Submission ID: S4F48EC48

At the hearing held on the 8th July the Applicant made comments that the LFP BESS technology to be used in the Rosefield development was far safer than older ION batteries and should a fire occur it could be extinguished quickly. This is disputed. Whilst there are some benefits to the use of LFP batteries as opposed to alternatives they still present a fire risk, and indeed are still capable of explosion. There also remains the risk of significantly higher volumes of toxic hydrogen fluoride gas in the event of an incident.
I attach a technical assessment for the above.
I would also challenge the Applicant's position on "burn time" in the event of a fire. LFP battery fires may not be extinguished fully for several days or even weeks.
The sheer number of BESS units being proposed will increase the likelihood of a fire/explosion event and poses a serious threat to people and to the environment.
There is little or no real need for this development, for reasons already made in my earlier statements on this application.

The newer technology:

Lower Heat, Slower Burn: If it does ignite, an LFP fire burns noticeably cooler (with a peak temperature around 620°C vs. NMC's 800°C) and propagates to adjacent cells at a much slower rate. However, because LFP burns slower, the total duration of the fire can actually be longer.

3. The Big Trade-Off: Higher Explosion (Deflagration) Risk

- **Incomplete Combustion:** Because LFP batteries burn cooler, they do not fully combust their internal liquid electrolytes. Instead of burning off cleanly into carbon dioxide (CO_2), they undergo incomplete combustion and release massive quantities of unburned, highly flammable off-gases.
- **Hydrogen and Carbon Monoxide Plumes:** LFP cells in thermal runaway release a much higher percentage of **hydrogen gas (H_2, roughly 55–60%)** and **carbon monoxide (CO)** compared to NMC.
- **Vapor Cloud Explosion:** While an NMC fire behaves like an intense, self-oxidizing torch, an LFP failure is more likely to create a heavy, dense vapor cloud. If this cloud accumulates inside an enclosure without proper ventilation, it presents a severe risk of a sudden, powerful **deflagration (explosion)** rather than just a progressive fire.

4. Severe Hydrogen Fluoride (HF) Off-Gassing

- **Concentrated Toxicity:** Despite lacking heavy metals, LFP batteries still use fluorine-based lithium salts ($LiPF_6$) in their liquid electrolytes. [1, 2, 3]
- **Worse Vapor Toxicity:** Studies have shown that when equalized for electrical capacity, failing LFP batteries can actually produce **significantly higher volumes of toxic hydrogen fluoride (HF) gas** than NMC. If mixed with ambient moisture or fire-fighting water, this forms highly corrosive hydrofluoric acid, creating an intense, immediate respiratory and skin-contact hazard for first responders.

How Modern Facilities Mitigate This Today

Because the industry understands that **LFP = Less Fire, More Gas**, modern LFP systems are not built like the legacy indoor rooms at Moss Landing. Today's outdoor LFP enclosures rely heavily on:

- **Deflagration Venting:** Large, mechanical pressure-release panels designed to blow outward, preventing gas buildup from turning the container into a bomb.
- **Early Off-Gas Detection:** Specialized sensors that sniff out trace amounts of hydrogen or carbon monoxide *before* smoke or heat is ever detected, allowing the system to automatically flood the cabinet with inert gas to prevent ignition.

Inverter/Chiller Noise: Batteries require massive, constantly running air conditioning units and inverters to prevent overheating. Demand a comprehensive BS4142 noise assessment and object if the low-frequency hum disrupts nearby properties.