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CEC Data Request Response #4

Compass Battery Energy Storage Project

NOVEMBER 2024

Prepared for:

CALIFORNIA ENERGY COMMISSION

Prepared by:

COMPASS ENERGY STORAGE LLC

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2 Draft Hazard Mitigation Analysis

3 Revised Transportation Application Section and Appendix

4 Revised Air Quality Application Section and Appendix

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7 Revised Worker Safety Application Section

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10 Fire Hydrant and Secondary Entrance Exhibit

1 Introduction

On October 7, 2024, Compass Energy Storage LLC and Affiliates (Applicant) received a Determination of Incomplete Application and Request for Information from the California Energy Commission (CEC or Commission) for the Compass Battery Energy Storage Project (project; Docket Number 24-OPT-02) in response to the first set of data request responses (Data Response #1 and #2). Table 1 lists the Data Requests responded to in Response #4. Please note that this document (Data Response #4) includes responses and materials to support the resource areas of Mandatory Opt-in Requirements, Alternatives, Hazardous Materials Handling, Traffic and Transportation, Visual Resources, Wildfire, and Worker Safety. The remainder of the Data Requests received on October 7, 2024, were responded to and submitted to the CEC on November 6, 2024, and included Greenhouse Gas Emissions, Biological Resources, and Cultural Resources (Data Response #3).

Table 1. Data Responses Included

Data Request Resources Area	Data Request Number
Mandatory Opt-in Requirements	REV 1 DR MAND-1 and REV 1 DR MAND-2
Alternatives	REV 1 DR ALT-1 and REV 1 DR ALT-2
Hazardous Materials Handling	REV 1 DR HAZ-1 through REV 1 DR HAZ-5
Traffic and Transportation	REV 1 DR TRANS-1 through REV 1 DR TRANS-5
Visual Resources	REV 1 DR VIS-1 and REV 1 DR VIS-2 DR VIS-3 through DR VIS-7; DR VIS-9 through DR VIS-13; DR VIS-19 through DR VIS-21
Wildfire	REV 1 DR FIRE-1 through REV 1 DR FIRE-5
Worker Safety	REV 1 DR WS-1 through REV 1 DR WS-4

The responses are grouped by individual resource area and are presented in the same order and with the same numbering provided by the CEC.

Please note that for the Mandatory Opt-in Requirements and Alternatives resource areas, the Applicant has provided a response to the CEC's introduction to provide additional background related to the REV 1 responses. For example, please refer to Sections 2.1 and 3.1.

2 Mandatory Opt-in Requirements

2.1 Introduction to REV 1 Data Requests

CEC Comment: Introduction: California Code of Regulations title 20, section 1877(f) requires Opt-In Applications to identify preliminary information demonstrating overall net positive economic benefit to the local government that would have had permitting authority over the site and related facility, consistent with Public Resources Code section 25545.9. California Code of Regulations title 20, section 1879(a)(7) further states that the net positive benefits identified in an Opt-In Application may include, but are not limited to the following: (a) employment growth, (b)

housing development, (c) infrastructure and environmental improvements, (d) assistance to public schools and education, (e) assistance to public safety agencies and departments, and (f) property taxes and sales and use tax revenues.

The applicant’s Opt-In Application and Data Request Response #1 Part I (TN 258090-1) includes an Economic and Public Revenue Impact Study (TN 255577-10), which uses the IMPLAN model, an Input/Output modeling framework, to calculate gross positive economic benefits to the City of San Juan Capistrano and to Orange County (pp. 13 to 23). However, the study and Data Request Response #1 do not provide a calculation of the net positive economic benefit to the local government (i.e., City of San Juan Capistrano) per the requirements of California Code of Regulations title 20, section 1877(f). For example, the economic metrics provided for employment (e.g., employment, full-time equivalent [FTE], job-year, employee compensation; p.14) do not account for a net change in these metrics. While information provided in the original application material and the Data Request Response #1 contain the gross positive benefits to the City of San Juan Capistrano, and the model assumptions, there are no assumptions included in the applicant’s IMPLAN impacts for any “negative events” (as defined by IMPLAN) to include in the calculation of net benefits. Therefore, an overall net positive economic benefit to the City of San Juan Capistrano has not been demonstrated.

A net analysis should consider all project-related economic effects that result from a change in production or spending in the economy. A model that calculates net positive economic benefit would incorporate other economic impacts (or what are known as “negative events” in IMPLAN) beyond the overall gross impacts of the project such as:

- The opportunity cost of investment in the proposed project;
- Projected cost of the city providing services to the project;
- Local economic development losses associated with the displacement of an existing energy source; or
- Potential increases or decreases in electricity rates or fuel prices resulting from project investments in new energy storage infrastructure.

A net analysis should also include the gain and loss of jobs when calculating the net employment impact. A net analysis will consider the differences of the economic outputs from the proposed project versus the outputs from the current use at the project site. Specific assumptions for positive, and negative effects to the industry from the project must be made to estimate the net benefits specifically.

To determine the net economic benefits to the City of San Juan Capistrano, CEC economics staff are developing an economic model. To obtain accurate estimates, the staff requests the applicant to provide further information on the technology by filling out the data categories in the following table:

Industry Sector	Value (in Dollars)	Local Share (in Dollars)
Plant Investment Hardware		
Plant Installation		
Maintenance, Year 1		
Plant Earnings, Year 1		
Government Permitting		
Government Revenue, Year 1		

Property Tax, Local		
Sales Tax on Installation		
TOTAL		

Response: The Applicant’s response to Data Request REV 1 DR MAND-1 includes the supplemental Memorandum prepared by Economic and Planning Systems (EPS) dated November 26, 2024 (see Attachment 1). This memorandum should be read along with and incorporates by reference the EPS Technical Memorandum submitted as part of the initial Opt-In Application in April 2024 and the supplemental EPS Technical Memorandum, dated July 17, 2024, which together demonstrate that the project will have a net positive economic impact to the local government that would have had permitting authority over the site and related facility. The net economic benefits, opportunity costs and other issues raised by the CEC in the REV 1 Introduction paragraphs (c), (d) and (e) are further addressed in detail in the EPS Technical Memorandum attached hereto as Attachment 1.

2.2 Data Request REV 1 DR MAND-1.

REV 1 DR MAND-1: Per California Code of Regulations, title 20, section 1877(f) requirement, please provide responses to the following questions:

- a. What is the total value of the plant hardware and what is the local share allocation?
- b. Is there a utility interconnect fee for this BESS facility? If so, what is the local share? What is the total dollar value for construction and BESS installation? What is the estimated local share for City of San Juan Capistrano?
- c. What is the total maintenance per year for the plant and the local share?
- d. What is the expected annual operating revenue of the facility? What share of that benefit is estimated to be allocated to City of San Juan Capistrano?
- e. Are there any permitting fees for the construction of this BESS facility in the City of San Juan Capistrano? If so, what are the values in dollars?
- f. What is the annual income tax for the proposed BESS facility? What allocation has been made for the local share of taxes for City of San Juan Capistrano?
- g. What is the estimated property tax for the BESS facility per year? What is the local share allocation for City of San Juan Capistrano?
- h. What is the estimate for sales tax related to BESS installation? What is the local share for City of San Juan Capistrano?

Response: Targeted responses to the questions within REV 1 DR MAND-1 are provided below. Please refer to Attachment 1 for additional details and background.

- a. The total value of plant hardware is about \$243 million. The local share allocation is expected to be \$18 million.

- b. There is no utility interconnect fee. However, the project includes the infrastructure to interconnect the project to the existing SDG&E transmission line. This includes a switchyard and loop-in transmission line. These costs are included in the cost of hardware and installation. Total project cost is estimated at \$300 million; local economic output is estimated at about \$51 million.
- c. Annual maintenance cost estimated at \$2.3 million; about \$1.5 million estimated to be local spending/economic activity.
- d. The expected annual operating revenue of the facility is difficult to forecast as the project will participate in the dynamic California energy market.
- e. About \$1 million paid to the CEC.
- f. Annual income taxes are not known. The City is expected to receive \$2.25 million in sales and use tax revenues associated with project construction and a total of \$6.0 million in property tax revenues over the lifetime of the project (an average of about \$170,000 annually).
- g. Average annual property tax payments are about \$1.5 million with about \$170,000 accruing to the City of San Juan Capistrano.
- h. Total sales and use tax associated with project construction is estimated at \$9.27 million with \$2.25 million accruing to the City of San Juan Capistrano.

2.3 Data Request REV 1 DR MAND-2

CEC Comment: REV 1 DR MAND-2: Per California Code of Regulations title 20, section 1877(f) requirement related to net economic benefits, please provide responses to the following questions:

- a. What is the estimated round-trip efficiency of the Tesla Megapack 2XL technology system over 35 years?
- b. What is the estimated degradation factor of the Tesla Megapack 2XL technology system over 35 years?
- c. Does the Tesla Megapack 2XL technology system qualify for a federal tax credit? If so, what is the rate of the credit and the total dollar value of the tax credit?

Response:

- a. The round-trip efficiency (AC to AC) is 87.3%.
- b. The project degradation was modeled to 20 years. At that point, the project will be re-assessed for potential 're-powering' with the latest technology. Annual degradation is approximately 1.27%. However, the project is planned to be 'augmented' periodically to compensate for degradation to ensure the full capacity of the project can continue to be met.

- c. The Tesla Megapack 2XL (MP2XL) qualifies for a federal tax credit. 30% is the standard tax credit rate for this type of project. Plus, there is a 10% adder for Domestic Content which is expected to apply given the domestic sourcing. There is also a 10% Energy Community Adder which is expected to apply per current classification.

3 Alternatives

3.1 Introduction to REV 1 Data Requests

CEC Comment: Introduction: On September 6, 2024, an Update Regarding Selected Battery Storage Technology and Fire Protection (TN 259023) was filed which indicated that the Applicant had made a commitment to procure Tesla Megapack 2XL technology for the project.

In the CEC's most recent Data Request to Compass, the CEC Worker Safety and Fire Protection staff stated that their *"initial review of UL9540A test results for this type of battery energy storage system (BESS) indicates that the chances for cell thermal runaway are high and for escalation to a unit or units are moderately high. Potentially significant impacts to worker safety and fire protection and public health could result from a fire in a BESS producing toxic gas emissions to the atmosphere, with limited site and fire water access, and the proximity to populations, sensitive receptors, railways, and heavily traveled highways or roadways."*

Response: The Applicant is planning to utilize the safest battery storage technology available on the market at the time of purchase that meets all local, state and federal health and safety standards and protocols. Currently, the applicant has selected the MP2XL since it meets these criteria today.

The Applicant will only assemble and operate the batteries provided to it from the ultimate vendor used. In discussions with Tesla and other vendors, the risk of thermal runaway in their technology at any location is low, with the probability of it occurring and causing impacts even lower. As a result, it is unclear where the Commission staff's categorization for the technology risk for thermal runaway as "high" or that escalation to additional units as "moderately high" originates. In addition, to date no thermal incident has extended beyond an individual battery unit or project site, and none have resulted in the spread of fire or other adverse health impacts beyond the project site. Potential risks to adjacent properties can be further reduced and mitigated through facility design and proper prevention and protection and management systems, along with clearly defined management practices.

A Hazard Mitigation Analysis (HMA) and Emergency Response Plan (ERP) for this project are being completed in collaboration with the Orange County Fire Authority (OCFA). A draft of this HMA that incorporates preliminary recommendations from OCFA is included as Attachment 2 to this Data Response. This draft provides an expert evaluation of UL9540A testing and related safety considerations. A summary of the pertinent analysis is included below, with additional details available in Attachment 2.

The HMA provides the results of independent certified testing and expert evidence to demonstrate that the MP2XL does not present a high risk of thermal runaway, and the chances of escalation to a unit or units are low. This information relies upon physical evaluations conducted in compliance with national and state safety criteria and standards for this technology and this specific product.

This project will fully comply with all applicable California Fire Code (CFC), National Fire Protection Association (NFPA), and UL protocols. Our understanding is that these standards form the basis for evaluating the performance and safety of battery storage projects, as has been the case in other CEC-reviewed projects. Furthermore, as stated above, we have not encountered any peer-reviewed testing or evidence to support a high-risk characterization of the MP2XL or lithium-iron phosphate (LFP) technology.

Without any specific new information to suggest impacts beyond those already included in our application, we defer to the established California Environmental Quality Act (CEQA) criteria for evaluating this project and its alternatives. Notably, each of the 17 Alternatives already submitted in our original project application explicitly considered all of the factors described in the Commission’s comments (worker safety, public health, fire water, proximity to populations, sensitive receptors, railways and highways). We request the Commission refer to the original Project Description outlining all available alternatives.

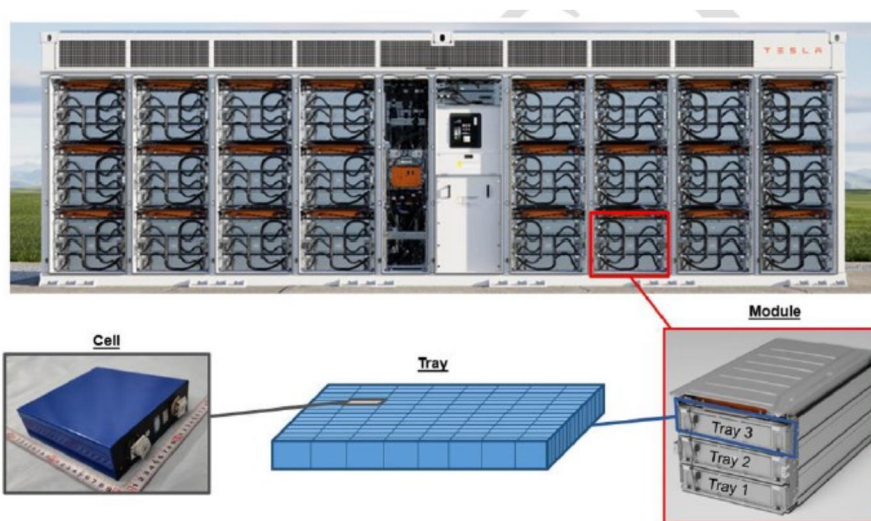
To further assist the Commission and the public in their review of the safety of the MP2XL we offer the following supplemental information:

UL 9540A test results for MP2XL:

The purpose of a UL 9540A test is to intentionally dismantle all safety and prevention systems, and force the components into a thermal condition –in order to observe how it would respond. The following is a summary of the information contained in the attached hazard mitigation analysis (HMA) for the MP2XL:

Assuming that the Compass battery energy storage system (BESS) cabinets will utilize the 24-battery module (MP2XL) each battery module contains three battery trays, as shown in Figure 1 below, which are arrays of LFP cells. The LFP cells utilized in the MP2XL are individually hermetically sealed. Each battery tray contains 112 cells. Therefore, each battery module has 336 cells. In total, the 24-battery module MP2XL being installed at the Compass BESS will have 8,064 cells.

Figure 1. MP2XL Cabinet, Module, Generalized Tray, and Individual Cell Layout



UL 9540A unit-level fire testing for the MP2XL demonstrated that a nearly simultaneous failure of up to seven cells did not result in thermal runaway propagating throughout the battery module, much less from the tested module to other modules in the cabinet. Thus, any contention that the chances for cell thermal runaway are high and for

escalation to a unit or units are moderately high are not supported by the UL 9540A test results. Further, the MP2XL design includes a series of passive fire protection schemes (barriers) to protect it from a fire spreading from one MP2XL cabinet to another, meaning there is little to no risk of escalation to another cabinet. There were no observations of deflagration, projectiles, flying debris, detonation, or other explosive discharge of gases.

In addition to the 9540A test, the manufacturer also conducted a destructive unit test to evaluate a so-called “worst case” scenario. Because the 9540A test cell failures did not result in thermal runaway, this large-scale test intentionally dismantled all safety systems and ignited over 48 cells in the unit to force a combustion condition. Again, the incident remained contained within the individual unit, and did not propagate to adjacent units or structures. It is further notable that there are over 5,000 of the MP2XL batteries deployed in the U.S. (many of which are deployed as utility-scale BESS) and none of them have resulted in a thermal runaway event.

Please see the detailed description of these test results in Attachment 2.

Response – air quality test results for MP2XL:

During the UL 9540A testing, non-flammable gases collected during the full combustion of an MP2XL tray of cells identified typical fire byproducts, such as carbon monoxide (CO) and carbon dioxide (CO₂), which were the only non-flammable gases detected. The non-flammable gases detected are similar to gases that first responders would encounter in a typical Class A structure fire and do not contain any unique, or atypical, gases beyond what you would find in the combustion of modern combustible materials, such as plastics. Note: LFP batteries have a different cathode chemistry than that of other lithium-ion batteries and therefore the toxic gases sometimes associated with other types of lithium-ion batteries, such as hydrogen fluoride (HF), hydrogen chloride (HCL), and hydrogen cyanide (HCN), were not detected during the combustion of the MP2XL tray during UL 9540A module level testing.

Additionally, as summarized in the response to **REV 1 DR HAZ-1** below, the CO and CO₂ values measured from UL 9540A module level fire testing (where the products of combustion were collected within a hood) are well below the IDLH (the Immediately Dangerous to Life or Health) values for each of the gases based on data published by National Institute for Occupational Safety & Health (NIOSH).

Given that the project will install and operate the MP2XL units outdoors, where any gas release would be diluted by the entrainment of outside air, these gases, at the quantities measured during UL 9540A module level fire testing, would not be expected to have an adverse effect on individuals during the time deemed necessary to evacuate from the area (i.e., approximately 30 seconds to walk 100 feet away/evacuate from a burning MP2XL). Nor would these gases, at the quantities measured during UL 9540A module level fire testing, be expected to have an adverse effect outside of the project area, or on emergency response personnel, where the Emergency Response Plans advise set back distances and wearing appropriate personal protective equipment (PPE) while responding to an MP2XL fire.

Please see additional detailed discussion of these air quality and related safety features in Attachment 2.

3.2 Data Request REV 1 DR ALT-1

CEC Comment: REV 1 DR ALT-1: Please identify additional alternative locations (sites) that may be better suited in terms of site and fire water access, distances to populations, sensitive receptors, railways, and heavily traveled

highways or roadways, which could reduce or avoid potential impacts resulting from emissions to the atmosphere of toxic gases from a BESS fire. Provide an assessment of potential feasibility of locating the project at the alternative sites and describe the ability to attain the project objectives at the alternative sites.

Response: Please see the response to the Alternatives introduction, and the attached HMA (Attachment 2) which documents the results of the UL 9540A test in greater detail. The circumstances described by the CEC that could warrant the consideration of an additional alternative are not present for this project, and because a full examination of 17 alternatives that consider all of the factors mentioned in the Data Request has been included in the project application.

In sum, such testing concluded: a nearly simultaneous failure of up to seven cells did not result in thermal runaway propagating throughout the battery module or to adjacent MP2XL cabinets; the external flame detection system and internal sensors within the MP2XL are capable of rapidly detecting a fire event within the MP2XL cabinets; toxic gas concentrations measured during module level fire testing are well below the “immediately dangerous to life or health” value for each gas and any gas release would be diluted by the entrainment of outside air; no flammable gases exceeding 25% of their lower flammability limit would be released from the BESS during charging, discharging, and normal operation; and finally, the MP2XL explosion control system effectively avoids development of an explosion hazard during a thermal runaway event.

On this basis, the applicant further responds as follows:

The Alternatives analysis evaluated alternatives to the project to determine, as required by CEQA and Appendix B, whether the alternatives could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the potential impacts. Seventeen (17) alternative site locations were considered, but all were rejected because they would not reasonably and feasibly accomplish most of the project objectives or would result in greater impacts than the project. Thus, the Alternatives analysis exhaustively concluded that there are no additional alternative locations that may be better suited to reduce or avoid potential impacts generally.

The Moulton Niguel Water District (MNWD) provides the infrastructure necessary to provide water to the Saddleback Church property where the project will be located. The project has confirmed that local infrastructure has sufficient fire water access and capacity to serve the project. The flow tests conducted by the MNWD for the pipes adjacent to the project site have verified that the existing system exceeds the 2,500 gallons per minute flow rate and 20 psi pressure standards required by the OCFA.

There are no occupied structures within approximately 750 feet of the project site; the nearest occupied structure is a residence located approximately 750 feet to the southeast located between the railroad tracks and Camino Capistrano. Air quality monitors at prior utility-scale battery thermal runaway incidents have shown that air emissions are less hazardous than a small structural fire. This result is consistent with the flammable gases observed during Tesla’s destructive unit test on the MP2XL and contained some of the same constituents including Carbon Monoxide (CO), Carbon Dioxide (CO₂), Hydrogen (H₂), and Methane (CH₄). Due to the LFP technology, other heavy metal emissions were not found in the MP2XL test results. No particulates or toxic gas emissions were observed. Accordingly, under any foreseeable adverse scenario, the nearest population and the nearest occupied structure is approximately 750 feet away - a safe distance away from the project site from an air quality perspective.

The railway is approximately 400 feet away from the project site and across a canyon, thus avoiding any potential impact from a BESS fire.

Further, Interstate 5 is approximately 500 to 800 feet away from the project site. None of the test results for the MP2XL described in the attached UL 9540A test nor the destructive unit test resulted in a significant smoke plume. For example, the amount of smoke from the UL 9540A test was barely detectible and only visible within a few feet at the base of one container, and no flames occurred. Similarly, Tesla's destructive unit test also did not result in a significant amount of smoke. Based on these testing results and the distance from the project site to Interstate 5, no significant impact from smoke from a BESS fire can be expected, particularly given the ability to spray a fogging pattern to disrupt or redirect any smoke plume which may leave the project site. In addition, as indicated above, there is no basis for toxic gases to emanate from an MP2XL and thereby will not have an impact on people occupying or utilizing the roads surrounding the project site.

3.3 Data Request REV 1 DR ALT-2

CEC Comment: REV 1 DR ALT-2: Please describe which alternative battery technologies you have considered, specifically ones that fail to catch fire under normal or stressed conditions (e.g., aqueous flow batteries using iron, zinc, vanadium; or lithium titanium oxide batteries, and others) and thus may be better suited in terms of site and fire water access, distances to populations, sensitive receptors, railways, and heavily traveled highways/roadways than the Tesla Megapack 2XL BESS. Provide an assessment of potential feasibility of the alternative battery technologies and describe the ability to attain the project objectives using the alternative battery technologies.

Response: The project objectives include, among others, to (1) develop a utility scale BESS in an economically feasible and commercially financeable manner; (2) use a proven and established battery energy storage system technology that is safe, efficient, commercially available, and has low maintenance requirements, and (3) locate a BESS that is capable of being completed by summer 2026. The alternative battery technologies suggested in REV 1 DR ALT-2 would not satisfy these objectives. In particular, aqueous iron redox flow battery technology has only recently come into development and has not yet been scaled-up to a commercially available level.¹ Vanadium redox flow batteries, while potentially more proven than iron redox flow batteries, are notoriously expensive, preventing their commercialization and implementation within the timeframe and economics of this project.² Similarly, the high up-front cost of lithium titanium oxide batteries prevents them from meeting the project objectives.³

In addition, from a review of publicly available information on which battery types have completed UL 9540A testing, information largely demonstrates testing of LFP batteries.⁴ Thus, using the highest standard for large-scale fire testing of BESS, there is no available evidence to conclusively demonstrate that these other technologies are more safe or feasible than the project's chosen LFP BESS technology.

¹ <https://www.pnnl.gov/news-media/new-all-liquid-iron-flow-battery-grid-energy-storage>

² <https://www.cleantech.com/vanadium-flow-batteries-vs-alternative-battery-chemistries/#:~:text=Flow%2Obatteries%2C%20energy%20storage%20systems,of%20flow%2Obattery%20projects%20worldwide>.

³ <https://www.kbvresearch.com/lithium-titanate-oxide-battery-market/#:~:text=Application%20Outlook,increasingly%20adopting%20LTO%20battery%20technology>.

⁴ See, e.g., [https://www.fortresspower.com/fortress-powers-evault-max-meets-ul9540a-standard-for-large-scale-fire-test/#:~:text=Fortress%20Power%20is%20among%20a%20select%20few,in%20a%20battery%20energy%20storage%20system%20\(BESS\):https://www.energy-storage.news/catl-to-start-conducting-ul9540a-tests-through-ul-solutions-partnership/#:~:text=In%20somewhat%20related%20news%2C%20KORE,solar%20arrays%2C%E2%80%9D%20Wolfe%20said](https://www.fortresspower.com/fortress-powers-evault-max-meets-ul9540a-standard-for-large-scale-fire-test/#:~:text=Fortress%20Power%20is%20among%20a%20select%20few,in%20a%20battery%20energy%20storage%20system%20(BESS):https://www.energy-storage.news/catl-to-start-conducting-ul9540a-tests-through-ul-solutions-partnership/#:~:text=In%20somewhat%20related%20news%2C%20KORE,solar%20arrays%2C%E2%80%9D%20Wolfe%20said); <https://agreate.com/agreate-passes-ul-9540a-and-receives-ul-1973-safety-certification-for-its-commercial-energy-storage-racks-and-systems/#:~:text=About%20AGreatE%20Inc.,generation%2C%20storage%2C%20and%20consumption>.

4 Hazardous Materials Handling

4.1 Data Request REV 1 DR HAZ-1

CEC Comment: REV 1 DR HAZ-1: Please provide an updated discussion of the toxic vapors/emissions that could be produced if a battery is damaged, or thermal runaway occurs based on the updated battery system information and fire protection system.

Response: The MP2XL utilizes listed LFP cells that are hermetically sealed and do not vent during charging, discharging, or normal operation. Unlike other battery types, no flammable gases are released during normal operation of the LFP batteries.

In case of a thermal runaway, the non-flammable gases collected during the UL 9540A module-level testing are listed in the table below, which shows typical fire byproducts, such as CO and CO₂ were the only non-flammable gases detected during the full combustion of an MP2XL tray of cells. Note that toxic gases sometimes associated with other types of lithium-ion batteries, such as HF, HCL, and HCN, were not detected during the combustion of the MP2XL tray during UL 9540A module-level testing. The nonflammable gases detected are similar to gases first responders would encounter in a typical Class A structure fire and do not contain any unique, or atypical, gases beyond what you would find in the combustion of modern combustible materials, such as plastics.

Table 2, below, has also provided the immediately dangerous to life and health (IDLH) values for each of the gases based on data published by the National Institute for Occupational Safety & Health (NIOSH). The IDLH is an atmospheric concentration of any toxic, corrosive, or asphyxiant substance that: poses an immediate threat to life; would cause irreversible or delayed adverse health effects; or would interfere with an individual's ability to escape from a dangerous atmosphere. The values measured from UL 9540A module level fire testing (where the products of combustion were collected within a hood) are well below the IDLH value for each gas identified. Accordingly, the MP2XL technology does not pose a risk to the surrounding community of toxic non-flammable gas release in the event of a thermal runaway event.

Table 2. Products of Combustion: Nonflammable Gases and IDLH Values

Gas Name	Chemical Structure	Quantity Measured (parts per million)	IDLH Value (parts per million)
Carbon Monoxide	CO	204 ppm	1,200 ppm
Carbon Dioxide	CO ₂	6,720 ppm	40,000 ppm

Please see Attachment 2 for additional emission testing and results detail.

4.2 Data Request REV 1 DR HAZ-2

CEC Comment: REV 1 DR HAZ-2: Please provide a discussion of the potential for hazardous materials spills or leaks from hazardous materials used and/or stored onsite during operation, and measures/procedures that would be used to reduce the risk of spills or releases during project operation and resulting adverse effects to people and the environment.

Response: The MP2XL utilizes LFP batteries which, because of their chemistry and architecture, do not require spill neutralization or containment. Unlike other battery types, such as lead acid, there is no free-flowing liquid inside the cells. Additionally, the MP2XL is equipped with a thermal management system (TMS) that utilizes 106 gallons of a glycol-water solution. The MP2XL cabinet, specifically, the IP66 battery bay enclosure, is designed to fully contain the volume of the solution should a leak occur in the TMS, either in normal operation or during a failure event.

4.3 Data Request REV 1 DR HAZ-3

CEC Comment: REV 1 DR HAZ-3: Please provide copies of the UL 9540A report for the MP2XL battery system.

Response: The UL 9540A test results are incorporated in Attachment 2 as part of the expert HMA prepared for this project. The UL 9540A test results were provided to the Fire Safety Engineer, Fire and Risk Alliance, who prepared the Draft HMA and forthcoming ERP.

4.4 Data Request REV 1 DR HAZ-4

CEC Comment: REV 1 DR HAZ-4: Please provide a schematic of the battery container and the fire protection and explosion control systems and a detailed description of these systems.

Response: The applicant does not have access to a schematic drawing for these systems other than those contained in the attached draft HMA. The applicant will engage Tesla to see if it has a schematic and is able to share it. If so, the applicant will update this response accordingly. The draft HMA and forthcoming ERP will be finalized with the OCFA before commencement of construction of the project. This HMA will clarify that the MP2XL has an integrated battery management system (BMS) that tracks the performance, voltage, current, and state of charge (SOC) of the cells (among many other datapoints). The BMS is a layered system, where each battery module has its own BMS and the MP2XL itself has a bus controller supervising the output of all the battery modules at the AC bus level. The BMS is engineered to react to fault conditions in an autonomous manner, with safeguards built into the firmware. These fault conditions include, but are not limited to, over-temperature, loss of communication, over-voltage, and isolation. For instance, to prevent a cell over-temperature the TMS is enabled by the BMS to cool the cells/module. This action by the BMS (which is just one example of many ways the BMS can respond to a fault condition) can either prevent thermal runaway from occurring in the cell or prohibit the propagation of thermal runaway to adjacent cells and prevent the spread of fire to the other battery storage modules. Depending on the severity of the fault condition, the BMS can automatically isolate the affected battery module temporarily (less severe fault) or it can permanently disconnect the module. The internal sensors which detect an off-normal overheating event, such as a fire, are monitored by the BMS and are relayed to a Tesla Local Operation Center (LOC). The Tesla LOC can then inform project operations and maintenance service personnel who, if necessary, can notify the fire department if there is a thermal event.

See the response to **REV 1 DR HAZ-5** for a detailed discussion on the explosion control system.

Notably, destructive unit testing of the MP2XL indicates the smoke produced does not create a strong plume or a very dark sooty smoke plume because there are very limited combustible materials to generate flames and smoke inside a MP2XL. The BESS will also have an external flame detection system capable of detecting a fire event within the MP2XL cabinets. Specifically, multi-spectrum IR flame detection will be installed external to the MP2XL to detect

flames exiting the cabinets, as required by the CFC. Testing performed by Tesla has demonstrated that multi-spectrum infrared (IR) flame detectors are capable of detecting a fire once flames have exited the cabinet. An external flame detection system will be installed to monitor each battery enclosure, but this is not within the MP2XL. This will include the installation of several IR cameras throughout the BESS yard, mounted on poles, covering several MP2XLs, to detect abnormal temperature increases associated with fire inside the enclosures. The IR cameras will be wired to an alarm and control panel inside the control enclosure (which is inside the substation), which will be wired to the emergency management system (EMS). There will also be an HVAC system and fire suppression system (FSS) inside the control enclosure. This external flame detection system will be monitored separately (not monitored through the MP2XL or Tesla's LOCs) by a fire alarm monitoring company that operates 24/7, as required by the CFC.

4.5 Data Request REV 1 DR HAZ-5

CEC Comment: REV 1 DR HAZ-5: Please provide a summary of the NFPA regulations discussed in Data Response DR HAZ 6 (NFPA 68, 69, and 855) as they relate to the design of the selected battery system (MP2XL) and update Table 4.5-2.

Response: NFPA 68 applies to the design, location, installation, maintenance, and use of devices and systems that vent the combustion gases and pressures resulting from a deflagration within an enclosure so that structural and mechanical damage is minimized. NFPA 69, the sister standard to NFPA 68, provides requirements for installing systems for the prevention and control of explosions in enclosures that contain flammable concentrations of flammable gases, vapors, mists, dusts, or hybrid mixtures.

NFPA 855 provides the minimum requirements for mitigating the hazards associated with energy storage systems.

The MP2XL includes an explosion control system to mitigate the risk of an uncontrolled deflagration. The system consists of 26 pressure-sensitive vents (overpressure vents), and 12 sparkers installed throughout the battery module bay designed to ignite flammable gases very early in a thermal runaway event before they accumulate within the enclosure and become an explosion hazard. The sparkers are installed at a variety of locations and heights throughout the battery module bay to ensure the flammable gases released during thermal runaway quickly meet an ignition source. The 26 overpressure vents are installed in the roof of the sealed battery module bay's IP66 enclosure and permit gases, products of combustion, and flames to safely exhaust through the roof during a thermal event. By designing this natural ventilation flow path, flammable gases are not permitted to accumulate within the MP2XL cabinet, reducing the risk of an explosion that could compromise the cabinet's integrity, push open the front doors, or expel projectiles from the cabinet. In addition, the ventilation path creates a controlled fire condition, should one occur, out the front and top of the MP2XL cabinet. By maintaining the cabinet's integrity, keeping all the doors shut during a fire event, reducing the risk of projectiles, and creating a controlled path for flames that exit the top of the MP2XL cabinet, the likelihood of a thermal event having an impact on life safety, site personnel or first responders, is reduced. In addition, by maintaining these features, the likelihood of a fire propagating to electrical equipment or other exposures is also reduced and can be designed for at the installation level (i.e., maintain clearances, emergency response plans, etc.).

The overpressure vents themselves are passive and are not actuated or controlled by another device. As such, they are not active deflagration vents listed to corresponding explosion and deflagration standards such as NFPA 68 or 69. Their rubber seals are designed to release during an overpressure event or melt out during a fire event inside the battery module bay. The number and total area of overpressure vents is sized following the requirements of

NFPA 68. They are designed to relieve with a safety factor of 2.5 times the enclosure’s strength, including the front doors. Meaning, during an overpressure event inside the MP2XL cabinet, the overpressure vents will open when subjected to an overpressure of approximately 12 kPa (250 psf), well before the integrity of the enclosure itself becomes compromised at 30 kPa (626 psf) with a 2.5 times safety factor.

Tesla developed the overpressure vents and sparker system because the application of NFPA 68 or NFPA 69 was not suitable for the MP2XL cabinet given it does not have large volumes of open space, as is typical of BESS cabinets. This engineered approach is permitted by NFPA 855, Section 9.6.5.6.4 provided it is validated through large-scale, unit-level fire testing, which Tesla has performed (described in more detail in the following sections). During the UL 9540A unit-level test, six cells were simultaneously forced into thermal runaway within a single battery module. This resulted in thermal runaway propagating to a seventh cell only. The failure of the seven cells did not result in any observations of explosion hazards, including but not limited to, observations of a deflagration, projectiles, flying debris, detonation, or other explosive discharge of gases. In addition, internal destructive unit-level fire testing further demonstrated the functionality of the explosion control system. During this test, 48 cells simultaneously were forced to fail within the same battery module (an extreme abuse condition). The sparker system ignited the flammable off-gases, and an overpressure vent opened. This resulted in a controlled fire event. As shown in Table 3 below, Table 4.5-2 from Section 4.5, Hazards and Hazardous Materials, of the Opt-In Application has been updated to include NFPA 68, 69, and 855 regulations as they relate to the design of the selected battery system (MP2XL). Updated text is shown in underline text in the table.

Table 3. Updated Table 4.5-2, Laws, Ordinances, Regulations, and Standards

LORS	Requirements/ Applicability	Administering Agency	Application Section Explaining Conformance
Federal			
National Fire Protection Association Codes, Standards, Practices, and Guides	NFPA 68: Not applicable to Tesla Megapack 2XL (MP2XL). Tesla developed the overpressure vents and sparker system because the application of NFPA 68 or NFPA 69 was not suitable for the MP2XL cabinet given it does not have large volumes of open space, as is typical of BESS cabinets. This engineered approach is permitted by NFPA 855, Section 9.6.5.6.4 provided it is validated through large-scale, unit-level fire testing, which Tesla has performed.	Battery manufacturer and OCFA	REV 1 DR HAZ-5; REV 1 DR FIRE-1
	NFPA 69: Not applicable to Tesla Megapack 2XL (MP2XL). Tesla developed the overpressure vents and sparker system because the application of NFPA 68 or NFPA 69 was not suitable for the MP2XL cabinet given it does not have large volumes of open space, as is typical of BESS cabinets. This engineered approach is permitted by NFPA 855,		

Table 3. Updated Table 4.5-2, Laws, Ordinances, Regulations, and Standards

LORS	Requirements/ Applicability	Administering Agency	Application Section Explaining Conformance
	<p>Section 9.6.5.6.4 provided it is validated through large-scale, unit-level fire testing, which Tesla has performed.</p> <p>NFPA 855: Applicable to the project. The project will prepare a Hazard Mitigation Analysis (HMA) to demonstrate compliance with NFPA 855. The HMA will evaluate the Tesla Megapack 2XL LFP BESS intended for installation at the Compass site. Based on a review of the MP2XL and Site Plan, the HMA will address whether the project will meet the CFC requirements for an outdoor BESS installation. In addition, the HMA will include a fire and community risk assessment, performed for the project installation based on destructive unit level fire testing and fire modeling results. The fire and community risk assessment will evaluate the potential consequences of a BESS fire at the project site to determine what impact it might have on the surrounding area and community.</p>		
<p>Section 302 EPCRA (Public Law 99-499, 42 USC 11022)</p> <p>Hazardous Chemical Reporting: Community Right-To-Know (40 USC 11002)</p>	<p>Requires one-time notification if environmental hazardous substances are stored in excess of threshold planning quantities</p>	<p>Orange County Health Care Agency Environmental Health Division</p>	<p>A HMBP will be prepared (4.5.4.2).</p>
<p>Section 304, EPCRA (Public Law 99 - 499, 42 USC 11002)</p> <p>Emergency Planning Notification</p>	<p>Requires notification when there is a release of hazardous material in excess of its reportable quantity</p>	<p>Orange County Health Care Agency Environmental Health Division</p>	<p>A HMBP will be prepared (4.5.4.2).</p>
<p>Section 311, EPCRA (Public Law 99-499, 41 USC 11-21)</p> <p>Hazardous Chemical Reporting: Community Right-To-Know (40 CFR 370)</p>	<p>Requires that safety data sheets for all hazardous materials or a list of all hazardous materials be submitted to the State Emergency Response Commission and Orange County Health Care Agency Environmental Health Division</p>	<p>Orange County Health Care Agency Environmental Health Division</p>	<p>A HMBP will be prepared (4.5.4.2).</p>

Table 3. Updated Table 4.5-2, Laws, Ordinances, Regulations, and Standards

LORS	Requirements/ Applicability	Administering Agency	Application Section Explaining Conformance
Section 313 EPCRA (Public Law 99 – 499, 42 USC 11023)	Requires annual reporting of releases of hazardous materials	Orange County Health Care Agency Environmental Health Division	A HMBP will be prepared (4.5.4.2).
Toxic Chemical Release Reporting: Community To-Know (40 CFR 372)			
Section 112, CAA Amendments (Public Law 101 – 549, 42 USC 7412)	Requires facilities that store a regulated hazardous material at quantity greater than the threshold quantity to develop an RMP	Orange County Health Care Agency Environmental Health Division	A RMP is not required.
Chemical Accident Prevention Provisions (40 CFR 68)			
Section 311, CWA (Public Law 92 – 500, 33 USC 1251 et seq.)	Requires the preparation of a SPCC plan if 660 gallons oil/petroleum products are stored in a single container or collectively the site stores 1,320 gallons or more	RWQCB	The project will prepare a SPCC plan, if required. (4.5.4.2)
Oil Pollution Prevention (40 CFR 112)			
State			
Health and Safety Code, Section 25500 et seq. (HMBP)	Requires preparation of a Hazardous Materials Business Plan if hazardous materials are handled or stored in excess of threshold quantities	Cal/OSHA, but submitted to Orange County Health Care Agency Environmental Health Division	A HMBP will be prepared (4.5.4.2).
Health and Safety Code, Section 25531 through 25543.4 (CalARP)	Requires registration with local CUPA or lead agency and preparation of RMP if regulated substances are handled or stored in excess of threshold planning quantities	Orange County Health Care Agency Environmental Health Division	A RMP is not required.
Occupational Safety and Health Act (19 CFR 1910.119)	For chemicals listed above thresholds listed in Appendix A, requires a process safety management (PSM) plan for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards.	Orange County Health Care Agency Environmental Health Division	A PSM plan will not be required because there are no chemicals that trigger a PSM plan used for the project (4.5.4.2)
Health and Safety Code, Section 25270 through 25270.13 (Aboveground Petroleum Storage Act)	Requires the preparation of a SPCC plan if 660 gallons oil/petroleum products are stored in a single container or collectively the site stores 1,320 gallons or more.	RWQCB	The project will prepare a SPCC plan, if required. (4.5.4.2)

Table 3. Updated Table 4.5-2, Laws, Ordinances, Regulations, and Standards

LORS	Requirements/ Applicability	Administering Agency	Application Section Explaining Conformance
Public Utilities Code, Section 761.3, Chapter 377	Requires the preparation of Emergency Response Plans for battery energy storage projects	CPUC	An Emergency Response Plan will be prepared in coordination with local and regional agencies.
Local			
City of San Juan Capistrano General Plan	Provides hazards and hazardous materials related goals and policies for development	City of San Juan Capistrano Planning Division	Section 4.5.5.3
Local Hazard Mitigation Plan	Mitigates natural hazards	Orange County and OCFA	Section 4.5.5.3

5 Traffic and Transportation

5.1 Data Request REV 1 DR TRANS-1

CEC Comment: REV 1 DR TRANS-1: The applicant’s VMT analysis dismisses construction-related VMT. Per Table 4.12-8 on Application page 4.12-10, the site would experience over 1,000 trips per day (PCE adjusted) during the peak of construction, and construction would last over a year. Additionally, many of those truck trips would be long-distance (construction materials), and the worker pool would likely be mostly from outside of the County of Orange due to socio-economic conditions.

The application seems to rely upon this statement on page 4.12-8: “The guidance from the City does not require VMT analysis for construction projects.” This is not a construction project/transportation project, as categorized in the City’s Project VMT Significance Thresholds, but rather a construction phase of an industrial development. Please identify if the construction phase would be in compliance with, the City’s VMT impact criteria for office and industrial land uses where a project would have a significant impact if the project VMT exceeds the City average VMT/employee minus 15 percent (Application page 4.12-7).

Response: The project’s vehicle miles traveled (VMT) analysis has been prepared consistent with the requirements of Senate Bill (SB) 743. Per SB 743, the Governor’s Office of Planning and Research (OPR) was directed to amend the CEQA Guidelines to provide an alternative to level of service (LOS) for evaluating transportation impacts. The CEQA Guidelines were updated to add Section 15064.3, Determining the Significance of Transportation Impacts, that describes specific considerations for evaluating a project’s transportation impacts using VMT methodology instead of LOS methodology. The new VMT methodology was required to be used for projects starting on July 1, 2020. The City of San Juan Capistrano’s Local Guidelines for Implementing the CEQA (2024) (section 5.09), do not deviate from the State Guidelines provided at CEQA Guidelines section 15064.3. Subdivision (a), states, “For the purposes of this section, ‘vehicle miles traveled’ refers to the amount and distance of automobile travel attributable to a project.” The OPR’s 2018 Technical Advisory Guidance on Evaluating Transportation Impacts in CEQA states,

“Here, the term ‘automobile’ refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT *could* be included for modeling convenience and ease of calculation...” (*Id.*, § C.1 [emphasis added].) Because this guidance from the City does not require a quantitative VMT analysis for construction traffic or truck traffic (i.e., heavy-duty trucks), and neither OPR nor the City has specified models or methods to estimate VMT or VMT thresholds of significance for construction traffic, a qualitative analysis of construction traffic can be provided for the reasons explained below.

The CEQA Guidelines Section 15064.3(b) is divided into four subdivisions as follows:

- (1) **Land Use Projects.** Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop⁵ or a stop along an existing high-quality transit corridor⁶ should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.
- (2) **Transportation Projects.** Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.
- (3) **Qualitative Analysis.** If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project’s vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.
- (4) **Methodology.** A lead agency has discretion to choose the most appropriate methodology to evaluate a project’s vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project’s vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

Further, most land use and transportation projects have two phases: construction and operation. The City of San Juan Capistrano’s Local Guidelines do not require a quantitative VMT analysis for traffic generated by construction (or decommissioning) phase of a project. In addition, neither OPR nor the City of San Juan Capistrano have specified VMT thresholds of significance for construction (or decommissioning) phase because it generates temporary traffic.

⁵ OPR’s Technical Advisory 2018, § 11.39: “‘Major transit stop’ [under Pub. Res. Code, § 21064.3] means a site containing an existing rail or bus rapid [sic] transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of fifteen (15) minutes or less during the morning and afternoon peak commute periods.”

⁶ OPR’s Technical Advisory 2018, § E.1, fn. 21: “High-quality transit corridor” under Pub. Res. Code, § 21155 means “a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.”

However, to account for workers that are anticipated to travel to the project site from distant locations, the VMT analysis for the project's construction phase has been evaluated quantitatively to estimate worker VMT for construction phase of the project. The worker VMT (estimated over the 25-year project life) has been compared with the County's existing regional VMT per employee to determine if the project's construction phase could result in a potentially significant VMT impact. See revised Section 4.12.2.2 and 4.12.2.6 for VMT analysis of the construction phase of the project. As shown in the revised application section (see Attachment 3), the construction phase of the project would result in a less than significant VMT impact.

The following VMT screening and analysis methodology applies to the operational phase of the project. The City's significance thresholds/screening criteria for land use projects or industrial projects should be used to determine whether long-term operation of the project may be screened out and need not include a detailed VMT analysis. The following VMT screening criteria are used by the City for land use projects:

- Projects that generate 200 daily trips or less weekday daily trips;
- Projects that are located within one-half mile or either an existing major transit stop or a stop along an existing high-quality transit corridor;
- Projects that are local serving retail use of 50,000 square feet or less;
- Projects that are local serving public facilities such as transit centers, public schools, libraries, post offices, park-and-ride-lots, etc.
- 100% affordable housing units.

If a project meets any one of the above-mentioned criteria, it can be screened out of VMT analysis and presumed to result in less than significant impacts. During the operations and maintenance phase, the project will only produce four total weekly trips and nominal peak hour trips. Because the operational or long-term phase of the project generates less than 200 daily trips, it would screen out of conducting a detailed VMT analysis. Therefore, as discussed in Section 4.12.2.6.2, a detailed VMT analysis for the operational phase of the project is not required, and the project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). The impacts of the operational phase of the project are thereby presumed to be less than significant.

5.2 Data Request REV 1 DR TRANS-2

CEC Comment: REV 1 DR TRANS-2: The response for DR TRANS-6 (Data Request Response #1 Part I [TN 258090-1]) re-states the vague discussion in the application. Yes, there are interchanges to the north and south, but that is not related to the question of where would trips be coming from, for both workers and construction materials.

Namely, what percentage of construction materials would be from the north versus the south? Similarly, what would be the origins of construction workers?

Response: Construction workers and construction material would mostly be from the north. Based on the location of labor unions in Orange County and Riverside, 90 percent of the construction workers would travel to the site from the north, traveling approximately 25 to 40 miles. Some workers (approximately 10 percent) are anticipated to travel from the south. Based on location of the labor union identified by the applicant in the San Diego region, some construction workers would travel approximately 60 miles to the project from the south. The construction material

would travel to the site with an anticipated 80 percent from the north and 20 percent coming from the south. See response to **REV 1 DR-TRANS-4** for further details on construction worker and truck trips.

5.3 Data Request REV 1 DR TRANS-3

CEC Comment: REV 1 DR TRANS-3: The response to DR TRANS-7 (Data Request Response #1 Part I [TN 258090-1]) suggests an alternative to using smaller trucks for deliveries could be to remove the existing median to accommodate inbound trucks that have a longer wheelbase than WB-40. Removal of the median may result in safety issues because the installation of the existing median and requirement that all eastbound vehicles turn right was likely developed, in part, to reduce the likelihood that a vehicle queue would reach the adjacent railroad tracks. In addition to including the possible use of pedestrian detours and flagmen in the traffic control plan if the median is temporarily removed, please identify additional physical measures that could be implemented that would address potential safety issues from vehicles queuing at the railroad tracks.

Response: The removal of some existing medians at the Camino Capistrano/Rancho Capistrano-Project Access intersection would be a temporary measure during the construction period. This would accommodate truck turn maneuvers in and out of the project site to bring in large equipment using trucks that have a longer wheelbase than WB-40 such as the Tesla Heavyweight Trailer with MP which will be used for delivery of batteries. Figure 4.12-9 and Figure 4.12-10 in the revised section (Attachment 3) illustrate truck turning analysis at the Camino Capistrano/Rancho Capistrano-Project Access intersection. To control and ensure safe movement at the railroad crossing and the Camino Capistrano/Rancho Capistrano-Project Access intersection, a combination of physical barriers and traffic control personnel will be used. For physical barriers, traffic cones or candle sticks will be placed in the center of the bridge to divide the inbound and outbound travel lanes. A temporary stop sign and candle sticks/cones would be installed at the northbound left turn lane of the Camino Capistrano/Rancho Capistrano-Project Access intersection. Manual on Uniform Traffic Control Devices (MUTCD) signs at appropriate distances along both north and southbound lanes of Camino Capistrano Road will be placed to notify road users of traffic control during construction and provide notification of additional trucks using the intersection and roadway. Additionally, the existing automatic railroad crossing signal and gates will remain in effect. For implementation of traffic control plan including personnel such as spotters and flag persons on each side of the bridge entrance, the construction contractor will engage with a traffic control company as part of its construction process. At the end of each construction workday and during periods when there is no construction occurring and therefore no spotters or flag persons are needed to provide traffic control, the construction contractor would install temporary delineators that would function as interim medians to maintain the pre-construction traffic pattern. Once construction is complete, the medians would be replaced to their pre-construction condition at the Applicant's expense. See also response to **REV 1 DR TRANS-5** for further details on the traffic control plan.

5.4 Data Request REV 1 DR TRANS-4

CEC Comment: REV 1 DR TRANS-4: Why is a default assumption from a statewide model (CalEEMod as stated in response to DR TRANS-8) that is based upon land uses a reasonable estimate for construction-related traffic to this site? Would the workforce be within the expected radius (18-mile average)? Would the source of materials be sufficiently local to justify the 20-mile assumption for haul trucks? These values are related to the VMT discussion in REV 1 DR TRANS-1.

Response: In the absence of specific information regarding construction-related traffic, the default assumption from the statewide model based upon land uses was used for the Orange County area because it was thought to be representative of trip lengths for the project area generally and was therefore, an appropriate default from the CalEEMod to use where more specific information was unavailable. However, the Applicant has since obtained more route specific information for construction workers and materials, including: locations of potential labor unions to estimate worker trip lengths; locations of factories that would supply BESS equipment (batteries, high-voltage breakers, main power transformer, medium-voltage transformer); and locations of distribution hubs (for nearest UPS and FEDEX facilities) where equipment would be collected, including the Ports of Los Angeles, Long Beach and/or Mexico. Such information has permitted the applicant to better estimate truck trip lengths associated with project construction and has thereby given the applicant a more reasonable estimate for construction-related traffic to the site. As indicated in the response to **REV 1 DR TRANS-2**, the workforce is expected to be within a 25–40-mile radius. In addition, factories that would supply BESS equipment are located approximately 350 miles from the project; distribution hubs are located within 20 miles; the Ports of Los Angeles and Long Beach are within 50 miles; and Mexico is located about 90 miles from the project site. Accordingly, the project’s construction VMT analysis has been prepared to quantify worker VMT and compared with the regional VMT per employee (see Section 4.12.2.2 and 4.12.2.6; Attachment 3). The project’s air quality analysis has also been updated to account for appropriate trip lengths for workers and trucks based on this new information (see Attachment 4).

5.5 Data Request REV 1 DR TRANS-5

CEC Comment: REV 1 DR TRANS-5: Data Request Response #1 Part I (TN 258090-1) to DR TRANS-9, explains the proposed construction access route is through the Saddleback Church campus. How would construction traffic safely interact with church patrons, which includes pedestrians crossing the road while walking from the parking area to the buildings?

The proposed long-term access road appears to connect to the existing street at the location of a permanent structure (guard shack), which would prohibit inbound access to the road. Please provide a description of how the existing entrance will be modified to accommodate both church and project operations.

Response: The road labeled as Temporary Access Route on the Project Site Plan drawing (CMP-SE-100) (see Appendix 2A from the original application; drawing CMP-SE-100 is also included herein as Attachment 5), is the existing access road that will be used only for the first 45 days to access the project site. A permanent, Long-Term Access Route (labeled as 32-foot access road (30-foot paved) within a 38-foot access and utilities easement in drawing CMP-SE-100) would be constructed to provide access to the project use. The Saddleback Church has a western upper lot which allows for pedestrian access to the western upper facilities and a lower eastern lot which provides pedestrian access to the eastern lower facilities. Pedestrians generally do not need to use the existing access road to access the Church facilities from the parking lots. Therefore, the proposed temporary or long-term access roads will not interfere with pedestrian traffic associated with the Church. Further, to ensure access for all road users during construction period, the project applicant will implement a temporary traffic control plan. The traffic control plan (TCP) shall include provisions for construction times and for safe movement of all road users including pedestrians and bicyclist, at the Camino Capistrano/Rancho Capistrano-Project Access intersection and along the existing access road. The TCP shall also outline provisions for emergency vehicle movement at all times. In addition to installing appropriate signage, there will be personnel and/or flagmen on site during construction, both near the Temporary Access Route and the Long-Term Access Route to monitor and guide any vehicles and pedestrians for both the Church and construction site.

It should be noted that through a perpetual Access and Utilities Easement with the Church, the project and the Church have agreed to modify the Church entrance area to accommodate the turn such that a long-term access road to the project is provided. The Church and the project will share approximately the first 250 feet of the existing access road from the Camino Capistrano/Rancho Capistrano-Project Access intersection. Construction of the long-term access road will include removing the circular landscaping area in the middle of the road at the entrance and may also require removal of the guard shack. Per information provided by the applicant, the guard shack is rarely used by the Church. All proposed modifications to the entrance will be done with approval of the Church and to ensure adequate access to all users of the project during construction and operational phases as well as for ongoing emergency access.

The project shall implement Construction Traffic Management Plan to include the following measures:

- The project applicant will prepare and implement a traffic control plan (TCP) at the Camino Capistrano/Rancho Capistrano-Project Access intersection to include:
 - Remove a portion of the existing median temporarily to accommodate truck turn maneuvers in and out of the project site.
 - Install appropriate barriers and temporary traffic control devices at the project access intersection and Camino Capistrano Road
 - Flaggers that serve to ensure safety at the intersection and railroad crossing, alert motorists and pedestrians to slow moving trucks and to guide trucks to maneuver turn movement at the project access intersection
 - Temporary signage along Camino Capistrano near the project access to warn all road users of construction in the vicinity
 - Ensure access to church, especially during service or Sundays, is not impacted by construction traffic or equipment. Appropriate signage shall be installed, and flaggers will be used to prioritize movement of church traffic at the intersection and along the existing access road
- The project applicant will limit worker and truck traffic during the AM and PM peak hours.

6 Visual Resources

6.1 Data Request REV 1 DR VIS-1

CEC Comment: REV 1 DR VIS-1: Prepare and submit project visual simulations for Views 1, 2, 3 (DR ES-2 additional simulation provided in Data Request Response # 1, Part II [TN 258090-2], Attachment 7), and 4 (DR PD-2 additional simulation provided in Data Request Response # 1, Part II [TN 258090-2], Attachment 13) that illustrate the conceptual landscaping and screening plan at one year after completion of construction, and number those images as Figures 4.13-2a, 4.13-3a, 4.13-4a, and 4.13-5a respectively. The new existing view images provided in the Data Response Attachments 7 and 13 referenced above should be numbered 4.13-4 and 4.13-5 respectively.

Response: According to Application Section 4-13 (TN255535-17), pp. 9-10, the project is located in an urbanized area, as defined under Public Resources Code Section 21071(a)(1) – (2). Accordingly, the project’s visual resources assessment under CEQA must be conducted under Appendix B, Section G(6)(B) as an urbanized area, not Section G(6)(C) which is specific to non-urbanized areas. Detailed analysis of how the project site meets the definition of an urbanized area is provided in the application Section 4.13 pages 9 and 10. Nevertheless, the October 7, 2024, Data Completeness Worksheet and Data Request REV 1 DR VIS-1 identifies certain elements applicable to CEQA analysis under Appendix B, Section G(6)(C) as “incomplete.” Pursuant to discussion with CEC staff, the Applicant understands that these continuing data requests pertain only to the CEC’s potential Laws, Ordinances, Regulations, and Standards (LORS) conformance analysis, and do not indicate an intent to analyze the project’s visual resources impacts as if it were located in a non-urbanized area. Accordingly, the Applicant has prepared responses to the Data Completeness Worksheet, pp. 68-69, and REV 1 DR-VIS-1 and 2 in that light, and with the understanding that the material submitted will not be used to analyze the project under an inappropriate CEQA threshold.

Additional visual simulations for Views 1 through 4 have been prepared to illustrate the conceptual landscaping and screening plan at one year after completion of construction (i.e., one year of vegetative maturity) to supplement the previously submitted simulations showing the landscaping and screening after 10 years. Please refer to the revised Visual Resources section of the application (Attachment 6). Visual simulation figure numbering has been completed as noted in the data request. Please refer to the figure list below for reference:

- Figure 4.13-2, View 1: Southbound Interstate 5 (Existing Conditions)
- Figure 4.13-2a, View 1: Southbound Interstate 5 (Visual Simulation 1 Year Vegetative Maturity)
- Figure 4.13-2b, View 1: Southbound Interstate 5 (Visual Simulation 10 Year Vegetative Maturity)
- Figure 4.13-3, View 2: Northbound Camino Capistrano (Existing Conditions)
- Figure 4.13-3a, View 2: Northbound Camino Capistrano (Visual Simulation 1 Year Vegetative Maturity)
- Figure 4.13-3b, View 2: Northbound Camino Capistrano (Visual Simulation 10 Year Vegetative Maturity)
- Figure 4.13-4, View 3: North of Project Site (Existing Conditions)
- Figure 4.13-4a, View 3: North of Project Site (Visual Simulation 1 Year Vegetative Maturity)
- Figure 4.13-4b, View 3: North of Project Site (Visual Simulation 10 Year Vegetative Maturity)
- Figure 4.13-5, View 4: South of Project Site (Existing Conditions)
- Figure 4.13-5a, View 4: South of Project Site (Visual Simulation 1 Year Vegetative Maturity)
- Figure 4.13-5b, View 4: South of Project Site (Visual Simulation 10 Year Vegetative Maturity)

6.2 Data Request REV 1 DR VIS-2

CEC Comment: REV 1 DR VIS-2: Retain but re-number existing Figures 4.13-2a and 4.13-3a as Figures 4.13-2b and 4.13-3b, respectively, and specify in the caption the time to vegetative maturity (after construction) that is illustrated

in the existing simulations (approximately 10 years). Retain the visual simulations provided in the Data Response Attachment 7 and Attachment 13 referenced above but number those images 4.13-4b and 4.13-5b, respectively, and specify in the caption the time to vegetative maturity (after construction) that is illustrated in the simulation (approximately 10 years).

Response: Visual simulations for Views 1 through 4 that illustrate the conceptual landscaping and screening plan at 10 years after construction of construction (i.e., 10 years of vegetative maturity) have been retained and re-numbered as noted in the data request. Please refer to Attachment 6 and the figure list above in **response REV 1 DR VIS-1** for a complete list of visual simulation figure numbers and titles. Please note that all simulations now show the 20-foot-tall faux ivy screening along the eastern San Diego Gas & Electric (SDG&E) switchyard fence. Preliminary discussions with SDG&E have determined this to be feasible at this time, pending final design decisions.

6.3 Data Request DR VIS-3

CEC Comment: DR VIS-3: Prepare and submit a map of scenic vistas, scenic highways (all categories), and scenic resources (all categories) within five miles of the project site.

Response: A map of scenic vistas, scenic highways (all categories), and scenic resources (all categories) within five miles of the project site has been prepared and is presented in Attachment 6 (see Appendix 4.13A within Attachment 6). The information included on this map is sourced from local planning documents (e.g., General Plans) for jurisdictions within the five miles study area, review of aerial imagery, U.S. Geological Survey topography/contours, and waterbodies identified the U.S. Fish and Wildlife Service National Wetland Inventory; and review of the publicly accessible trail database Alltrails.com. Specifically, the map includes designated scenic highways and roads (including landscape corridors designated as such by the Orange County General Plan), historic structures (including the Mission Basilica San Juan Capistrano and the Swanner House), publicly accessible trails in local parks, scenic overlooks, and public parks and coastal resources.

6.4 Data Request DR VIS-4

CEC Comment: DR VIS-4: Provide a narrative discussion of each resource identified in response to DR VIS-3 within five miles of the project site.

Response: The requested narrative discussion of resources identified in response to Data Request DR VIS-3 are presented in Attachment 6 (see Appendix 4.13A within Attachment 6).

6.5 Data Request DR VIS-5

CEC Comment: DR VIS-5: Include any designated scenic vista and scenic resource in an adopted federal, state, county, or city government planning document, plan, or regulation.

Response: Please refer to response to **Data Request DR VIS-4**, above. The mapping of scenic resources was informed through review of relevant State, County, and local planning documents, plans, and regulations. Included in this review was the State Scenic Highway Program as administered by the California Department of Transportation (Caltrans), Orange County General Plan – Scenic Highways Plan and Resources Element, and the general plans of local jurisdictions including San Juan Capistrano, Mission Viejo, Aliso Viejo, Laguna Hills, Laguna

Niguel, Laguna Beach, and Dana Point. County and individual city websites for parks and recreation facilities (and where applicable, individual park trails maps including the trail map for Aliso and Wood Canyons Wilderness Park) were also reviewed for description of park amenities.

6.6 Data Request DR VIS-6

CEC Comment: DR VIS-6: Include any natural features or objects that are a part of the land, such as a geologic distinguishing characteristic (e.g., laccolith), geomorphologic feature (e.g., gorge), or other terrain feature (e.g., a water body, open space, or a tree recognized for its aesthetic, botanical, and ecological value or age, rarity, and size).

Response: Please refer to response to **Data Request DR VIS-5**, above. The mapping of scenic resources was informed through review of relevant State, County, and local planning documents, plans, and regulations. As the project area contains varied terrain including canyons, hillsides, ridgelines, valleys, and coastal bluffs, the figure basemap was revised from aerial imagery to topography to visually illustrate the characteristics of local terrain. In addition, waterbodies including streams, lakes (specifically, Laguna Niguel Lake in Laguna Niguel Regional Park), and the Pacific Ocean are included. Due to the number of waterbodies (primarily creeks) in the 5-mile project area, specific waterbodies are not listed in Appendix 4.13A (see Attachment 6). Regarding trees, the local planning documents and plans that were reviewed during preparation of responses did not identify any specific trees recognized for their aesthetic, botanical, and ecological value or age, rarity, and size.

6.7 Data Request DR VIS-7

CEC Comment: DR VIS-7: Include any man-made features or objects that embody elements of architecture or engineering design, detail, materials, or craftsmanship that represent a significant innovation or are unique, such as the California State Capitol, Golden Gate Bridge, or Hollywood Sign.

Response: While there are no particularly prominent and widely known human-made features or objects representative of unique or significant innovation of the scale of the California State Capitol, Golden Gate Bridge, or Hollywood sign in the project area, built environment resources were identified and are mapped in Appendix 4.13A in the “Sensitive Visual Resources – Built Environment” category (see Attachment 6). Information regarding the built environment resources included in the Sensitive Visual Resources – Built Environment category is provided below. It is important to note that due to intervening terrain, development, and vegetation, views to the project site are not available from any of the identified built environment resources described below.

The Mission San Juan Capistrano Basilica is located approximately 2 miles from the southeastern boundary of the project site. As explained in Appendix 4.13A, Mission San Juan Capistrano is a historic landmark and museum that was founded more than two hundred years ago as the 7th of 21 missions statewide.

The Courtyard at La Paz was identified and while this development does not embody elements of architecture or engineering design, detail, materials, or craftsmanship that represent a significant innovation (Courtyard at La Paz is a contemporary commercial shopping center), it is identified as a scenic vista by the City of Laguna Hills.

The historic Swanner House (also known as the Roger Y. Williams House) which is owned by the City of San Juan Capistrano and is a “significant example of an intact Craftsman Farm House”. The home (located approximately

2,000 feet to the southeast of the project site) is listed in the national Register of Historic Places by the U.S. Department of the Interior.

6.8 Data Request DR VIS-9

CEC Comment: DR VIS-9: Provide additional consistency analysis for the project based on landscaping maturity at one year after completion of construction (as illustrated in the additionally required simulations identified above), and specify the time frame to achieve the project consistency that is currently presented in the analysis.

Response: Table 4.13-5, Project Conformity with Regulations Governing Scenic Quality, within Attachment 6 has been updated where appropriate, to provide the requested additional analysis associated with landscaping maturity at one-year after completion of construction.

6.9 Data Request DR VIS-10

CEC Comment: DR VIS-10: For each image, provide: camera type, lens focal length, viewing angle, date and time the photograph was taken, and the distance to the project site.

Response: Baseline photographs from View 1 (Southbound Interstate 5) were taken with an iPhone (lens focal length is unknown as source metadata was not available) and at a slightly elevated, southwest- (View 1) oriented viewing angle to the project site. Baseline photographs from View 2 (Camino Capistrano) were taken with a Samsung Galaxy Note 8 with a 4.3 mm focal length (focal length in 35 mm film = 26 mm) at a normal, northwest- oriented viewing angle to the project site. View 1 photograph was taken on the morning of October 12, 2023. View 2 photograph was taken on the morning of December 3, 2021. Baseline photographs for Views 3 and 4 locations were taken with an iPhone 13 Pro Max with a 5.7 mm lens focal length (focal length in 35 mm film = 26 mm) and at normal, south- (View 3) and northeast- (View 4) viewing angles to the project site. View 3 and 4 photographs were taken on the afternoon of June 26, 2024.

6.10 Data Request DR VIS-11

CEC Comment: DR VIS-11: Separate from the existing view and simulation images presented in Section 4.13, provide to the CEC project manager stand-alone, high-resolution images that are capable of being printed at 11" x 17" with a minimum 600 dots per inch output resolution.

Response: The requested project images have been prepared and electronic files have been provided to the CEC.

6.11 Data Request DR VIS-12

CEC Comment: DR VIS-12: Provide revised electronic file of Section 4.13 Visual Resources that includes the additional simulations with landscaping maturity at one year after completion of construction.

Response: An electronic file of revised Section 4.13 Visual Resources has been prepared and provided to the CEC (see Attachment 6).

6.12 Data Request DR VIS-13

CEC Comment: DR VIS-13: Provide electronic files to the CEC project manager of the stand-alone, high-resolution images that are capable of being printed at 11" x 17" with a minimum 600 dots per inch output resolution.

Response: The requested project simulations with landscaping maturity at one year after completion of construction have been prepared and electronic files have been provided to the CEC (see Attachment 6).

6.13 Data Request DR VIS-19

CEC Comment: DR VIS-19: Provide a project-specific conceptual outdoor lighting control and management plan (lighting plan), and explain the control of reflectance from exterior surfaces off site that conforms with the city municipal code or county government code.

Response: A project-specific conceptual lighting plan is provided as Appendices 4.13B and 4.13C within Attachment 6. Permanent motion-sensitive, directional security lights would be installed to provide adequate illumination of the offsite access road, the internal BESS yard access roads, the project substation, and the SDG&E switchyard. All lighting will be shielded and directed downward to minimize the potential for glare, spillover onto adjacent properties, and skyglow. The City of San Juan Capistrano Municipal Code section 9-3.529, Lighting Standards subsection (b), requires "All properties located within a commercial (TC, OC, NC, and GC) district, industrial (CM and IP) district, public institutional (P&I) district, Solid Waste Facility (SWF) district, Farm Market (FM) District, Recreation Commercial (RC) District, and nonresidential portions of special districts including Planned Community (PC) and Specific Plan/Precise Plan (SP/PP) districts shall be subject to the exterior lighting regulations set forth." Section 9-3.529(b) includes exterior lighting regulations for (1) parking lots, (2), pedestrian walkways, (3) architectural and landscape lighting, (4) exterior display lighting, and (5) security lighting. The regulations for parking lots and security lighting are applicable to the project. Section 4.13.2.2.3, Lighting, of the revised application section (see Attachment 6) includes a discussion of the City's parking lot (9-3.529(b)(1)) and security lighting (9-3.529(b)(5)) regulations and how the project's conceptual lighting plan is consistent with the regulations.

6.14 Data Request DR VIS-20

CEC Comment: DR VIS-20: Provide a list of the project-specific luminaires; identify the design (e.g., full-cutoff, semi-cutoff, non-cutoff); and indicate if the luminaires have the International Dark-Sky Association Fixture Seal of Approval to the extent feasible consistent with safety and security considerations. Show the project-specific luminaires' locations on a diagram or elevation.

Response: The project-specific luminaires for the offsite access road and BESS yard would be full-cutoff Evolve EALS Series LED Outdoor Area Light (see Appendix 4.13D of Attachment 6) and have the International Dark-Sky Association Fixture Seal of Approval⁷. The project-specific luminaires locations for the offsite access road and BESS yard are shown in Appendix 4.13B of the revised application section. The project-specific luminaires and locations for the SDG&E switchyard are shown in Appendix 4.13C. SDG&E switchyard lighting is not planned to be International Dark-Sky Association approved, however, further coordination with SDG&E will occur to evaluate the use of International Dark Sky Association approved fixtures.

⁷ <https://darksky.org/what-we-do/darksky-approved/luminaires/#!/Evolve-EALS-Area-Light/p/65613543>

6.15 Data Request DR VIS-21

CEC Comment: DR VIS-21: As specified in the Siting Regulations, describe project reflectance and include the intensity of the specular reflectance from the exterior surface of the project's large buildings, structures, and major equipment off site to the surrounding area (e.g., the light reflected from the shiny surface).

Response: Please refer to response to Data Request Response #1 Section 17.1.15, Data Request DR VIS-15, which provides a detailed accounting of project components including dimensions, scale, and/or length; materials; and finishes. As typical with electrical substations and BESS projects, most metallic materials associated with project components would present a dulled finish and would not generate substantial glare during sunny conditions.

7 Wildfire

7.1 Data Request REV 1 DR FIRE-1

CEC Comment: REV 1 DR FIRE-1: Please provide a summary and outline of the information that would be included in the Hazard Mitigation Analysis (HMA) and Emergency Response Plan (ERP) documents. Please also provide more in-depth Emergency Action Plans (EAP) for the construction and operations phases of the project that describe more than the outline provided which should include site-specific procedures, alarms, worker evacuation or shelter-in-place, and training plus other information.

Response: In addition to the summary and outline of these documents provided below, the full draft HMA is included with Data Response as Attachment 2.

The MP2XL HMA outline consists of the following:

- 1.0 INTRODUCTION
- 2.0 REPORT DEFINITIONS
- 3.0 APPLICABLE CODES, STANDARDS, AND REFERENCE DOCUMENTS
- 4.0 MP2XL DESCRIPTION
 - 4.1 Cells and Battery Modules
 - 4.2 Customer Interface Bay
 - 4.3 Thermal Management System
 - 4.4 Battery Management System
 - 4.5 Site Controller and Monitoring
 - 4.6 Electrical Fault Protection Devices

4.7 Explosion Control System

4.8 MP2XL Product Listings

5.0 BESS SITE

5.1 Site Level Fire Safety

5.2 Permanent Exposures Associated with the BESS or Electrical Grid

5.3 Permanent Public Exposure Hazards

6.0 2022 CFC §1207 REQUIREMENTS

7.0 MP2XL UL 9540A TEST RESULTS

7.1 UL 9540A Cell Level Test Summary

7.2 UL 9540A Module Level Test Summary

7.3 UL 9540A Unit Level Test Summary

7.4 Explosion Hazard and IDLH Analysis

8.0 HAZARD MITIGATION ANALYSIS

8.1 CFC §1207.1.4.1 Fault Conditions

8.2 CFC §1207.1.4.2 Analysis Approval

9.0 FIRE AND COMMUNITY RISK ASSESSMENT

9.1 Destructive Unit Level Testing

9.2 Fire Propagation Model

9.3 Fire Propagation Hazards

9.4 Life Safety Hazards

9.5 Evacuation Distances/Emergency Response Perimeter

10.0 RECOMMENDATIONS

11.0 CONCLUSIONS

The HMA will evaluate the Tesla MP2XL LFP BESS intended for installation at the Compass site. Based on a review of the MP2XL and Site Plan, the HMA will address whether the project will meet the CFC requirements for an outdoor BESS installation. In addition, the HMA will include a fire and community risk assessment, performed for the project

installation based on destructive unit level fire testing and fire modeling results. The fire and community risk assessment will evaluate the potential consequences of a BESS fire at the project site to determine what impact it might have on the surrounding area and community.

Further, the HMA will be based upon UL verification service investigation tests (UL 9540A), which examine the fire performance of battery cells, modules, and the full cabinet when cells are forced into thermal runaway via an external heat source, to determine whether the approval criteria listed in CFC § 1207.1.4.2 will be met. For additional context, please see responses to **REV 1 DR HAZ-1 and HAZ-5**, and responses to the REV 1 Data Requests for Alternatives.

The ERP outline consists of the following:

1.0 GENERAL INFORMATION

- 1.1 Scope
- 1.2 Purpose
- 1.3 Owner
- 1.4 Site Location
- 1.5 Battery Energy Storage System Product
- 1.6 Emergency Contact
- 1.7 First Responder Contact Information

2.0 DEFINITIONS AND ACRONYMS

- 2.1 Tesla Site Controller
- 2.2 Battery Management System
- 2.3 Cell
- 2.4 Module
- 2.5 Battery String
- 2.6 Megapack 2 XL
- 2.7 Transformer Block
- 2.8 E-Stop
- 2.9 Emergency Response
- 2.10 Isolation

- 2.11 Stranded Energy
- 2.12 Critical Temperatures
- 2.13 Cell Venting
- 2.14 Thermal Runaway
- 2.15 Explosion Control Measures
- 2.16 Alternating Current / Direct Current (AC/DC)
- 2.17 BESS Subject Matter Expert

3.0 ENERGY STORAGE SYSTEM INFORMATION

- 3.1 Site Overview
- 3.2 Site Design
- 3.3 Protection Scheme
- 3.4 System Specifications
- 3.5 Thermal Operating Range

4.0 BATTERY MANAGEMENT SYSTEM

- 4.1 Battery Management System Description
- 4.2 Tesla Site Controller and LOCs

5.0 FIRE DEPARTMENT INFORMATION

- 5.1 Fire Department Access
- 5.2 Knox Box Entry
- 5.3 Fire Detection System
- 5.4 Fire Suppression System
- 5.5 Explosion Control System
- 5.6 Water Supply

6.0 HAZARDS

- 6.1 Chemical Hazards

6.2 Electrical Hazards

6.3 Arc Flash Hazards

6.4 Explosion Hazards

7.0 NOTIFICATIONS

7.1 Notification Flow

8.0 COMMAND AND CONTROL

8.1 Subject Matter Expert

8.2 Unified Command Structure

8.3 Incident Command Structure

9.0 RESPONSE TACTICS

9.1 Personal Protective Equipment

9.2 On Arrival

9.3 Size-Up

9.4 Response Scenarios

10.0 POST-INCIDENT OPERATIONS

10.1 Under Control

10.2 Personal Protection Equipment

10.3 Stray Voltage Assessment

10.4 Air Monitoring

10.5 Opening Doors

10.6 Open Remaining Doors

10.7 Lock Out / Tag Out

11.0 TRAINING AND FAMILIARIZATION TOURS

12.0 EXERCISES

The ERP will provide essential definitions and an overview of the MP2XL systems, hazards and response tactics associated with BESS emergencies, post-fire operations, and training and exercise cycles. The ERP is meant to provide guidance to the fire services on the process necessary to safely mitigate the low frequency, high hazard emergencies that may occur within a BESS system and its ancillary support equipment. It is imperative that the ERP be developed in close coordination with the OCFA to ensure consistency with their procedures, and to provide adequate training and equipment. The ERP will be finalized as a condition of the project approval.

The Applicant prepares an EAP for every project. These EAPs are developed in coordination with the Engineering, Procurement, and Construction (EPC) Contractor, equipment manufacturers and our Operations and Asset Management teams. The EAP will be finalized as a condition of the project approval. The following is the table of contents of the EAP used for an Applicant project located in California currently in operation:

1.0 INTRODUCTION

- 1.1 Purpose
- 1.2 Limitations
- 1.3 Facility Description
- 1.4 Plan Review and Revision

2.0 EMERGENCY RESPONSE MANAGEMENT

- 2.1 Overall Organization
- 2.2 Roles and Responsibilities
- 2.3 Preparation and Planning for Emergencies
- 2.4 Communications
- 2.5 Operator Safety & Equipment
- 2.6 Safety Training
- 2.7 Warning Systems and Alarms

3.0 EMERGENCY RESPONSE

- 3.1 Analyze, Plan, Implement, Evaluate
- 3.2 Evacuation Procedures
- 3.3 Post Emergency Reporting Procedures

4.0 FIRE INCIDENTS

- 4.1 Conditions Associated with Energy Storage Systems

4.2 Response to a Fire Incident

4.3 Site Maintenance and Housekeeping

5.0 CHEMICAL RELEASE

5.1 Hazardous Materials

5.2 Spill Response Procedures

5.3 Reporting Major Spills

6.0 MEDICAL EMERGENCY

6.1 Medical Emergency Response Procedures

6.2 Non-Emergency Safety Incident

7.0 SECURITY INCIDENTS

7.1 Bomb Threat

7.2 Chemical/Biological Agent Threat

7.3 Sabotage or Vandalism

7.4 Active Shooter

8.0 ENVIRONMENTAL HAZARDS

8.1 Flooding and Flash Flood

8.2 Tornado

8.3 Lightning Storm

8.4 Winter Storm

8.5 Seismic Event

9.0 CYBERSECURITY

Acronyms

Appendices

Appendix 1: Map of Site

Appendix 2: Evacuation Map

Appendix 3: Referenced Titles and Roles

Appendix 4: Emergency Contacts

Appendix 5: Incident Report Form

Appendix 6: Bomb Threat Report

Appendix 7: Bomb Threat Checklist

Appendix 8: Chemical/Biological Agent Threat Report

Appendix 9: Chemical/Biological Agent Threat Checklist

7.2 Data Request REV 1 DR FIRE-2

CEC Comment: REV 1 DR FIRE-2. Please clarify that the “built-in failsafe” system is the same as the fire protection system and explosion control systems described in the response to DR HAZ-6 (Data Response #1 Part 1 [TN 258090-1]) and the Updated Section 2 Project Description (Attachment A in Update Regarding Selected Battery Storage Technology and Fire Protection [TN 259023]) and provide a detailed description and specification of these systems.

Response: Yes, the “built-in failsafe” system described in response to DR HAZ-6 is the same as the fire protection and explosion control systems described, included in the response to **REV 1 DR HAZ-4**.

7.3 Data Request REV 1 DR FIRE-3

CEC Comment: REV 1 DR FIRE-3: Please confirm that the built-in cooling system is not the same as the HVAC cooling system previously described and provide a description of the “built-in cooling system”.

Response: There is no HVAC system inside the MP2XL, only the built-in liquid cooling system. An external flame detection system will be installed to monitor each battery enclosure, but this is not within the MP2XL. This will include the installation of several IR cameras throughout the BESS yard, mounted on poles, covering several MP2XLs, to detect abnormal temperature increases associated with fire inside the enclosures. The IR cameras will be wired to an alarm and control panel inside the control enclosure (which is inside the substation), which will be wired to the emergency management system (EMS). There will also be an HVAC system and fire suppression system (FSS) inside the control enclosure.

The liquid cooling system (or thermal system) provides active cooling and heating to the internal MP2XL components. The thermal system is comprised of the thermal cabinet and the thermal roof. The thermal cabinet includes pumps that circulate coolant through the MP2XL and a compressor that maintains thermal control, in addition to an in-line heater that can warm the coolant. The thermal cabinet also contains a power conversion system for drawing power from MP2XL’s internal AC bus. The thermal roof, or top cabinet of the enclosure, provides ventilation airspace and contains fans and radiators that cool the ethylene glycol-water coolant solution. The system operates autonomously and does not require user feedback.

7.4 Data Request REV 1 DR FIRE-4

CEC Comment: REV 1 DR FIRE-4: Please provide a detailed description of the auxiliary distribution boxes.

Response: The auxiliary distribution boxes were described in an earlier version of this application, prior to the decision to procure the MP2XL technology for the project. The prior version of this application discussed general battery energy storage fire safety mechanisms used in many battery storage technology types. The MP2XL, however, does not utilize the same mechanisms due to its unique and improved safety design. Thus, as indicated in the “September 6, 2024 Update Regarding Selected Battery Storage Technology and Fire Protection (TN 259023),” the thermal system described above does not include an auxiliary distribution box. Instead, the thermal cabinet contains a power conversion system for drawing power from the MP2XL’s internal AC bus, rather than from an auxiliary distribution box.

7.5 Data Request REV 1 DR FIRE-5

CEC Comment: REV 1 DR FIRE-5: Please update the discussion of wildfire risk and containment of potential contaminants related to wildfires based on the MP2XL battery system specifications.

Response: The MP2XL design includes a series of passive fire protection schemes (barriers) to prevent fire from spreading from one MP2XL cabinet to another (see response to **REV 1 DR HAZ-4**). As demonstrated in UL 9540A unit-level fire testing (see response to **REV 1 DR HAZ-3**), a nearly simultaneous failure of up to seven cells did not result in thermal runaway propagating throughout the battery module or to adjacent MP2XL cabinets. Additionally, destructive unit testing of the MP2XL indicates the smoke produced does not create a strong plume or a very dark sooty smoke plume because there are limited combustible materials to generate flames and smoke inside a MP2XL. The BESS will also have an external flame detection system capable of detecting a fire event within the MP2XL cabinets. Should a worst-case event occur, similar to Tesla’s destructive unit test, the test results demonstrate the event would be a localized, manageable incident, limited to one enclosure with minimal flame length and smoke generation that can be managed with monitoring and minor intervention if required, such as periodic fogging from a single hose.

In addition to the internal site spacing and design, areas within 10 feet of the BESS will have vegetation control to clear combustible vegetation and other combustible growth, so they do not form a means of readily transmitting fire if one occurs. Moreover, the BESS facility is surrounded by an exposure protection 10-foot tall wall. Thus, fire is not expected to impact the surrounding areas. The conceptual landscape plan is consistent with CFC requirements and OCFA Zone A fuel modification requirements (first 20 feet outside of the project perimeter), which require well irrigated plants that retain a high moisture level, and all of the plants selected are in the OCFA Vegetation Management Guidelines for New Construction Fuel Modification Plans. In addition, the Applicant will implement ongoing fuel modification on the full 41-acre parcel, and coordinate with neighboring landowners to implement appropriate adjacent fuel modification practices.

8 Worker Safety

8.1 Data Request REV 1 DR WS-1

CEC Comment: REV 1 DR WS-1: Please list the following LORS, Title 8 Cal Code Regs section 3395 and 3396 Heat Illness Prevention outdoors and indoors and Title 8 Cal Code Regs section 5144.1 Protection from Wildfire Smoke in the LORS Table, the Construction Hazard Analysis, and in both the Construction and Operations Safety and Health Plans and describe how these safety regulations would be implemented.

Response: The project will comply with Title 8 California Code of Regulations Section 3395 and 3396 regarding Heat Illness Prevention for Outdoor and Indoor workplaces and Title 8 California Code of Regulations Section 5141.1 Protection from Wildfire Smoke. An updated version of Section 4.16, Worker Safety, of the application is included as part of this data response (refer to Attachment 7). The updated version discusses how heat illness and protection from wildfire smoke safety regulations will be implemented for the project. Please refer to the updated (underlined) information in the Construction and Operation Hazard Analysis tables (Tables 4.16-1 and 4.16-2), in the Construction and Operations Safety and Health Plans (Sections 4.16.1.3.1 and 4.16.1.3.2), and the LORS table (Table 4.16-5). Please note, the updated application section also incorporates the revisions requested by the CEC in the Determination of Incomplete Application and Request for Information letter dated May 13, 2024 (DR WS-1 and DR WS-2).

8.2 Data Request REV 1 DR WS-2

CEC Comment: REV 1 DR WS-2: Please describe the specific source of water that would be used for, among other things, road dust control. Would it be the Moulton Niguel Water District? Please provide an analysis of that water which includes the usual water quality analytes (i.e., TDS, pH, Ca, Na, Mg, Chlorides, Sulfates, Iron, cyanides, etc.) plus the California Administrative Manual metals (CAM-17).

Response: Moulton Niguel Water District (MNWD) has existing water pipelines on the church property. The Applicant has completed a fire flow analysis with MNWD demonstrating the flow to be satisfactory for the needs of the project and to OCFA, namely, meeting the requirements of a flow capability of 2,500 gallons per minute at a residual pressure of 20 psi. The fire flow analysis is provided as Attachment 8 to this data response. The Applicant intends for MNWD to provide water to the site by extending existing service approximately 1,000 feet southward. This water service will be used for dust control during construction, fire hydrants, and landscaping needs.

MNWD conducts extensive water quality tests each year throughout the year. State-of-the-art laboratories independently analyze the tests to ensure MNWD adheres to the strict safety standards set by the Environmental Protection Agency and the State Water Resources Control Board. MNWD's drinking water continues to meet all federal and state water quality standards and safety regulations.

MNWD obtains water supply from Metropolitan Water District of Southern California. The source of the water is State Water Project water and Colorado River water. The water is treated at Diemer Water Treatment Plant and Baker Water Treatment Plant then delivered to customers. Water delivered to customers must meet Title 22 drinking water standards, so it is of high quality.

Attachment 9 to this data response is the MNWD's 2023 Water Quality Report. Water is sampled and tested throughout the year. Water quality results shown in the report tables include radiological, inorganic chemicals (aluminum, nitrate, fluoride), disinfection byproducts (bromate), secondary standards (sulfate, total dissolved solids), unregulated chemicals (chlorate, boron, magnesium, pH, potassium, vanadium, sodium, calcium), lead, copper, etc. As noted in the 2023 Water Quality Report, no maximum contaminant level (MCL) violations occurred (MNWD 2023). The MCL is defined as the highest level of a contaminant that is allowed in drinking water. Test results regarding several of the California Administrative Manual metals (arsenic, barium, copper, lead, vanadium) are also included in the 2023 Water Quality Report.

8.3 Data Request REV 1 DR WS-3

CEC Comment: REV 1 DR WS-3: Please describe the fire loop and locations of hydrants mentioned in Attachment A, section 2.2.10 page 2-6 of the Update Regarding Selected Battery Storage Technology and Fire Protection (TN 259023) and provide an updated scaled drawing with these locations. Please provide the source of water for the fire loop and worst-case fire flow required in GPM (gallons per minute). Additionally, please describe if a water tank would be required to meet the worst-case flow in GPM.

Response: There would be no change to the project's proposed fire loop and hydrants because of the Tesla MP2XL decision. The MNWD provides the infrastructure necessary to provide water to the Church property where the project will be located. The project has confirmed that local infrastructure has sufficient fire water access and capacity to serve the project. The flow tests conducted by the MNWD for the pipes adjacent to the project site have verified that the existing system the 2,500 gallons per minute and 20 psi to the standards required by the OCFA. The fire flow analysis is included herein as Attachment 8. The project's fire hydrant locations were provided in Appendix 2A of the original application (General Arrangement drawing, CMP-SE-101) however based on further correspondence with the OCFA, the proposed hydrant locations have been adjusted and additional hydrants added – as shown in Attachment 10. A water tank is not required.

8.4 Data Request REV 1 DR WS-4

CEC Comment: REV 1 DR WS-4: Please describe where a secondary emergency access would be placed and what protocols would be in place to ensure access is available for emergency responders. Please provide a scaled drawing locating the secondary entrance. Please describe how the secondary emergency access would be independent from the primary access to the project.

Response: Due to the new access road that will be constructed that meets the width and turning radius requirements for the Applicant, SDG&E, and OCFA (as per OCFA Guideline B-01), the Applicant has received direct communication from OCFA that a dedicated secondary access onto the church property would not be required. However, in an effort to address this item, the Applicant has reviewed as-built drawings provided from Orange County Public Works for a potential access point to the site from the existing road along the east side of Oso Creek channel. The Applicant has confirmed that this road is 21 feet wide, and that OCFA has access to this road through a gate at the intersection at Camino Capistrano. This road crosses Oso Creek towards the project site approximately 1,500 feet south of the main bridge access to the site. While this road meets OCFA's requirement of a minimum of 20 feet width, it is composed of gravel and is not considered to be all weather, and discussions are being held with Orange County Public Works to determine implications of paving this road. The Applicant understands this road could be used as an access point in its current condition under an emergency situation, and is willing to work with Orange County Public Works to bring this road to meet standard requirements of OCFA.

While not requiring secondary access onto the church property, OCFA has requested that the Applicant provide an additional access point into the battery yard itself. While the original site plan had two access points, OCFA has requested a third access point on the north end of the site towards the middle of the battery yard. The approximate location of this additional access point is shown on Attachment 10 provided in this submittal. Access to the battery yard will be provided by Knox boxes at the gates or other means as coordinated with first responders.

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