

Moss Landing Energy Storage Facility Emergency Response Measures



December 2022

What's Here and What's Coming



Phase III of the Moss Landing Energy Storage Facility brings the site's total energy storage capacity to 750 MW/3,000 MWh



- There is no higher priority at Vistra than the safety of the communities we serve, our people, the environment, and our company sites. That commitment to safety will extend through the design, construction, and operation of the Moss Landing BESS
- There is inherent but manageable risk in all forms of generating, transporting, and storing energy, and all energy sources have experienced events
- In Lithium-ion BESS, thermal runaway is a rare internal chemical reaction that releases heat and occurs when the voltage or temperature inside the battery becomes unstable
- Codes, rigorous standards and operational best practices are leveraged to reduce these risks through prevention, detection and mitigation

Battery Module Overheating Prevention, Detection and Mitigation



- Prevention
 - Engineering Design, Equipment Selection, Hazard Mitigation Analysis, Emergency Planning
- Detection
 - Battery Management Systems
 - Temperature, Smoke, Gas, Heat, Supervisory Air Pressure Drop in Water Line
- Mitigation
 - Battery Shutdown
 - Ventilation
 - Water, clean agent injection system
 - Roof level wet system



- The two events at the Vistra Moss Landing facility in 2021 and 2022 were caused by water leak events from the mitigation system
 - This led to grounding, arcing and localized smoke
- At time of first activation of safety systems, all battery modules were operating within established temperature limits and well below temperatures associated with thermal runaway
- The event was contained to site
 - Did not impact air, water, soil, nearby communities
- Corrective actions were implemented to resolve water leaks and enhance the detection and mitigation systems

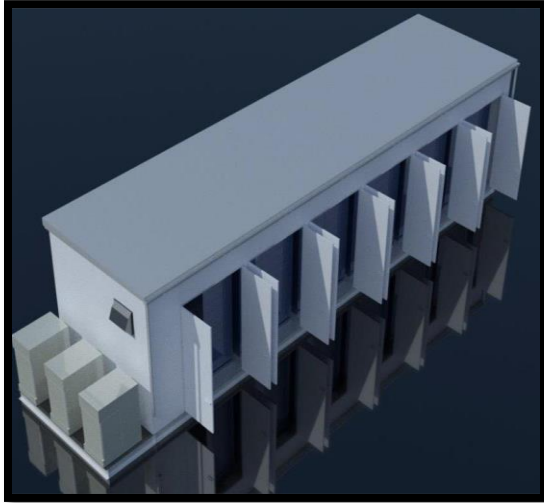
- Vistra has implemented a robust Facility Emergency Plan for the Power Plant and Energy Storage Facility
 - Extensive fire pre-plans were developed prior to operations of Phases 1 and 2
 - Training provided to fire department personnel in 2021 and 2022
 - Walk throughs, visual inspections, construction inspections
 - Fire pre-plan walk throughs
 - Formal/in class training on lithium-ion fires and strategies
 - All NFPA/CFC requirements, including Hazard Mitigation Analyses were met prior to operation
- After the events in 2021 and 2022, Vistra developed enhanced fire pre-plans, update the Facility Emergency Plan and performed plume modeling to inform emergency personnel of potential offsite impacts based upon event variables
 - These include: Smoke Dispersion Modeling, Emergency Evacuation Plans, and a Hazard Matrix

Example: Modeled Worst Case HF Scenario Moss 300 and 100



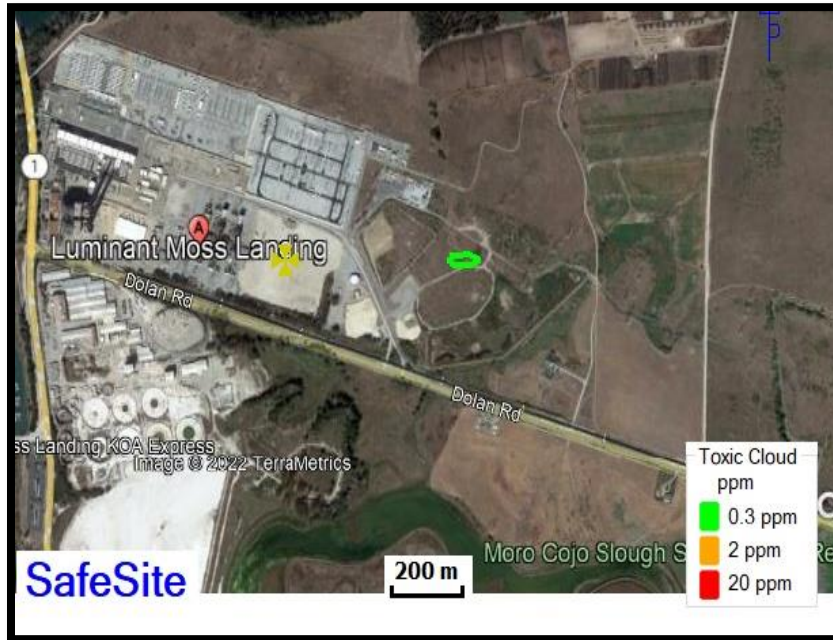
CA REL could be exceeded at ground level extending up to 1,360 feet. But only if:

- All control, mitigation and suppression systems fail
- Steady winds at 15.8 mph, **a weather condition occurring only 7% of the time**



- **Fire Plan**
Currently working with NCFPD on plan to address a potential fire at the Moss Landing 350 facility
 - **Thermal Runaway Propagation Evaluation assuming worst case system failures**
Apply fire hose cooling within 2 hours of fire breaching the initial container to prevent surrounding containers from impact
 - **Smoke plume dispersion modeling like 100/300 except:**
Based on fire that consumes entire container of battery modules
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- 50' L x 12' W x 15' H
 - Fire Detection/Mitigation Systems
 - Networked Alarm Panel
 - Smoke Detection (VESDA)
 - Flammable gas, CO detection
 - Automatic water injection designed, tested for thermal runaway protection

Example: Modeled Worst Case HF Scenario Moss 350



CA REL could be exceeded at ground level up to ~1,800 feet. But only if:

- Container fire with no internal suppression whatsoever
- Steady winds at 15.8 mph, **a weather condition occurring only 7% of the time**

Moss Landing Energy Storage Facility

Largest Energy Storage System in the World

