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Comments in Response to ESRG - Technical Clarifications on Modern Utility-Scale BESS Design, Safety Emergency Response-part 3

Additional submitted attachment is included below.

Please accept these comments in response to the *Energy Safety Response Group Comments--Technical Clarifications on Modern Utility-Scale BESS Design, Safety and Emergency Response*, TN 268717, submitted on 2/19/26.

The ESRG submission from 2/19/26 were in rebuttal to prior opposition comments submitted into the PSRP docket. As a 34 year resident of Acton, I would like to weigh in on their comments.

I am not a firefighter, but I have been married to one for 44 years. We are a fire family. My husband, now retired, proudly served LACounty Fire Dept for 30 years with 20 years as a Fire Fighter Specialist with 10 of those years in HazMat. Our son is an active duty Fire Captain with a department in the Central Valley. So our opinion too holds weight.

FREQUENCY OF EVENTS

I appreciate that ESRG notes the fact that reported BESS fires and failure incidents have dropped significantly since 2023. But even with reporting requirements under SB 38 (Laird), which was signed into law in Oct 2023, there was no enforcement mechanism until the CPUC amended and updated GO-167C in March 2025.

EPRI has been tracking BESS failures in a database which is dependent upon media coverage as proof of the fire or failure and the details of incident. I have personally reported at least two of the 2025 BESS incidents to EPRI which were in Peoria AZ and Boulder City NV, and was surprised that they were not yet reported to the database. EPRI and UL are both building a database and have both stated that the numbers are likely underreported as there was no mandatory BESS failure reporting requirement. As the public opposition grew to these types of energy storage, it would not be hard to imagine a project owner not wanting report a failure incident.

After being told in late 2024 that there may have been a fire at the largest BESS currently operating in the United States, the 821 MW Edwards-Sanborn BESS, I searched the EPRI database and also searched online and was not able to find evidence of any such event. I submitted a Public Records Act request to Kern County and received 6 incident reports! These all occurred between February and September 2024. I submitted the incident reports to EPRI and yet none of these failure incidents are included in the database.

So while I do believe there has been a decline in events, I am skeptical the reduction is as dramatic as the numbers appear.

ESS COMPARISON TO OTHER FIRE AND ELECTRICAL HAZARDS

No one would likely dispute that all electrical equipment and facilities pose a significant hazard to the public. This is why larger electrical facilities are sited in appropriate zoning. A 1,150 MW BESS, just by the sheer number of LFP batteries the project will deploy, poses a very significant risk to the public. I'm not quite sure why ESRG's comments comparing ESS to all other fire and electrical hazards was necessary and the mention of such does not make BESS hazards any less significant.

DANGEROUS GOODS AND TRANSPORT HAZARDS

With the construction of a BESS project that will be transporting 2,035 ESS units to the Prairie

Song project location, its impossible not to be concerned about a potential for a transport incident. Again just this massive number alone of battery containers increases the odds that there could be a mishap.

ESRG has implied that an opposition comment was incorrectly made suggesting that Lithium-ion batteries are “dangerous goods because of their propensity to spontaneously ignite”. One need only read the Department of Transportation’s guidance on Lithium Ion batteries to know that ESRG are the ones in error.

When transported to or from the United States lithium-ion batteries are subject to Hazardous Materials Regulations. For international transport, the Pipeline and Hazardous Materials Safety Administration authorize the use of the International Civil Aviation Organization’s Technical Instructions for the Safe Transport of *Dangerous Goods* by Air and the Maritime *Dangerous Goods* Code. So Lithium-ion batteries are regulated for transport by air and sea as “Dangerous Goods”. There is obviously a reason for this.

Lithium-ion batteries are also limited to a 30% state of charge during transport to ensure safety. With a lower SOC there is reduced risk of a spontaneous fire due to a manufacturing defect or improper handling or mishap during transport. But the risks associated with transport of Lithium-ion batteries in general are only complicated by the risks of the cargo itself.

The DOT warns that; *all Lithium-ion cells and batteries are hazardous materials when being transported, no matter the size or quantity.*

LITHIUM IRON PHOSPHATE BATTERY SAFETY

Lithium Iron Phosphate batteries are indeed “more safe” than NMC but that doesn’t mean they are “safe”. Because there are so many potential points of failure in a BESS, there is no way to completely mitigate all risks associated with LFP batteries. A perfectly manufactured and professionally installed battery can still be at risk for failure if any of the supporting management systems were to malfunction or fail. This includes but is not limited to the BMS, fire suppression system, hvac and thermal management systems.

Because of the reliance upon these systems to insure a battery functions safely, these systems and every battery cell can be considered a *potential point of failure*, as stated in the 2023 CPUC Lumen Energy Report Attachment F-- Energy Storage Procurement Studies: Safety Best Practices;

Each cell and other component of the system is a potential point of failure—the risk of which can be minimized via quality control, testing, and ongoing monitoring and maintenance but cannot be entirely eliminated.

Lithium Iron Phosphate batteries impose the same risk associated with all Lithium-ion batteries in general. They have an improved safety profile over NMC but are toxic while burning due to the electrolyte composition. The electrolyte decomposes during the exothermic reactive process of thermal runaway and produces the highly flammable and toxic gases. In alternative non-lithium batteries, the electrolyte does not produce toxic gases while

the battery is burning, therefore considered a much more safe choice.

LFP are favored by energy storage developers for their energy density, lifespan and pricing. But there are now alternative chemistries such as Iron Air, Iron Flow, Redox, Zinc Bromine, some Sodium-ion chemistries and many others which have a much elevated safety profile compared to LFP. Many of these are scalable to utility applications and can be stacked higher than LFP because of their safety profile. This enables batteries which are larger in size to still work within a reasonably-sized project footprint.

With regard to their fire and toxicity risk, LFP batteries are not an ideal choice considering the Prairie Song site is located in a VHFHSZ and does not have adequate water resources. There is no municipal water source onsite, only two 40,000 gallon storage tanks.

ENERGY STORAGE SYSTEM EVALUATION AND CERTIFICATION

Batteries which are certified under UL9540a test methods are required to meet important thresholds of safety, however the 12mph maximum windspeed at which they are tested *does not represent the real world conditions in Acton.*

The Prairie Song project site is located in a narrow transportation corridor between the Sierra Pelona and San Gabriel Mountains. This corridor acts as a funnel for the high desert winds which can significantly increase wind speeds as compared to the other areas of Acton. For this reason, no project that introduces additional fire risk should ever be considered for this location! At the common wind speeds experienced in this corridor, which regularly exceed 12mph, the jetted flame from a single burning battery container could lay over horizontally and therefore have a greater chance of igniting a neighboring container.

Does this mean the UL9540 certification has no value? Absolutely not. But it does mean that it cannot be expected to offer the same level of safety when burning in locations that far exceed their UL9540a testing standards.

The Victorian Big Battery in Australia was a perfect example of this. On July 30, 2021, a burning UL9540 certified Tesla Megapack battery ignited a neighboring container, which the investigators attributed to the elevated wind speed of 20-30 knots (23-34 mph). The Megapacks were installed 6 inches apart, a distance which was validated in UL9540a unit level tests. The wind was determined to be the dominant contributing factor to the propagation to the second Megapack, escalating the incident. This event does not invalidate the UL9540 certification but the UL9540a test methods do not explore environmental conditions beyond the 12mph limit.

East Acton would routinely exceed the unit level testing limit of 12mph and therefore UL9540 certified batteries by any manufacturer could pose a significantly higher fire risk in this wind-prone area.

BESS RISK MANAGEMENT AND LAYERED PROTECTIONS

I can appreciate that there are many layers of testing and standards that a manufacturer's

battery must pass through before receiving a certification of safety. But we must remember that the testing is done on one battery produced by a manufacturer with hopes that each and every battery produced by that same manufacturer will meet the same level of performance. However, in a huge BESS facility such as PSRP where millions of batteries will be deployed, there is absolutely no guarantee this level of quality will hold true for every battery nor every battery installation. The same can be said for all of the BMS, HVAC, Thermal Management systems, Fire Suppression systems etc. These systems are all just as capable of malfunction and failure as they are of operating properly. Sometimes these malfunctions are exposed during commissioning and testing before a facility comes online. But sometimes these malfunctions occur after the project is online and in service. If a supporting system fails, a perfectly manufactured and installed battery cell can be jeopardized. There are many combined systems that work together to achieve safe battery energy storage, and they must all function correctly or they impose risk of a failure. If the failure spreads to involve an LFP battery cell, a more dangerous situation has developed.

In 2018 the 20 MW Marengo BESS in Cook County, Illinois went online deploying UL9540 certified LG Chem Lithium-Ion batteries (likely NMC). LG Energy was experiencing issues with battery failures in South Korea facilities and notified Marengo to reduce the state of charge in all batteries in their facility until a root cause of these failures could be identified. Unfortunately in April 2019 the Marengo BESS system began experiencing battery failures resulting in fires and damage to their facility.

LG Energy acknowledged there were manufacturing defects and replaced the “defective” batteries with “new” batteries. Marengo began experiencing the same fire incidents with the replacement batteries and decided to take their BESS operation offline to avoid risk of another thermal event and damage to persons and property. As a result, the Marengo BESS was seeking a \$10M settlement for facility damage and loss of use from being forced to be taken offline for a prolonged period of 20 months.

The bottom line is the the LG Chem batteries were UL9540 certified and yet that held no guarantee of 100% quality control to the standards of the original LG Chem battery which met the standards of testing under UL9540a.

Therefore it cannot be said with certainty that *all* manufacturer’s batteries will without fail meet the standards of their single test battery scrutinized under UL 9540a and certified under UL9540.

BESS INCIDENT RESPONSE AND MITIGATION

Despite the multiple layers of mitigation applied through Codes, Regulations and ERAP, there is one fact that remains; *you cannot mitigate thermal runaway once it has begun nor stop the ensuing production and expulsion of toxic gases such as Hydrogen Fluoride, Hydrogen Chloride and Hydrogen Cyanide.*

It is for this reason that appropriate siting will serve as the most effective safety backstop to de-escalating thermal events that will occur. If you cannot totally remove a threat, you instead remove that which would be threatened.

Mitigation should begin with *appropriate* siting that provides a Lithium-ion BESS project with an adequate buffer between its potential failures and residents. If this mitigation effort of appropriate siting were given top consideration, the other numerous mitigations would be rendered a moot point with reference to public safety. But of course the other mitigation efforts are beneficial in limiting losses for the facility itself.

As an example, earlier in my comments I mentioned the largest BESS facility in the U.S. at this time which is the 821 MW Edwards-Sanborn BESS by Terra-Gen. This facility is located in the Mojave Desert and not in proximity to homes. In late 2024 I was made aware of a possible fire incident at the facility by an employee of the Edward's AFB. To follow up, we filed a Public Records Act Request with Kern County requesting all incident reports involving Kern County Fire and the Edwards-Sanborn BESS facility.

We received not just one, but SIX incident reports, all occurring between Feb and Sept 2024. Incident #1 was an inverter fire, #2 was a false alarm, #3 was a battery fire, #4 was another false alarm triggered by sprinkler system activation, and #4 and #5 were additional battery fires.

Similar to the Prairie Song, water is provided at the Edwards-Sanborn facility by storage tanks, but unlike the Prairie Song, the Edwards-Sanborn has a substantial buffer far enough away from homes to minimize potential impacts should there be a battery fire. The closest homes are in Rosamond which are 6 miles to the southwest of the E-S BESS. And homes to the east were reported to be 20 to 30 miles away in one incident report. This is very unlike the Prairie Song that is literally 200 feet from homes to the west on Tortuga Street, within 1/2 mile of homes to the east on Foreston Dr. and within 1/2 mile of the California RV Resort and additional homes to the north.

Safe siting proactively minimizes impacts more effectively than any Fire Code, ERAP or management system!

ESRG strongly disagrees with the commonly used terminology of "let it burn" when referring to accepted fire response protocol. Instead they prefer to say "the fire service is managing the incident in accordance with the response plan, available resources and threat posed by the event." If this mincing of words makes them feel better about the "let it burn" protocol, then so be it. But the term is used because it very simply describes the most commonly applied and proven response which is to let the fire burn to consume itself --and any potential stranded energy within. I am not arguing with ESRG's terminology, merely pointing out they seem to be trying to make this widely-accepted minimal attack defensive fire suppression strategy sound more "controlled".

This approach to let the burning battery consume itself was developed over time and soon was adopted as a preferred suppression method. Historically, prior to this protocol being recognized as the most effective method of suppression, BESS fires were fought with copious amounts of water only to have high incidence of reigniting later. Even utilizing tens of thousands of gallons of water on an EV fire was not always successful, often resulting in reigniting and creating a challenging situation for containment of incident water runoff. An incident response at a BESS must also be cautious of carrying contaminants into the ground which ultimately over time will end up in the ground water.

Reigniting is a common occurrence during a BESS fire incident with flare ups occurring within hours to days to sometimes a month from the initial incident. The Vistra 300 in Moss Landing reignited a full month after their Jan 16th 2025 fire. This was likely due to batteries that were not fully consumed in the initial massive fire.

The Vistra in Moss Landing is a perfect example of how a BESS project is no longer designed. The indoor facility proved to be a fire suppression impossibility resulting in total loss for the facility and a large health impact to the residents in the path of the toxic plume. It is common knowledge that mass tort lawsuit has been filed on behalf of residents who suffered inhalation exposures. People up to 20 miles away could smell and taste the toxic smoke.

How will the residents of Acton fare if there was a fire at the Prairie Song BESS? Of course an outside BESS design will hopefully limit the size of the fire as compared to the Vistra 300 BESS. But---there will most certainly be toxic smoke commensurate to the size of the fire---and residents are in very close proximity.

SMOKE TOXICITY AND PUBLIC HEALTH CONCERNS

I fully understand that Vistra 300 in Moss Landing was a very different project from that which Prairie Song will be. It was indoors, in a repurposed building, and utilized NMC batteries. At the time it was approved and built in 2020 it was the largest BESS in the world and built to the highest standards. Those standards were proven to be inadequate over the next 3 years as BESS facilities began having failures and the industry learned from these events. The industry then transitioned to containerized outdoor systems and LFP batteries, citing safety concerns with NMC and difficult fire suppression with large indoor systems.

As concerns over NMC batteries arose, earlier BESS facilities which utilized these batteries now thought to carry risk, were not required to transition to LFP --even though the industry had now considered the LFP a more "safe" chemistry. As fires in BESS systems within large buildings proved to be close to impossible to suppress, the existing large indoor facilities still continued to operate, even though BESS design had evolved to containerized and outdoor.

The indoor 250 MW Gateway BESS in Otay Mesa had a major fire event beginning May 15, 2024 that lasted nearly two weeks with several flare ups before being deemed officially out. Yet this was not motivation enough for the Vistra 300 in Moss Landing to make necessary changes in an effort to avoid facing the same possible future scenario.

Lo and behold, 8 months later on January 16th 2025, Vistra faced its own catastrophic failure event which was truly a defining moment for the battery energy storage industry. The "cat" was now officially "out of the bag".... and the vast majority of the public had heard the news reports and now understood the risks associated with lithium-ion batteries.

Now that the cat is out, its going to be very, very hard to wrangle that cat back in. It will take years of incident-free operations at existing BESS facilities to erase the stigma of danger associated with these "green" battery energy storage projects. And I personally don't think its possible to achieve "incident-free" operations with Lithium Iron Phosphate batteries---and a

mandatory failure incident reporting requirement.

These project developers who refuse to either site their BESS responsibly or pivot to *safe* and *non-toxic* batteries will experience nothing but pushback as communities continue to organize in opposition, create delays and ultimately seek litigation.

Time is money. So what will they choose to do?

Ruthie Brock
34 year Acton resident