Steve Brocco

Dear Washington State Department of Ecology Clean Energy Coordination Team,

My name is Steve Brocco. I own a farm in the Fall City / Snoqualmie Valley area of unincorporated King County, downstream and downwind of the proposed Cascadia Ridge Resiliency Energy Storage project and I have a private well.

Most comments of battery storage risk focus on fire codes and human evacuation. Wildlife cannot evacuate. Fish cannot leave a contaminated stream. Soil organisms, pollinators, and long-lived species absorb whatever settles on the land and remain exposed long after the fire is out. I ask that this PEIS treat the living landscape as a receptor in its own right. It should not count only people and structures. I also ask that it require the baselines without which ecological harm can never be measured, proven, or remedied.

1. A battery fire is a biological exposure event

Lithium-ion fires release hydrogen fluoride (HF), hydrogen cyanide, and particulate rich in nickel, cobalt, and manganese. Peer-reviewed testing measured 20 to 200 mg of HF per watt-hour of battery capacity (Larsson et al., *Scientific Reports*, 2017). That is on the order of 100 to 1,000 kg from a single 5 MWh enclosure. Large BESS fires are commonly managed by letting the involved enclosure burn out, so this inventory is released into the surrounding environment.

2. Fluoride is a well-documented ecological toxicant, and Washington knows it

Airborne fluoride accumulates in foliage. Conifers and many native plants are among the most sensitive species. Grazing animals that eat fluoride-contaminated forage can develop fluorosis, which damages teeth and bone. This is not speculation. It is a well-documented pattern near aluminum smelters, including in Washington. The PEIS should treat fluoride deposition onto vegetation, forage, and pasture as a pathway to wildlife and livestock harm. It should not treat fluoride only as an acute inhalation hazard.

3. Moss Landing proved metals deposit into habitat and may enter the food web

After the January 2025 Moss Landing fire, researchers at San José State University's Moss Landing Marine Laboratories compared post-fire samples with existing baseline data. They found nickel, manganese, and cobalt nanoparticles in Elkhorn Slough marsh soils at roughly 100 to 1,000 times prior levels. The metal ratio matched the facility's batteries (*Scientific Reports*, November 2025). Investigators are now studying whether those metals are moving into plants, invertebrates, and the food web. That question remains open more than a year later.

The lesson is that those findings were possible only because a baseline existed. Without one, a contamination event in the Snoqualmie Valley would be unprovable.

4. Aquatic species are the most exposed and the least able to escape

Downstream reaches of the Snoqualmie River support ESA-listed Puget Sound Chinook salmon and steelhead. Chinook are the primary prey of endangered Southern Resident orcas.

Several of the contaminants involved are toxic to aquatic life:

- Dissolved metals, fluoride, and lithium are toxic to fish and to the aquatic insects they feed on.
- Some battery components and firefighting foams contain PFAS, which persist and bioaccumulate (Guelfo et al., *Nature Communications*, 2024).
- Salmonid eggs and juveniles in gravel cannot move away from a pulse of contaminated runoff.
- Long-lived freshwater mussels and benthic macroinvertebrates integrate contamination over years. That makes them valuable sentinels, but only if they are measured before a facility is built.

These waters are also of treaty and cultural significance to the Snoqualmie Tribe, whose scoping comments raised contamination of salmon habitat.

5. Habitat loss happens even with no fire

Clearing and fencing a forested 45-acre parcel removes habitat permanently. The forested slopes around Snoqualmie Ridge are used by elk, black bear, cougar, bobcat, deer, amphibians, and migratory birds. Fencing fragments their movement corridors and pushes wildlife onto roads and into neighborhoods.

Operating facilities run cooling and inverter equipment around the clock, producing continuous low-frequency noise, and use nighttime security lighting. Both are known to disrupt bird communication and nesting, bat foraging, and amphibian breeding. Removing forest cover and adding impervious surface raises stream temperatures and peak flows, which harms cold-water species.

6. Cleanup without biological standards is not cleanup

Washington's Model Toxics Control Act (chapter 70A.305 RCW) sets cleanup levels largely around human health. Meeting a soil number does not mean a wetland, a stream, or a salmon run has recovered. King County requires only $1 million in financial responsibility for BESS thermal events. That will not fund multi-year ecological monitoring and habitat restoration, let alone remediation. The PEIS should ask what ecological recovery would cost and who would pay for it.

7. Response to the developer's request to skip ecological impacts

Jupiter Power, the Cascadia Ridge developer, told Ecology that impacts to water quality, wetlands, and wildlife habitat are "almost entirely project-specific." It asked Ecology to be cautious about recommending mitigation.

Ecologically, the opposite is true. The pathways by which battery-fire contaminants reach soil, water, plants, and animals are general and well understood. Those pathways are exactly what a programmatic analysis should establish. So are the baselines and monitoring protocols every

project should follow. Leaving these questions to individual project reviews guarantees inconsistent and minimal analysis, and almost certainly no baselines.

Requested studies: what the PEIS should analyze and require

Baselines before construction

1. **Soil and sediment baselines.** Sample metals (nickel, cobalt, manganese, lithium, copper), fluoride, and PFAS in soils and stream sediments within a defined radius, including downwind farmland and wetlands.
2. **Water-quality baselines.** Sample metals, fluoride, lithium, PFAS, temperature, and conductivity in all receiving streams, wetlands, and every private well within a defined radius.
3. **Biological community baselines.** Survey benthic macroinvertebrates using the Benthic Index of Biotic Integrity (B-IBI) already used in King County. Survey fish presence and spawning, amphibians, freshwater mussels, and pollinators. Use environmental DNA (eDNA) surveys where appropriate.
4. **Tissue and foliar baselines.** Sample metal and fluoride levels in sentinel organisms such as fish, crayfish, and mussels, in conifer and forage foliage, and in honey where hives exist. These are the measurements that let contamination be detected and attributed later.
5. **Wildlife movement baselines.** Map elk and large-mammal corridors, raptor and songbird nesting, and bat roosts before any clearing.

Impact analysis

6. **Fluoride deposition and fluorosis risk.** Model foliar fluoride accumulation, injury to sensitive native vegetation, and fluorosis risk to deer, elk, and livestock grazing contaminated forage.
7. **Aquatic toxicity.** Analyze toxicity of battery-fire runoff (metals, fluoride, lithium, PFAS, electrolyte byproducts) to salmonid eggs, juveniles, and adults, and to aquatic invertebrates. Use the most sensitive life stages and ESA-listed species as the standard.
8. **Bioaccumulation and food-web transfer.** Evaluate uptake of metals, fluoride, and PFAS by plants, soil invertebrates, fish, birds, and mammals, building on the Moss Landing food-web research.
9. **Soil ecology and agriculture.** Evaluate effects on soil microbes, earthworms, and pollinators, and on crop and livestock safety in the Snoqualmie Agricultural Production District.
10. **Habitat loss, fragmentation, and edge effects.** Quantify forest and wetland loss, corridor fragmentation, and increased wildlife-vehicle conflict, including cumulative loss across multiple facilities.
11. **Noise and light.** Model continuous low-frequency noise and nighttime lighting effects on birds, bats, and amphibians at the habitat edge, not at the fence line.

12. **Stream temperature and hydrology.** Evaluate how canopy removal and impervious surface affect stream temperature, peak flows, and sediment delivery to spawning gravels, using climate-adjusted projections.
13. **Endangered species and Tribal resources.** Evaluate effects on ESA-listed Chinook, steelhead, and Southern Resident orcas, and on Tribal treaty fisheries and cultural waters, in consultation with affected Tribes.

After an incident

14. **Post-incident monitoring and restoration.** Require a standing monitoring plan that runs for years after any fire, not weeks. Include ecological recovery standards, not only human-health cleanup levels. Back the plan with financial assurance sufficient to fund long-term monitoring and habitat restoration.

Siting

15. **Avoidance as primary mitigation.** Identify intact forest, wetlands, stream buffers, wildlife corridors, aquifer recharge areas, and agricultural lands as places where utility-scale lithium-ion BESS should not be sited. Prefer previously disturbed industrial land.
16. **Alternatives.** Compare lower-hazard storage technologies and lower-impact sites, recognizing that some ecological harm, such as loss of a salmon year-class, cannot be undone by any mitigation.

The species of the Snoqualmie Valley cannot submit comments. I ask Ecology to scope this PEIS so their exposure is measured before it happens, not argued about after.

Sincerely,

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