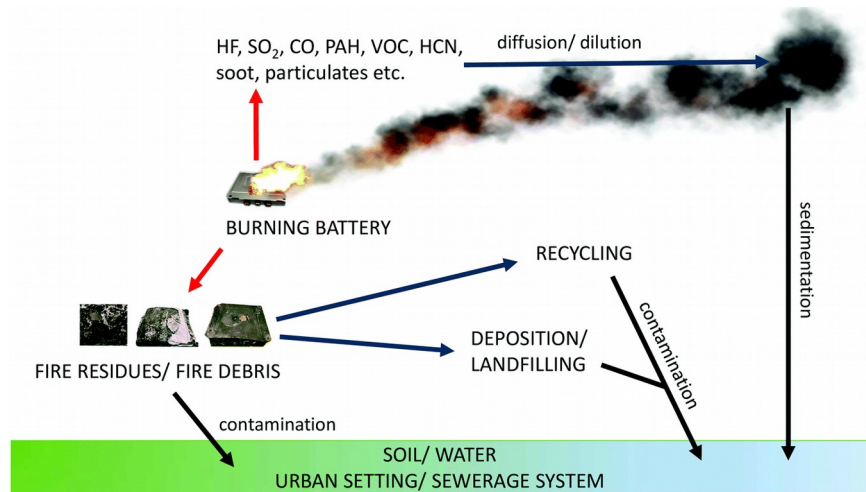


Image 1A

<https://pubs.rsc.org/en/content/articlehtml/2021/ee/d1ee00691f>.

10) "When I did further research into these battery plants, which basically resemble large shipping containers, it became apparent that there were many drawbacks, such as their concerning reputation for combusting into flames and creating massive uncontrollable fires, despite the fact fire suppressants are built into each container. These batteries get very hot and are very flammable and if they go up, fire response services are not equipped to cope with them", he explained.

11) "Fire services in England have already noted major concerns. If they try to douse them with water all the land beneath instantly becomes contaminated so often batteries are left to burn out releasing harmful toxic fumes into the air for many days. As my land is close to a number of residential houses and near the local village, I was not comfortable with this thought."

12) He also took into account the health risks and cancer-related issues of people who lived near electrical pylons and the fact that properties located near these battery storage units on average can see their homes devalued by as much as 34%.

https://www.thescottishfarmer.co.uk/news/23818900.farmers-cautioned-field-battery-storagepitfalls/?fbclid=IwAR15FEx2RwdfMnDj2H71aKm-7pos8--EesayWwVT6zpWKS0FpA6PiAZlwQ_aem_AXv9CpliQ8wRGfG4xZGZYvC7atZsxnSZODsR28DI5tBwUNKERb0xLiemyDEVtZiDU

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

13) HF, is a known toxic chemical that's in the fumes of BESS fire, and in LFP batteries. This is extremely toxic to human life and animals, especially birds. 1600m min evacuation radius HF fire, per Federal regulations, per ERG, (Emergency Response Guide), are needed as a setback for wildlife sensitive areas, like IBAs and KBAs, let alone a minimum setback from residential homes. This will ensure the public and wildlife sensitive area are considered when building a BESS project in Alberta.

14) I know the AUC will say that BESS units are not a shipping container, travel trailer, or tanker. But HF is highly toxic, is a public hazard, a wetland base IBA and KBA hazard, wildlife hazard. And after BESS units become more popular, it's a matter of time that BESS is added to the list. For this, is a fast pace technology, which, regulations haven't caught up to the present. The AUC should side on caution for we have no data, no real evidence base science as to what BESS fire will do to a highly prized, highly important, both provincially, federally, and internationally, wetland base Frank Lake IBA and KBA 079.

15) With all the information before you with my reply submission so far, the hazardous and toxic fumes, toxic contaminated water, contaminated grasses, (food for the animals in this area), contaminated groundwater, contamination of farm land and crops, wildlife, and residential homes and land. This is why Battery project development, (BESS) needs to have setbacks to protect the public and our sensitive wildlife habitats.


16) While setbacks are one factor that the AUC needs to update, the AUC also must up date the need to have the proper infrastructure for a fire in place for BESS units. I will provide example with Foothills county and a BESS fire, I will use a German fire as the base line for my example of Foothills county.

17) A fire at a BRSS unit in Germany took 10 hrs to be put out. This fire was in an industrial area and had some fire infrastructure to help with such emergencies. Here is a list of what resources was needed, and that the Foothills county do not have such equipment, staff and lack of water access.

https://www.feuerwehr-neermoor.de/index.php/einsaetze/einsatzbericht/384?fbclid=IwZXh0bgNhZW0CMTEAAR0W2tWJ-oTFwb0kk16GhbU0uuOFHQ6TjboPfxqcdgYT_pH1f5wvJ-eKIG8_aem_AdV04uaklHF1pLR7kff7trIC658n4EDzup-U0_TVj8e_zxU-RwO-wntK0j8uFV6qyKemhePVuwn7ahKaJC1kcs7. Please translate to English.

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

18) This is what they needed for resources: 7 fire departments were involved and more emergency personnel on site.



Burns conatiner with batteries
Fire operation

Hits 1505

Location	Neermoor diesel road	forces deployed
Date	April 27, 2024	Neermoor fire department
Alert time	8:52 p.m	<ul style="list-style-type: none"> ▪ Tank fire truck 8/18 ▪ Firefighting assistance vehicle 10 ▪ Personnel transport vehicle
End of use	07:30 am	Ambulance service
Duration of use	10 hours 38 minutes	<ul style="list-style-type: none"> ▪ Ambulance
Alert type	Digital reporting receiver	police
		<ul style="list-style-type: none"> ▪ Radio patrol car
		Municipality of Moormerland
		<ul style="list-style-type: none"> ▪ Kdow Municipal Fire Chief
		Veenhusen fire department
		<ul style="list-style-type: none"> ▪ Firefighting group vehicle 8 ▪ Personnel transport vehicle
		Warsingsfehn fire department
		<ul style="list-style-type: none"> ▪ Tank fire truck 4000 ▪ Personnel transport vehicle
		Oldersum fire department
		<ul style="list-style-type: none"> ▪ Tank fire truck 8/18
		Miscellaneous
		Rapid Response Group Florian
		<ul style="list-style-type: none"> ▪ Ambulance
		Fire Department Empty
		<ul style="list-style-type: none"> ▪ Turntable ladder 23/12 ▪ Emergency fire team vehicle
		Loga Fire Department
		<ul style="list-style-type: none"> ▪ MTF with Cold Cut Cobra
		Meyer Port 4 plant fire department
		<ul style="list-style-type: none"> ▪ Equipment trolley logistics

Image A 2

19) I would like to point to the AUC, that Blackie fire department is highly understaffed and lack of resources in man power for such a fire, a lot of rural small communities have this problem, its not just unique to Blackie and Foothills County. Foothills county is always putting adds in the Blackie local news, (A 3), seeking able individuals to join and help staff this department for the local area. The image below,(A 3), has been in the local Blackie news for years. This shows getting staff at a stable and constant level is very hard for this area.

checkout lane.



Foothills Fire Department

Blackie Station is looking for able bodied individuals to join us. Come to the Blackie station on Tuesdays at 7:00pm or call 587-227-9949 or 403-603-6305.

For more information:

www.foothillsfiredepartment.ca/recruitment

Friday Doors of welcome and mu:

If you the Fo Church messag

Image. A 3

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

20) With the image A4, shows the vast area that the Blackie fire department services with the few staff it has. They do call in other fire departments to help with larger fires. This shows the AUC, the layout within a county for designation on different emergency stations, fire halls, and what area they are responsible for. This also shows what other areas might be effected or resorcses sent from to another area of emergency needs. If a BESS fire was to happen in the Blackie zone, this station being under staffed, shows what other areas can be effected. Germany, who needed 7 different fire departments and other emergency services, where are they coming from? Especially when Blackie is constantly understaffed(A3), where are they coming from? As we take what was needed in image A2, we would be needing, High River, Cayley, Blackie, Okotoks, Heritage Point, and maybe Vulcan County and beyond. Also, if such staff are needed, are other areas being left under serviced to just go to this BESS fire for a min of 10 hrs. Then what happens, if another major fire/ accident, (HWY 2 and 2A very prone to accidents),/ or other emergency services are needed, but they lack due to BESS fire in the Blackie area.

21) And to give another context to this issue, Blackie fire department are volunteers, they have to leave their work, get to the station, change, and then go to the BESS fire. This all takes time and adds to the risk for residents, wildlife, and the IBA and KBA. This adds to the response time for getting fire staff to the area. And even then, they can not do much for they have to let it burn out, due to harm and contamination. This is why, BESS, who on the record have HF toxicity, must have 1600m setbacks from homes and highly sensitive wildlife area, like IBAs and KBAs, but not limited to just these. High wildlife areas like wetlands should also have 1600m setback from BESS projects.

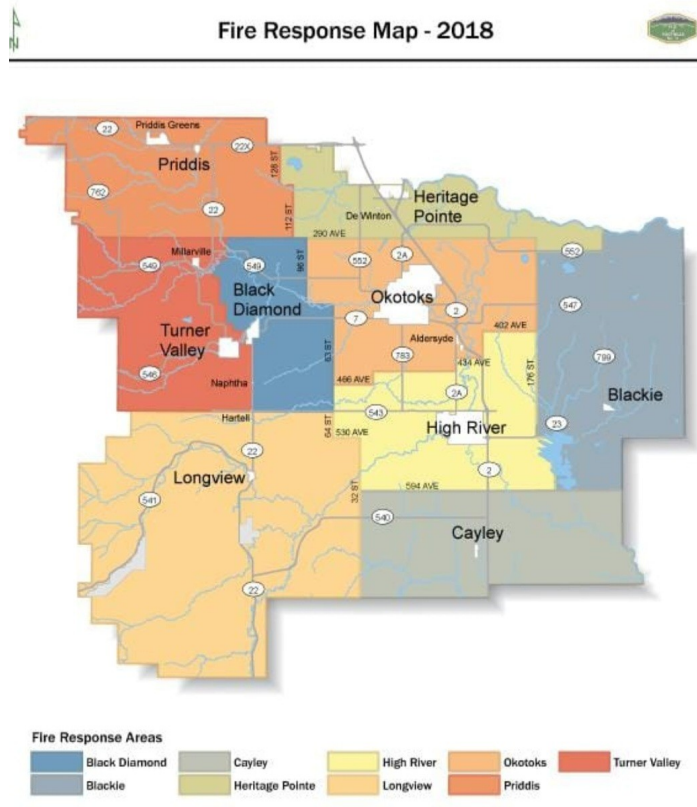


Image A 4

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

22) With the images A2 and A4, and we apply what was needed for the most recent fire in Germany, who needed 7 different fire departments and other emergency services, where are they coming from? Especially when Blackie is constantly understaffed(image A 3), where are they coming from? As we take what was needed in image A 2 we would be needing, High River, Cayley, Blackie, Okotoks, Heritage Point, and maybe Vulcan County and beyond. Also, if such staff are needed, are other areas being left under serviced to just go to this BESS fire for a min of 10 hrs. Then what happens, if another major fire/ accident (HWY 2 and 2A very prone to accidents)/ or other emergency services are needed, but they lack due to the a battery fire. The logistics of the BESS project at the site, not equipped to handle or have resources within reach, is a nightmare and puts the public at risk and of greater harm then good.

23) Then on top of what I have provided, we have BESS units that keep reigniting once they are on fire. 40 fire fighters are involved with this BESS fire(link below quote). Where is Foothills County going to get 40 fire fighters from, without it effecting other areas and other residents?

24) "At 8:23 p.m. Friday, Pascua said, a "significant fire" reignited inside one of the buildings at the Gateway Energy Storage Facility on Camino De La Fuente — the result of a chain reaction called "thermal runaway" that can occur when lithium-ion batteries overheat."

25) "Evacuation orders and warnings are in effect in the immediate vicinity of the facility, an area that includes several businesses. However, the orders could be expanded if, say, the wind shifts, increasing the potential threat of the fire."

<https://www.sandiegouniontribune.com/news/public-safety/story/2024-05-18/battery-fire-at-storage-facility-in-otay-mesa-keeps-reigniting>

Please use this link below, for the continued need for setbacks for BESS units.

<https://www.firerescue1.com/lithium-ion-battery-fires/ala-ffs-call-attention-to-li-ion-battery-safetyafter-recent-ev-fire>

26) Here is an EXCELLENT article about the dangers/risks of lithium batteries and the difficulties of extinguishing them- plus a lot of other data they give. The article also quotes a study by the ATF where the fluoride levels released from burning lithium batteries were in the "lethal range" and "very acidic."

27) One container experiencing thermal runaway, will have 100x the battery capacity of the Model Y Tesla that took 36,000 gallons of water to control. The article goes on to say, "*that up to 50,000 gallons have been used to control EV fires...*" (this is why, where is all the water coming from? With all that water and now hazardous spill contamination, right beside a sensitive wildlife biodiversity ecosystem)

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

- 28) The article also calls out that spraying water on a smoking lithium battery, converts the hydrogen fluoride to hydrofluoric acid, and that hydrofluoric acid then runs off into the soil and ground of the surrounding area- contaminating it all.
- 29) This is why setbacks are needed and correct infrastructure in-place for someone will get killed. BESS projects fall in a grey area currently, due to lack of BESS specific regulations due to it moving highly fast in new technology, yet, like solar, wind, SMRs, they have environmental impacts and can effect the public at large, too.
- 30) The TC Energy solar and battery project (Saddlebrook) is a prime example of a solar and battery project I support. This is because if a fire happens, they are located in the industrial area of Foothills County, which they have access to the emergency resources. And to add, will not effect agriculture land for its located in an industry promoted area, less risk to crop growing land and wetland sensitive IBAs and KBAs.
- 31) The TC project had next to no push back, for it was good use of land that was unable to grow, while also now being able to generate a service to the public. Many of us residents of foothills county supported this project. The AUC should use this project as the gold standard for doing everything right and apply it to other projects under their jurisdiction.
- 32) And because batteries take up less land then a solar or wind project, yet, as stated above, carry many risk. That caution must be used in sensitive area like IBAs and KBAs, which already exist, Wildlife directive for Alberta Solar Energy Projects 200.1.1. Which isn't creating new regulations, just applying them in a uniform standard for solar, wind, battery, and should also apply to natural gas generation too.
- 33) The AUC must take into account this: would you place an industrial garbage dump on top of an aquifer, which 100,000 people use everyday for drinking? That would pose too much risk for the public at large. The same can be said about putting BESS units beside provincially, federally, and internationally significant wildlife area like IBAs, KBAs, high wildlife areas, and including wetlands.
- 34) Another example is, we would not place a wind project all around IBAs, KBAs, due to the magnitude of wildlife risks(birds), especially when you factor in provincially and federally protected birds. That would be highly irresponsible on the AUC to let it go though. This is why, when we have wildlife directives for solar energy projects 200.1.1, we must apply same standards to wind and battery to be consistent. Each said project type,(wind, solar, Battery) provide same types of risks to wildlife, their habitats, and death, solar(lake effect 27486), wind(bird deaths or injuries from blade impact <https://www.newsweek.com/france-renewable-energy-wind-farm-golden-eagle-killed-shutdown-1855080>), and battery(highly toxic fumes, water contamination, soil contamination, death). And should follow the federal standard, ERG, for HF fires of 1600m setback for such areas.
- 35) I'm trying to bring a fair and evidence base proposal to the AUC, which will move rule 007 into the future and is fair to industry, the public, and wildlife organizations. This balance approach, will help provide a clear and a level of fairness to all of industry, where its not singling out just one, but all.

Update to Rule 007 / Submission of Amy Marcotte / September 3, 2024

36) In conclusion, I would like to put forth these recommendations to the AUC:

- 1) BESS projects should be 1600m away from wetland base IBAs(1000m already exist for solar 200.1.1)
- 2) BESS projects should be 1600m away from all areas classified as a wetland(13, 14, A1)
- 3) BESS projects should be 1600m away from residential homes.(13, 14, A1)
- 4) BESS units should have proper emergency water supply on site to deal with a fire, and must be maintained at levels. Should the fire spread to other areas. (A1)
- 5) BESS units must have ground water testing before the project is built and after a fire. (A1)
- 6) BESS projects should have all well water within 1600m tested for baseline. If on top of a high use aquifer, testing should be 3000m away.(A1)
- 7) BESS units should not be on class 1, 2, and 3 agriculture land due to the threat to crops they can pose when on fire. (8, 9, A1)
- 8) BESS projects should be on class 4 and lower quality land or industrial areas, to protect good farm land from the potential of contamination.(8, 9, A1)

37) I kindly submit this submission to the AUC for their consideration for rule 007 updates to move the AUC into the future. While also giving the AUC the tools needed to keep the public, wildlife, and even agriculture land safe.

Amy Marcotte

Abbreviated Terms

LFP – Lithium Iron Phosphate
LTO – Lithium Titanium Oxide
LCO – Lithium cobalt Oxide
LIB – Lithium Ion Battery
Li – Lithium- ion
BESS – Battery Energy Storage Systems
IBA – Important Bird Areas
KBA – Key Biodiversity Areas
AUC – Alberta Utilities Commission
EV – Electric Vehicle
ATF - The Bureau of Alcohol, Tobacco, Firearms and Explosives
HF – Hydrogen Fluoride
TC – Trans Canada
ERG - Emergency Response Guide