

DOCKETED	
Docket Number:	24-OPT-05
Project Title:	Corby Battery Energy Storage System Project
TN #:	272480
Document Title:	Sarah Dunn Comments - Heavy Metal Soil Deposition Math Error
Description:	N/A
Filer:	System
Organization:	Sarah Dunn
Submitter Role:	Public
Submission Date:	9/10/2026 2:10:42 PM
Docketed Date:	9/10/2026

Comment Received From: Sarah Dunn
Submitted On: 9/10/2026
Docket Number: 24-OPT-05

Heavy Metal Soil Deposition Math Error

See attached

Additional submitted attachment is included below.

Renee Longman, Project Manager

California Energy Commission

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Submitted via Electronic Filing

Subject: Public Comment Pertaining to Toxic Metal Pollution, Nanoparticle Exposure, Air Detection Gaps, and Water Risks (Corby BESS Project, Docket No. 24-OPT-05)

Dear Ms. Longman:

I am writing to express my strong concerns regarding the Staff Assessment and Draft Environmental Impact Report (DEIR) for the proposed Corby Battery Energy Storage System (Corby BESS) project.

The state's current assessment claims that a battery fire at this facility would not cause significant harm to our soil, water, air quality, or local residents. However, a closer look at the state's own figures in Appendix LU reveals major math errors, unexamined airborne toxic risks, and critical gaps in emergency air-detection capabilities.

I urge the Energy Commission to address the serious health, safety, and environmental threats detailed below before considering this project for approval.

1. A 1,000x Math Error Hides Dangerous Toxic Levels in Our Soil

When battery storage facilities catch fire, they release heavy metals that settle onto surrounding farmland and residential yards. In Appendix LU, state staff calculated how much toxic fallout would land on local soil. Unfortunately, they made a severe math error that underreports the pollution by a factor of 1,000:

- The Math Error: The report states that 18 grams of lithium per square meter would mix into the top 3 inches of soil. Doing the math correctly gives 182 milligrams of toxic lithium per kilogram of soil.
- What the State Printed: The report incorrectly prints 0.18 mg/kg--missing the true value by a factor of 1,000. They made the exact same 1,000x error for aluminum (3.4 g/m² printed as 0.034 mg/kg instead of the correct 34.4 mg/kg).
- Why This Matters: Normal background levels of lithium in Solano County soil are 15 to 30 mg/kg. The real projected level of 182 mg/kg is 6 to 12 times higher than natural levels.

Lithium is highly toxic to agricultural crops and stone fruit trees (like almonds and plums) at levels as low as 4 to 50 mg/kg. Claiming "no significant impact" based on a wrong math calculation is unacceptable.

2. Dangers to Our Drinking Water and Underground Aquifers

The state's report assumes that toxic fallout from a fire will immediately dilute deep into 3 inches of dirt. In reality, heavy metal dust lands on the surface as a thin layer (<5 mm).

When rain falls or firefighter water sprays over the site, those heavy metals wash down through the soil. Because the real metal concentrations are 1,000 times higher than reported, these toxic chemicals threaten to leach into shallow groundwater, contaminating local irrigation canals and domestic drinking wells.

3. Equipment Gaps, Inadequate Smoke Monitoring, and Ultrafine Nanoparticles

First responders and local residents face severe health risks from airborne battery emissions that the DEIR completely fails to manage:

- **Wrong Detection Tools for First Responders:** Gas detection equipment issued to local fire departments (like the Dixon Fire Department) is primarily calibrated to detect explosive gases like hydrogen gas (H₂) or toxic gases like hydrogen fluoride (HF). These sensors do not measure airborne heavy metal dust or fine particles. First responders could enter a smoke plume unaware that they are inhaling aerosolized metals.
- **The Moss Landing Air Monitoring Flaw:** During the Moss Landing battery fire, air monitoring relied heavily on standard PM_{2.5} sensors (particles down to 2.5 micrometers). Standard PM_{2.5} monitoring treats soot and dust as generic mass and fails to isolate or measure tiny, hazardous metallic particles.
- **New Scientific Evidence on Nanoparticles:** Peer-reviewed scientific studies demonstrate that lithium-ion thermal runaway fires produce vast quantities of ultrafine nanoparticles smaller than 0.1 micrometers (PM_{0.1}). These microscopic particles--composed of lithium, aluminum, and other contaminants are small enough to bypass the human body's natural respiratory defenses, traveling deep into lung tissue and directly entering the bloodstream.
- **Lack of Airborne Protection:** Because nanoparticle smoke moves with wind currents, heavy metal dust will drift off site onto neighboring homes, farms, and school paths. The DEIR provides no plan to control, capture, or suppress these airborne nanoparticles once released into the atmosphere. Locating the Corby BESS near residential houses and active farming operations compounds that risk.

Critical Questions the Energy Commission Must Answer

Before moving forward with Docket 24-OPT-05, the CEC must provide clear answers to these community concerns:

1. **Fix the Math:** Will the CEC correct the 1,000x unit conversion error and redo all soil and groundwater impact studies using the true mass loading numbers?
2. **Protect First Responders:** How will the CEC prevent Dixon Fire Department personnel and emergency crews from breathing in toxic metal dust when their standard field monitors only test for hydrogen and combustion gases?
3. **Upgrade Air Monitoring Requirements or Reclassify Public Health Impacts as "Significant":** scientific evidence proves battery fires emit microscopic, heavy-metal nanoparticles (PM0.1) are emitted during lithium BESS fires.
 - How specifically will the CEC and the applicant monitor real-time airborne emissions of ultrafine heavy-metal nanoparticles (PM0.1) at the site perimeter and downwind property lines during a fire event?
 - If the CEC or applicant cannot demonstrate a feasible, reliable method to monitor and capture these toxic nanoparticle emissions in real time during a thermal runaway fire, the CEC must revise the DEIR to formally reclassify public health and air quality impacts during a BESS fire as a "Significant and Unavoidable Environmental Impact" under CEQA.
4. **Protect Neighboring Properties:** How does the applicant plan to prevent fine heavy metal dust from blowing onto neighboring yards, pastures, and farm fields during a multi-day fire? Additionally, who will perform the cleanup?
5. **Mandate Water & Soil Protections:** Will the CEC map all water wells within 5 miles, require pre-construction baseline well testing, and establish an irrevocable clean-up bond to pay for property decontamination if off-site testing reveals metal contamination?

Conclusion

The state's finding that a battery fire at the Corby BESS facility will not cause significant environmental or public health harm is built on flawed math, outdated air-monitoring assumptions, and an overreliance on gas sensors that cannot detect toxic metal dust.

I respectfully ask the Commission to pause certification of this report until all math errors are corrected, specialized nanoparticle health assessments are conducted, and binding protections are established for first responders and nearby residents.

Sincerely,

Sarah Dunn

Vacaville Resident