

Monterey Peninsula Chamber Quarterly Business Insights Breakfast



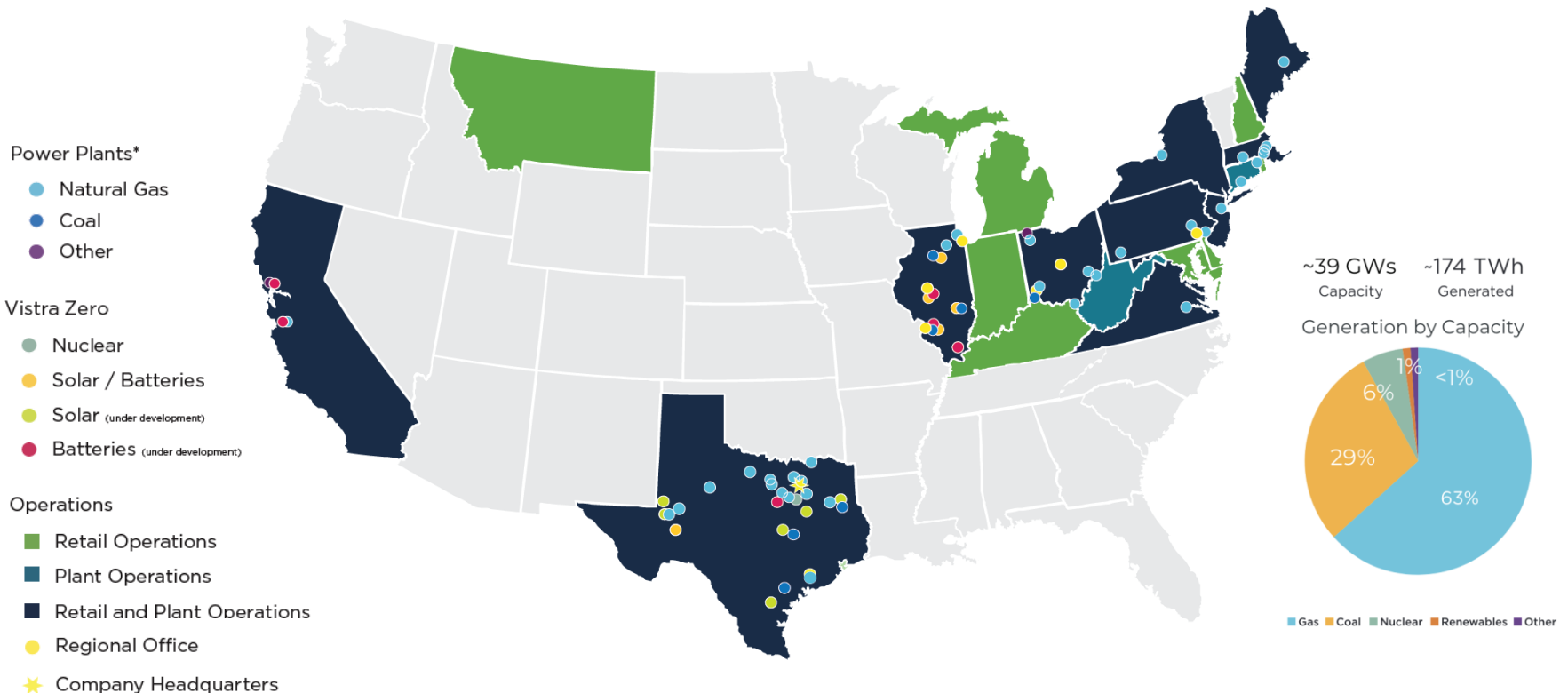
Moss Landing Energy Storage Facility

November 15, 2022



America's leading integrated energy company

Vistra (NYSE: VST) is a leading Fortune 500 integrated retail electricity and power generation company based in Irving, Texas, providing essential resources for customers, commerce, and communities. Vistra combines an innovative, customer-centric approach to retail with safe, reliable, diverse, and efficient power generation. The company brings its products and services to market in 20 states and the District of Columbia, including six of the seven competitive wholesale markets in the U.S. Vistra is the largest competitive power generator in the U.S. with a capacity of approximately 39,000 megawatts powered by a diverse portfolio of natural gas, nuclear, solar, and battery energy storage facilities, including the largest energy storage facility in the world. Vistra's retail business serves approximately 4 million residential, commercial, and industrial retail customers with electricity and natural gas, making it one of the largest competitive electricity providers in the country and offering over 50 renewable energy plans. Vistra is guided by four core principles: we do business the right way, we work as a team, we compete to win, and we care about our stakeholders, including our customers, our communities where we work and live, our employees, and our investors.





**Approximately
4 million retail
customers**

across the United States

Combined premier retail and wholesale brands



Approximately 39,000 MW
generation capacity
**enough to
power
20 million
homes**



Retail Offices

Cincinnati, OH	Irving, TX
Collinsville, IL	King of Prussia, PA
Columbus, OH	Oak Brook, IL
Houston, TX	

Total Employees

Approx. ~5,000



Committed to our customers, our communities,
and to operating our plants safely, reliably, and
in accordance with environmental standards.

Sustainability: Environmental Stewardship

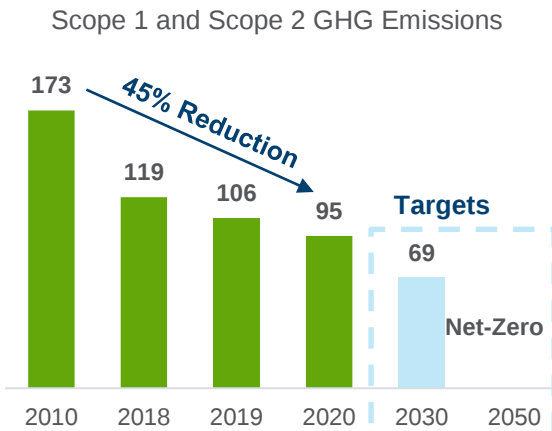


Vistra is targeting net-zero by 2050 and advancing its transformation via planned retirements of coal plants and investments in solar and batteries.

EMISSIONS REDUCTIONS

60% by 2030
As compared to 2010 baseline

Net-Zero 2050



PORTFOLIO TRANSFORMATION

~3,300 MW¹
of zero-carbon generation currently online

~7,300 MW¹
of zero-carbon generation expected by 2026

~8,000 MW
of fossil-fueled power plants expected to retire by 2027



AWARDS



2021 Excellence in Surface Coal Mining Reclamation Award



Texan by Nature 20 (TxN 20) Honoree

REPORTING

2021 [Sustainability Report](#) (GRI & SASB)

2020 [Climate Report](#) (TCFD)

2021 [CDP](#) questionnaire

Green Finance [Framework](#)

¹ Includes Comanche Peak Nuclear Facility

Vistra's Purpose: Lighting up lives, powering a better way forward.

PEOPLE AND COMMUNITIES

Diversity, Equity, and Inclusion

- Vistra joins **Disability:IN** to further advance inclusion and equality
- Dedicated employee-led **Diversity, Equity, and Inclusion Advisory Council** and **13 Employee Resource Groups** available with focus on Vistra culture and the community

Employee Health & Safety



- **0.87** Total Recordable Incident Rate achieved in 2021



- **12 Facilities** recognized with OSHA VPP Star Rating

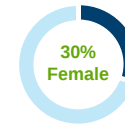
Community Support

- Provided **\$6 million** of charitable giving in 2021, including **\$2 million** of a five-year \$10 million commitment to support the advancement of business and education in diverse communities

GOVERNANCE

- Oversight of Vistra's ESG initiatives is governed by the full Vistra board, with oversight of subject matter-specific components delegated to relevant board committees

- Board Composition



AWARDS

- Vistra named one of America's Most JUST Companies for its commitment to serving its workers, customers, communities, the environment, and shareholders
- Recognized by American Association of People with Disabilities (AAPD) and Disability:IN as a **Best Place to Work for Disability Inclusion** in the 2022 Disability Equality Index

MEMBERSHIPS AND ADVOCACY



From the world's largest battery energy storage facility to miles and miles of solar panels, Vistra Zero is bringing a zero-carbon future to life.

Vistra expects to grow its Vistra Zero portfolio to more than 7,000 MW by 2026.

SOLAR

Andrews Solar Facility
100 MW
Andrews County, TX

Angus Solar Facility
110 MW
Bosque County, TX

Brightside Solar Facility
50 MW
Live Oak County, TX

Emerald Grove Solar Facility
108 MW
Crane County, TX

Forest Grove Solar Facility
200 MW
Henderson County, TX

Oak Hill Solar Facility
200 MW
Rusk County, TX

NUCLEAR

Comanche Peak Nuclear Power Plant
2,300 MW
Somervell County, TX

ENERGY STORAGE

DeCordova Energy Storage Facility
260 MW / 260 MWh
Hood County, TX

Edwards Energy Storage Facility
37 MW
Peoria County, IL

Havana Energy Storage Facility
37 MW
Mason County, IL

Joppa Energy Storage Facility
37 MW
Massac County, IL

Moss Landing Energy Storage Facility
750 MW / 3,000 MWh
Moss Landing, CA

Oakland Energy Storage Facility
36.25 MW/145 MWh
Oakland, CA

SOLAR + ENERGY STORAGE

Baldwin Solar & Energy Storage Facility
68 MW solar; 9 MW battery
Randolph County, IL

Coffeen Solar & Energy Storage Facility
44 MW solar; 6 MW battery
Montgomery County, IL

Duck Creek Solar & Energy Storage Facility
20 MW solar; 3 MW battery
Fulton County, IL

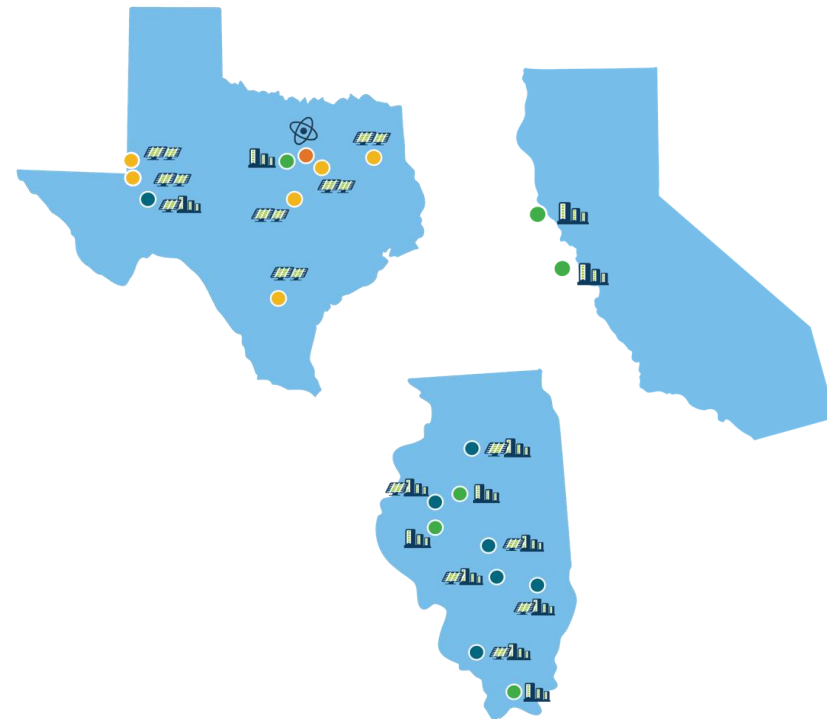
Hennepin Solar & Energy Storage Facility
50 MW solar; 6 MW battery
Putnam County, IL

Kincaid Solar & Energy Storage Facility
60 MW solar; 8 MW battery
Christian County, IL

Newton Solar & Energy Storage Facility
52 MW solar; 7 MW battery
Jasper County, IL

Upton 2 Solar & Energy Storage Facility
180 MW solar; 10 MW/42 MWh battery
Upton County, TX

List includes publicly announced projects under development



BRANDS IN CALIFORNIA



LOCATIONS

Oakland

110 MW oil (RMR and to be retired pending CAISO approval)*

35 MW / 220 MWh BESS with target COD 2024 (in queue)

39 MW / 220 MWh BESS with target COD 2025 (in queue)

Moss Landing

1,020 MW natural gas

300 MW / 1,200 MWh BESS

100 MW / 400 MWh BESS

350 MW / 1,400 MWh BESS 2023

750 MW 3,000 MWh BESS (in queue)

Morro Bay

600 MW / 2,400 MWh BESS (in queue)

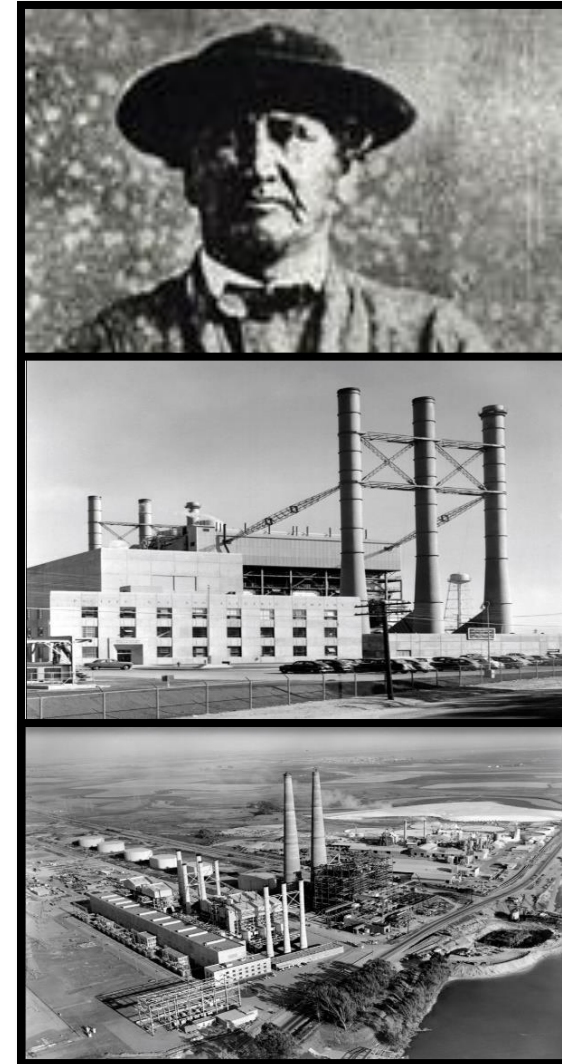
**Bold units in commercial operations*



Moss Landing History

- OCEN Tribal Nation. Spain, Mexico. In 1866 retired ship captain Charles Moss builds pier and establishes a fishing, whaling, and shipping port.
- To meet post-WWII boom in population and power demand, PG&E builds Moss Landing Units 1-5; commercial operations begin in 1950 with an operating capacity of 560 megawatts.
- PG&E adds Units 6 and 7; new units begin commercial operations in 1967 with an operating capacity of 1,509 megawatts.

*Moss photo courtesy of Moss Landing Harbor District



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.



HOW IT WORKS



**Renewable Solar
and Wind Energy**



**Moss Landing
Energy Storage Facility**

Batteries store excess renewable
energy until it is needed



**Homes & Businesses
Powered**

ENERGY IN

Excess green energy comes in and
charges utility-scale batteries



ENERGY OUT

Batteries release the stored renewable
energy when demand is highest,
increasing grid reliability and maximizing
the use of zero-carbon energy

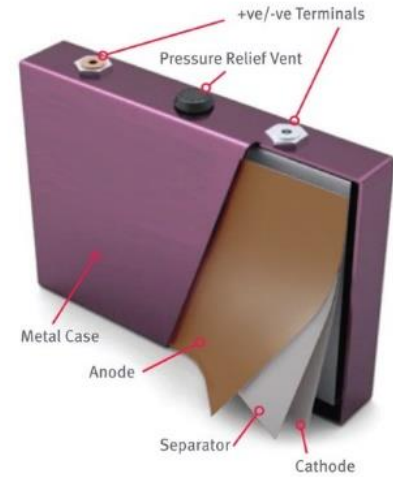
Li-ion Cell Designs



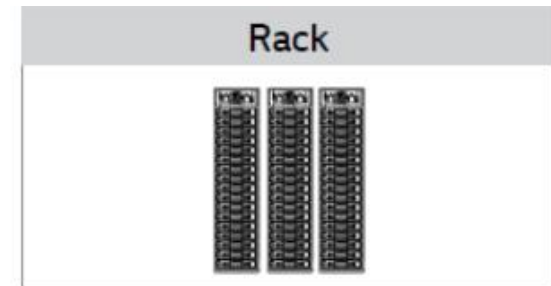
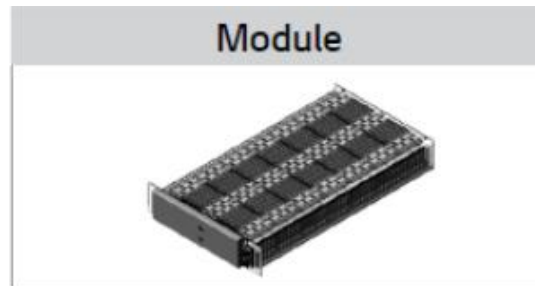
POUCH CELL



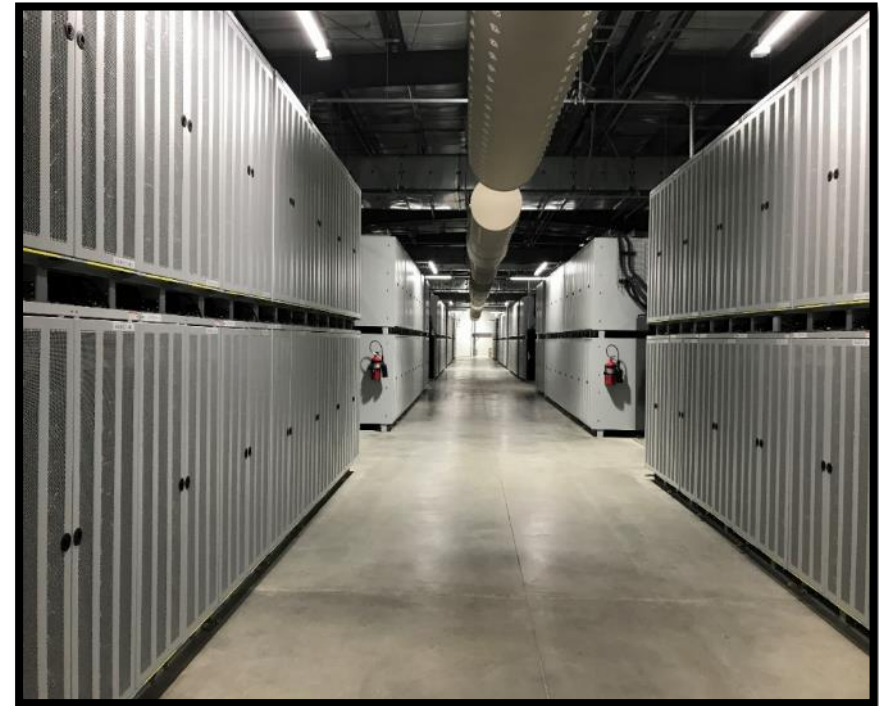
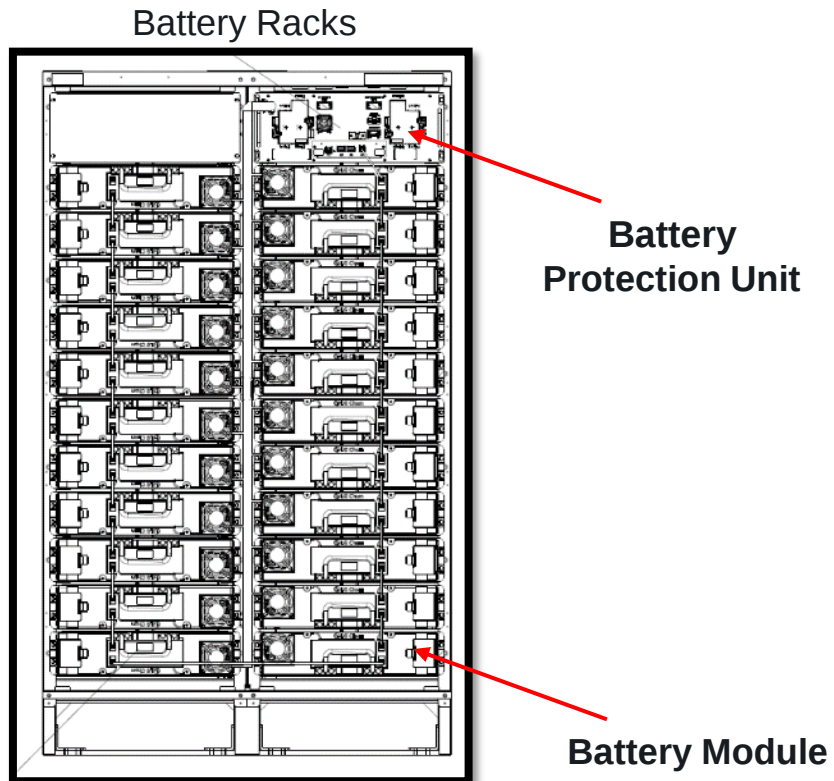
CYLINDRICAL



PRISMATIC



Battery Arrangement



Battery Core/Bank

Safety at Moss Landing Energy Storage Facility

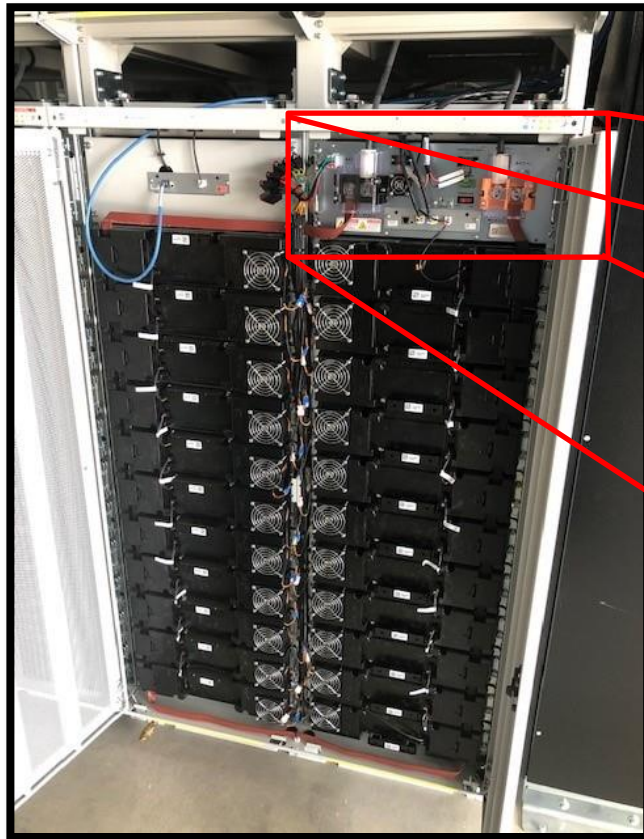
- There is no higher priority at Vistra than the safety of the communities we serve, our people, the environment, and our company sites. That commitment to safety will extend through the design, construction, and operation of the Moss Landing BESS.
- There is inherent risk in all forms of generating, 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

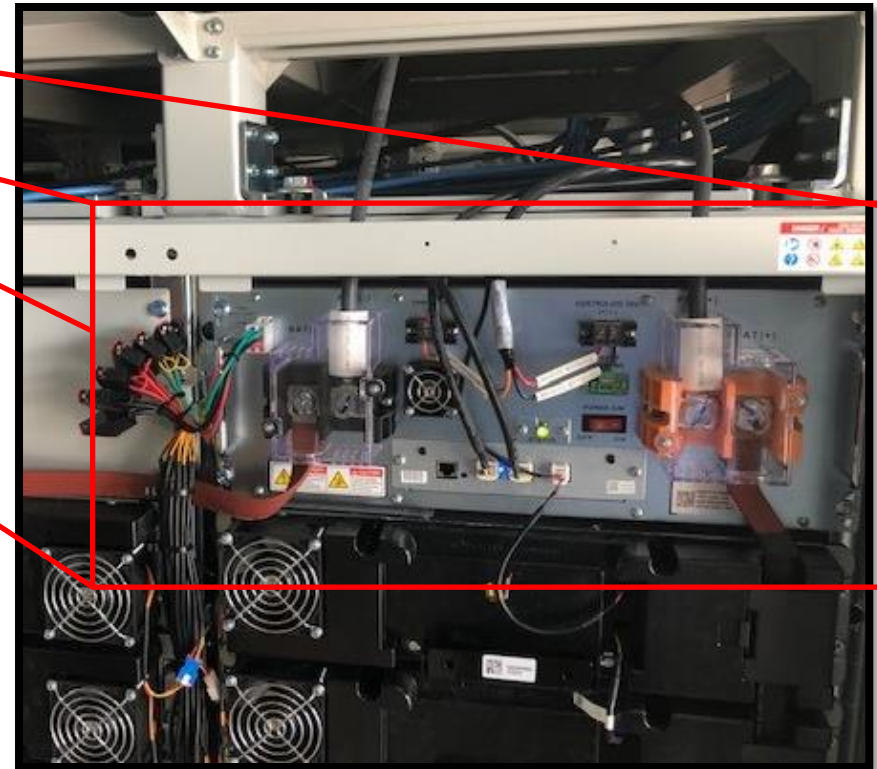
- **Prevention**
 - Engineering design, equipment selection, hazard mitigation analysis, emergency planning
- **Detection**
 - Battery management systems
 - Smoke, gas, heat, supervisory air pressure drop in water line
- **Mitigation**
 - Battery shutdown
 - Ventilation
 - Water, clean agent injection system
 - Roof level wet system



Overheating Prevention: Battery Protection Unit



Battery Rack

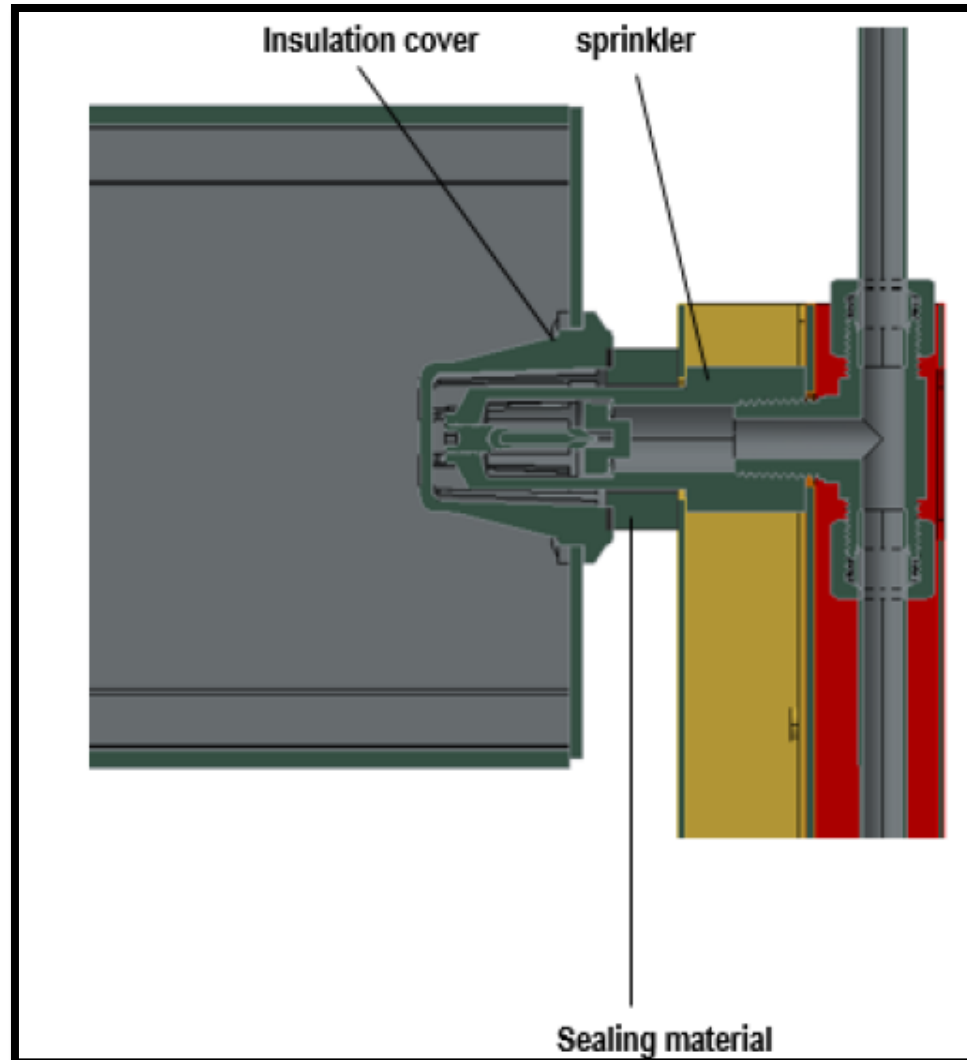


Battery Protection Unit

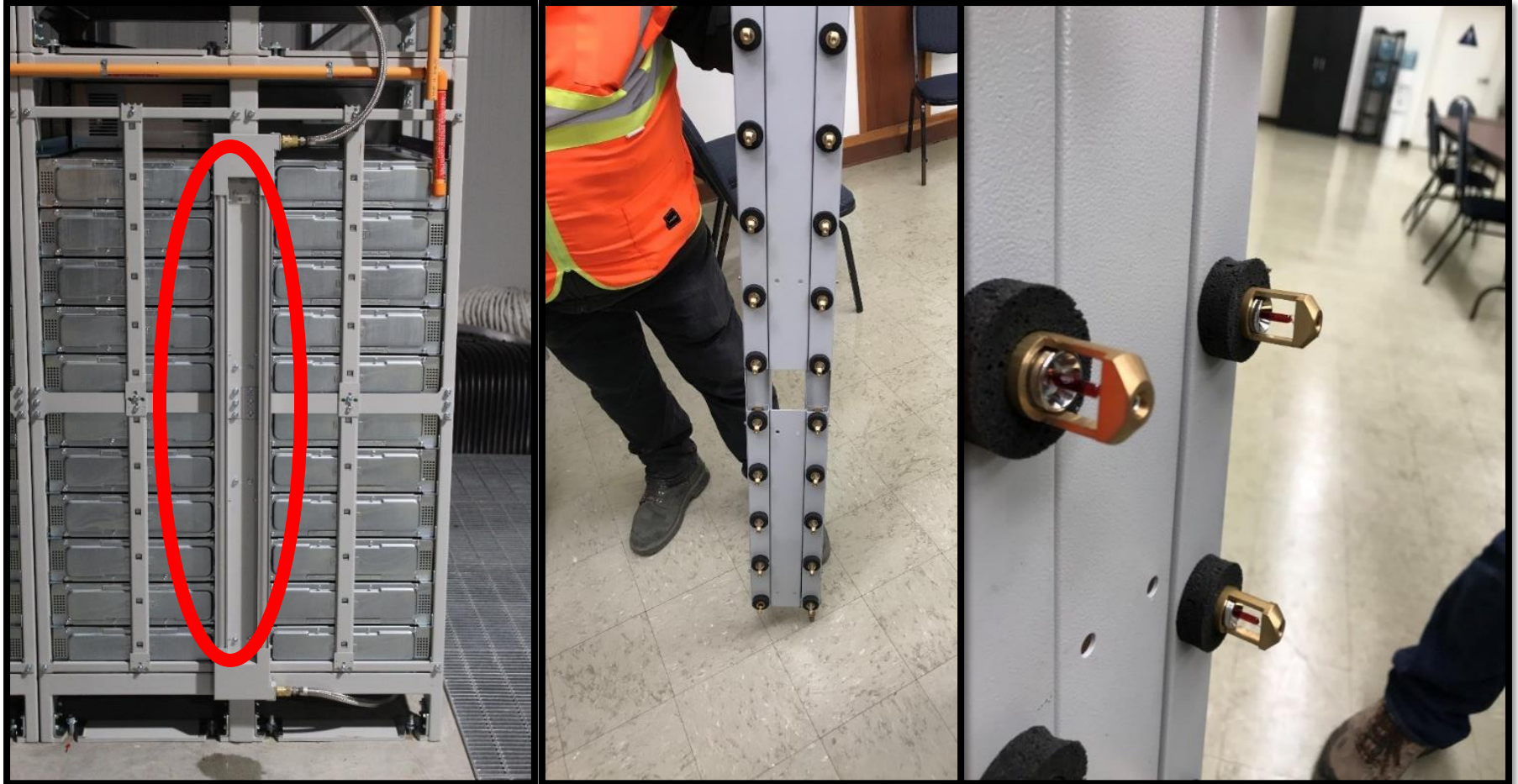
DETECTION: Very Early Smoke Detection Apparatus (VESDA)



Battery Module Sprinkler



Overheating Suppression



September and February Event Investigation Results



- **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.**
- Smoke entered the buildings, likely from failed bearings in ventilation units.
- Smoke detectors alarmed, causing release of water to the battery heat suppression system.
- Some hoses on heat suppression system disconnected at couplings to modules.
 - Sprayed water on battery modules, causing short-circuiting of batteries and arcing.
 - Generated more smoke; other smoke detectors alarmed and released water; more hose/pipe issues sprayed water on more batteries.
 - Damaged approximately 10% of batteries in ML 300 and 20% in ML 100.

- VESDA programmed in accordance with the specifications.
- Hose connections replaced.
- The complete heat suppression system pressure tested.
- System changed to dual interlock – requires both smoke and activation of battery module sprinkler to release water to heat suppression system.
- Smoke detectors installed in all air handling units to detect any smoke generated in air handling units or outdoors.

Moss Landing BESS Performance During September Heat Wave



- According to CAISO, during California's early September hot spell the battery storage fleet supplied nearly 7% of generation.
- Sen. John Laird: "It was battery storage that got us through that. If it wasn't for battery storage, the grid would have gone down." – *New Times*, Oct. 20, 2022
- Moss Landing Energy Storage Facility performed very well. During discharge, powered 300,000 homes.

Moss Landing Energy Storage Facility

Economic Benefits



- Tax Payments:
 - Estimated total annual tax payment for power plant and battery storage upon completion of Phase 3 based current project capital investment and 2021 tax rates:
 - Monterey County and other tax entities – \$16 million
 - In 2019, for power plant only before battery storage – \$1.8 million
- According to soon-to-be-released Cal Poly Economic Analysis:
 - Almost 8,700 direct, indirect, and induced jobs created during construction 2022-2026.
 - \$1.5 billion of total economic benefit during construction that includes all local spending on labor, materials, and services.
 - When operating, project estimated to create 77 jobs annually and about \$65 million in economic impact.

Moss Landing Energy Storage Facility



Largest Energy Storage System in the World

THANK YOU



Questions? Please contact:

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