



County of Monterey

Item No.

Board Report

Board of Supervisors
Chambers
168 W. Alisal St., 1st Floor
Salinas, CA 93901

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1. Receive a presentation from Pacific Gas and Electric Company (PG&E) and Vistra Energy Corporation (Vistra) regarding operation and emergency response plans for their respective Lithium-Ion Battery Energy Storage Systems, and
2. Provide direction to county staff regarding the Lithium-Ion Battery Energy Storage Systems in the Monterey County Operational Area.

RECOMMENDATION:

1. Receive a presentation from Pacific Gas and Electric Company (PG&E) and Vistra Energy Corporation (Vistra) regarding operation and emergency response plans for their respective Lithium-Ion Battery Energy Storage Systems, and
2. Provide direction to county staff regarding the Lithium-Ion Battery Energy Storage Systems in the Monterey County Operational Area.

SUMMARY:

The Moss Landing lithium-ion battery energy storage project is a massive battery energy storage facility built at the retired Moss Landing power plant site at 11283 Dolan Road (APN 133-181-011-000) and 7251 Highway 1 (APN133-181-010-000) in Moss Landing. This site is comprised of two independent properties that currently developed with the world's biggest battery storage facility. The Moss Landing electric substation hosts Vistra Energy Corporation's Lithium-Ion Battery Energy Storage System (BESS) powered by LG Energy Solution batteries and Pacific Gas and Electric's Lithium-Ion Battery Energy Storage System (BESS) powered by Tesla batteries.

Energy storage is critical to an efficient, clean electric grid. With recent advances in battery technology and renewable energy, lithium-ion batteries have become one of the leading solutions for large-scale energy storage. Lithium-Ion Battery Energy Storage Systems pose a new and emerging threat to public health and safety.

Since 2021, the site has experienced three (3) incidents related to the battery energy storage systems resulting in a response from North County Fire Protection District, Monterey County Sheriff's Office, Monterey County Environmental Health Bureau, and Monterey County Office of Emergency Services.

On December 13, 2022, representatives from PG and E and Vistra Energy will make brief presentations to the Board of Supervisors regarding operation and response plans for their facilities.

DISCUSSION:

The Moss Landing lithium-ion battery energy storage project is located at the retired Moss Landing power plant site. This site is currently the world's largest battery storage facility. The Moss Landing electric substation hosts Vistra Energy Corporation's Lithium-Ion Battery Energy Storage System (BESS) powered by LG Energy Solution batteries and Pacific Gas and Electric's Lithium Ion Battery Energy Storage System (BESS) powered by Tesla batteries.

Since 2021, the site has experienced three incidents related to the battery storage systems. Two overheating incidents have occurred at the Vistra Energy Corporation BESS and one fire incident has occurred at the PG&E's BESS. The incident at the PG&E's ESS resulted in a shelter-in-place advisory to surrounding communities as a result of toxic off gassing, or plume. All three incidents included fire suppression tactics required to control thermal runaway or fire suppression resulted in application of massive quantities of water over an extended period, which is the established means of preventing continuous thermal runaway in a lithium-ion battery. This can result in hazardous runoff.

As such, the North County Fire Protection District, Monterey County Sheriff's Office, Monterey County Environmental Health Bureau, and Monterey County Office of Emergency Services have been and will continue to work with Vistra Energy Corporation and Pacific Gas and Electric to mitigate, prepare for, and respond to incidents.

Clean Renewable Energy Storage

Energy storage is critical to an efficient, clean electric grid. It enables communities to produce clean energy when it is abundant, store it, and put it back into the electricity grid when needed. Lithium-Ion Battery Energy Storage System will allow wind and solar power to displace a growing share of fossil-fuel plants. Lithium-Ion Battery Energy Storage Systems can enhance grid reliability, create a more flexible/nimble grid, minimize power outages, make clean energy more viable, and reduce consumer costs.

Threats and Hazards

With recent advances in battery technology and renewable energy, lithium-ion batteries have become one of the leading solutions for large-scale energy storage. While Lithium-Ion Battery Energy Storage Systems are an added value to critical infrastructure and key resources, they also pose a new and emerging threat to public health and safety. Generally, lithium-ion batteries can overheat creating thermal runaway, fire, explosions, and hazardous materials releases in the form of toxic plumes and toxic runoff due to fire suppression tactics. Unlike standard alkaline batteries, most lithium batteries manufactured today contain a flammable electrolyte and have an incredibly high energy density.

- *Thermal Runaway:* Thermal runaway is one of the primary risks related to lithium-ion batteries. It is a phenomenon in which the lithium-ion cell enters an uncontrollable, self-heating state. In lithium-ion cells, the movement of electrons and lithium ions produces electricity. The process of charge and discharge is normally accompanied by a small amount of heat. In ideal conditions, the heat is able to dissipate from the cell. However, in thermal runaway, the lithium-ion cell generates heat at a rate several times higher than the rate at which heat dissipates from the cell. A short circuit, physical damage, improper design, or assembly can cause heat and pressure to build up in the battery. A thermal runaway often results in one or more of the following events: heat generation, gas and smoke formation, cell breach/cell explosion, fire or gas explosion. Gas releases can

typically occur at lower temperatures and without the occurrence of a thermal runaway.

- *Hazardous Materials - Toxic Gas/Smoke/Plumes:* Lithium-ion battery fires generate intense heat and considerable amounts of gas and smoke. The gasses that are released from battery energy storage systems are highly flammable and toxic. The type of gas released depends on the battery chemistry involved but typically includes gases such as: carbon monoxide, carbon dioxide, hydrogen, methane, ethane, and other hydrocarbons.
- *Cell Ignition / Fires:* When thermal runaway occurs, the cell is undergoing an unstable chemical. When oxygen mixes with the toxic flammable gases the battery cell may ignite, causing surrounding cells to do the same.
- *Cell Breach / Explosions:* If the pressure within the cell reaches a critical point, the cell can rupture, releasing flammable gases and in some examples; projectiles at high speeds. These gases have the potential to combine with oxygen in the air and form an explosive mixture.
- *Hazardous Materials - Toxic Runoff:* Massive quantities of water over an extended period is the only established means of preventing continuous thermal runaway in a lithium-ion battery. This can result in hazardous runoff.

Permits

On February 26, 2020, the Monterey County Planning Commission adopted a Resolution adopting a Mitigated Negative Declaration, pursuant to the California Environmental Quality Act (CEQA), for the Pacific Gas and Electric site and approved the installation of a battery storage system and associated PG&E switchgear and equipment on approximately 4.5 acres of land within the existing Moss Landing Substation which would transmit power to the PG&E electric grid. As a result of the approval, the Housing and Community Development Department is issuing associated building permits for the improvements.

On July 29, 2020, the Monterey County Planning Commission adopted a Mitigated Negative Declaration for the Vistra Energy Corporation's site and approved a Coastal Administrative Permit to establish the 1200-megawatt (MW) battery energy storage system. As a result of the Planning Commission's approval, the County of Monterey Housing and Community Development Department has issued building permits for the battery installation and other improvements at the Vistra Energy Corporation's site.

Incidents To Date

- *September 4, 2021 Incident -* 300-MW Phase I of Vistra Energy Corporation's Lithium-Ion Battery Energy Storage System early detection system was activated in response to detection of very low levels of smoke in one area of the facility. Off-site emergency response was notified.
- *February 13, 2022 Incident -* the early detection safety system activated in the 100 -megawatt Phase II building at the Vistra Energy Corporation's Moss Landing Energy Storage Facility. Off-site emergency response was notified. The building's systems contained the event without the need for the outside assistance. There were no injuries to personnel. An investigation was conducted to determine what caused the safety system to activate.
- *September 20, 2022 Incident -* Tesla-powered Pacific Gas and Electric's Lithium-Ion Battery Energy Storage System in Moss Landing experienced a fire resulting in an ongoing hazardous materials incident in Moss Landing. The North County Fire Protection District and Monterey County Sheriff's Office issued a shelter-in-place advisory for the areas of Moss Landing west of Dolan Road/Via Tanques, South of Struve Road, and North of Potrero Road.

County Agency Roles and Responsibilities

Monterey County Housing and Community Development Department: The County of Monterey Housing and Community Development Department (HCD) is responsible for land use and construction permitting in the County to ensure the protection of the health, safety and welfare of its residents, and protect its natural resources. Through the land use permitting review, HCD-Planning, and the appropriate decision-making authority (e.g., Planning Commission), ensures projects are consistent with the policies and regulations contained in the General Plan, North County Land Use Plan, Moss Landing Community Plan, the Coastal Implementation Plan, Part 2 (CIP), and the Monterey County Zoning Ordinance (Title 20). HCD also ensures that the project is designed in a visually appropriate manner and that the necessary environmental review has been prepared pursuant to the California Environmental Quality Act (CEQA). HCD-Building ensures that the construction meets the California Building Standards Code and its local amendments, which include the Fire Code.

Monterey County Environmental Health Bureau: The Monterey County Environmental Health Bureau (EHB) is designated as the local Certified Unified Program Agency (CUPA) in Monterey County and is responsible for permitting and inspecting facilities in the County to verify proper storage, handling and disposal of hazardous materials and hazardous wastes. An essential part of that inspection process is verifying and ensuring these permitted facilities have emergency response plans and procedures in place in the event of a reportable or threatened release of a hazardous material. The EHB works closely with local fire departments and is a member of the Operational Area Hazardous Materials Response team which is the multi-agency team charged with responding to hazardous substance releases within the incorporated and unincorporated areas of Monterey County. In addition, the EHB oversees the environmental cleanup after a hazardous material release and ensures all site mitigation requirements are met to make certain the site is no longer a hazard to public health and safety as well as the environment. After each event, EHB followed up and continues to coordinate with the Environmental, Health and Safety representatives for each of the sites specifically to ensure and enforce proper handling and disposition of water run-off from fire suppression efforts, confirm proper disposal of compromised batteries, review plans related to corrective and preventive actions and to ensure development of risk management plans that would address environmental health emergency response.

Monterey County Office of Emergency Services: Monterey County Office of Emergency Services is responsible for the mitigation, preparedness, planning, coordination of response, and recovery activities related to county emergencies and disasters. The office serves as the primary coordination point for emergency management activities affecting more than one jurisdiction, and the unincorporated areas of the county. The Office of Emergency Services staff the 24/7 Emergency Management Duty Officer program. The Duty Officer is the point of contact and action agent for all threat notifications and public warning missions and the on-scene liaison to County departments, municipalities, and special districts during emergencies. The Duty Officer performs time-sensitive, public safety support functions for the Monterey County Operational Area. Office of Emergency Services is responsible for activating the Operational Area Emergency Operations Center in response to moderate to large scale emergencies, and subsequently support fire suppression activities, environmental health response activities, road closures, evacuations/shelter-in-place advisories, emergency sheltering,

coordination of response agencies, public information dissemination, mutual aid resource requests, communication with county leadership, and coordination with state and federal agencies.

Mitigation and Preparedness Activities to Date

- The Monterey County Environmental Health Bureau worked with Vistra Energy Corporation to register hazardous materials with the California Certified Unified Program Agencies (CUPA) program.
- The Monterey County Environmental Health Bureau and Office of Emergency Services worked with Vistra Energy Corporation to develop criteria, conduct toxic plume dispersion modeling, and received the Vistra Energy Corporation funded results.
- The Monterey County Environmental Health Bureau worked with Pacific Gas and Electric to register hazardous materials with the California Certified Unified Program Agencies (CUPA) program.
- The Monterey County Environmental Health Bureau and Office of Emergency Services are working with Pacific Gas and Electric to develop criteria, conduct toxic plume dispersion modeling. The County has not yet received the modeling results from Pacific Gas and Electric.
- The Monterey County Office of Emergency Services and Environmental Health Bureau worked with Vistra Energy Corporation to host a First Responder Learning Day at Vistra Energy's Lithium-Ion Battery Energy Storage System in Moss Landing on 3/23/2022. This four hour event included detailed instruction and edification of recent incidents, Lithium-Ion Battery Design and Composition 101, Community Risk Assessment, Emergency Response Plan review, and Tour of Moss 100 and 300.

Recommended Mitigation and Preparedness Activities

The County of Monterey recommends the following mitigation and preparedness activities:

- Monterey County Environmental Health Bureau and the Office of Emergency Services will provide local input for updating (or creating) state and/or local regulations for utility scale battery storage sites.
- Monterey County Environmental Health Bureau and the Office of Emergency Services will work together to develop and coordinate future training and tabletop exercises.
- Monterey County Environmental Health will continue to develop environmental health regulatory programs in coordination with CalEPA.
- Monterey County Office of Emergency Services will work with cooperating agencies and partners to develop a community response plan to address policies and procedures for responding to incidents at the Moss Landing power plant.
 - This can include the commitment of public health and emergency management staff as part of the Incident or Unified Command structure.
- Monterey County Office of Emergency Services will be hosting a Community Townhall in January 2023 to address community concerns.

OTHER AGENCY INVOLVEMENT:

Monterey County Housing and Community Development Department, Monterey County Environmental Health Bureau, Monterey County Office of Emergency Services, Monterey

County Sheriff's Office, North County Fire Protection District

FINANCING: There is no impact on the General Fund through receipt of this report.

BOARD OF SUPERVISORS STRATEGIC INITIATIVES:

Mark a check to the related Board of Supervisors Strategic Initiatives

Economic Development

Administration

Health & Human Services

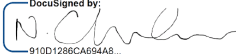
Infrastructure

Public Safety

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Attachments:
Board Report

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12/7/2022 | 10:46 AM PST

cc: Jeana Arnold, PG&E
Brad Watson, Vistra Energy