

4.9. HAZARDS AND HAZARDOUS MATERIALS

This section includes the following discussion and analysis related to hazards and hazardous materials: existing environmental and regulatory setting; criteria and methodology for evaluating impacts; and the results of the impact assessment, including the identification of significant impacts and corresponding mitigation measures to avoid or substantially lessen such impacts to the extent feasible, as appropriate.

PEIR Scoping Comments

During the PEIR scoping process, the District received two letters containing comments related to hazards and hazardous materials. The comments submitted are summarized below (see PEIR Scoping Report in Appendix A of this document for copies of comments received).

California Department of Conservation, Geologic Energy Management Division (CalGEM)

The comment letter indicates that the Plan Area is within the boundaries of several oil and gas fields and includes 421 known oil or gas wells. CalGEM advises against building over, or in any way impeding access to, oil, gas, or geothermal wells. Maintaining sufficient access is considered the ability for a well servicing unit and associated necessary equipment to reach a well from a public street or access way over the parcel on which the well is located. CalGEM advises that all wells on the project sites be tested for liquid and gas leakage prior to or during development activities. Additional detailed requirements and recommendations regarding wells located within planned development areas are included in the comment letter.

Potential impacts associated with oil and gas wells are addressed below in Section 4.9.3. *Environmental Impact Analysis* under Impact HAZ-5.

Leadership Counsel for Justice and Accountability

The comment letter requests an analysis of any hazardous materials and solid waste generated by construction and operation of the project, including the movement and disposal of these materials both on and off-site and any threats to human health or the environment from these materials, and including the potential for fires associated with energy storage and transmission.

[Potential hazards and hazardous materials impacts are addressed below in Section 4.9.3. *Environmental Impact Analysis* under Impacts HAZ-1 through HAZ-8. Potential solid waste impacts are addressed in Section 4.17. *Utilities and Service Systems*. Potential fire impacts are addressed in Sections 4.14. *Public Services* and 4.18. *Wildfire*.]

The commenter requests analysis of the risk of causing heat island effects and requests incorporation of mitigation measures to protect residents and the community at large from extreme heat.

[The potential for solar photovoltaic (PV) facilities to result in heat island effects is discussed below in Section 4.9.3. *Environmental Impact Analysis* under Impact HAZ-10.]

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Definition of Hazardous Materials

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22 of the California Code of Regulations (CCR) as a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed (CCR, Title 22, section 66260.10 and Health and Safety Code section 25501).

Chemical and physical properties cause a substance to be considered hazardous, including the properties of toxicity, ignitability, corrosivity, and reactivity. These terms are defined in Title 22 of the CCR, sections 66261.20-66261.24. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway and individual susceptibility.

4.9.1. Environmental Setting

4.9.1.1. SOURCES OF HAZARDS AND HAZARDOUS MATERIALS

Hazardous Waste Generators

Many industries and commercial facilities generate hazardous waste as part of their processes and operations. The U.S. EPA regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA) to ensure these wastes are managed in ways that protect human health and the environment. Generators of hazardous waste are regulated based on the amount of hazardous waste they generate in a calendar month, not the size of their business or facility. Within the Plan Area, there are four hazardous waste generators, all of which are small quantity generators (i.e., generate less than 100 kilograms per month of hazardous waste or less than one kilogram of acutely hazardous waste). These include two fertilizer plants, one cotton gin, and one water treatment plant. One fertilizer plant and the cotton gin are located adjacent to Development Focus Areas (DFA) lands, while the other two generators are at least one mile from the nearest DFA lands, and at least a half mile from the VCIP connecting transmission corridor. These generators are subject to regulatory oversight by the U.S. EPA and have no open cases of uncontrolled discharges of hazardous materials (Cal EPA 2025).

Hazardous Materials Contamination Sites

Uncontrolled discharges of hazardous materials have the potential to result in adverse impacts related to soil and groundwater quality. Contaminant sources include leaking above-ground fuel storage tanks (ASTs), underground storage tanks (LUSTs), petroleum product pipelines, or accidental spills of fuels or other hazardous materials. Hazardous contamination sites exist throughout Fresno County, including several existing within the Plan Area. Hazardous contamination cases are administered by various agencies (described below in Section 4.9.2. *Regulatory Context*) including the California Department of Toxic Substances Control (DTSC) and the State Water Resources Control Board (SWRCB). Both agencies track contamination cases and maintain the publicly accessible EnviroStor (aka Cortese List) and GeoTracker databases, respectively, which provide the

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cleanup status for contamination cases. Within the Plan Area (excluding cities and NAS Lemoore), there are four open contamination cases subject to regulatory action. These include the following: 1) Bullard Avenue Airstrip; 2) Airway Farms – Five Points Ranch Shop; 3) TMT Chemical Company on Oakland Avenue; and 4) Airway Farms Duster Ranch near Huron. Two of these sites (Bullard Airstrip and Airway Farms – Five Points Ranch Shop) are adjacent to potential DFAs, while the remaining two sites are at least one mile from the nearest potential DFA (DTSC 2025b, SWRCB 2025). The cleanup status for all four sites is summarized below based on information from EnviroStor and GeoTracker databases.

Former Bullard Avenue Airstrip

Location: North side W. Bullard Ave., west of N. Jerrold Ave.

Lead Agency: Central Valley Regional Water Quality Control Board (CVRWQCB).

Potential Contaminants of Concern: Aviation fuel, pesticides, herbicides, fumigants, Toxaphene, waste oil.

Cleanup Status: Open – Site Assessment as of 5/28/2009.

Site History: This abandoned airstrip, which was formerly owned by the Broadview Water District (since annexed to Westlands Water District), operated from approximately 1975 to 2004, and was used by crop dusters and other agricultural aircraft. It contained a wash rack and fueling area for the aircraft. During a 2004 site investigation, soil staining was noted in the area and subsequent soil testing indicated the presence of Toxaphene at actionable levels. There is potential for heavy metals and aircraft fuel residues to be present along the airstrip. In November 2005, two nearby irrigation wells were destroyed and backfilled to protect public health and safety. In June 2006, the wash rack was demolished and the concrete hauled off-site for disposal (SWRCB 2025).

Air-Way Farms – Five Points Ranch Shop

Location: 18878 W. Mount Whitney Ave., east of W. Lake Ave.

Lead Agency: CVRWQCB

Potential Contaminants of Concern: Diesel, gasoline.

Cleanup Status: Open – Inactive as of 4/4/2019.

Site History: The site contained three ASTs that had operated since at least 1985. Two of the tanks were diesel and one was gasoline. In 2006 significant soil staining and groundwater sampling indicated the presence of both diesel and gasoline. In August of 2007 the three ASTs were removed (SWRCB 2025).

TMT Chemical Co.

Location: 26979 S. Butte Ave., south of N. Oakland Ave.

Lead Agency: DTSC.

Potential Contaminants of Concern: Pesticides, herbicides.

Cleanup Status: Open – Inactive as of 2010.

Site History: The TMT Chemical Company operated at the site from at least the 1960s until 1990. The site formerly discharged wastewater from a laboratory to a dry well. This practice was discontinued by 1985. DTSC conducted site screening of site in 2010 (DTSC 2025b).

Airway Farms Duster Ranch

Location: 14000 Lassen Ave., south of W. Jane Ave.

Lead Agency: CVRWQCB.

Potential Contaminants of Concern: Gasoline, diesel fuels.

Cleanup Status: Open – Inactive as of 4/4/2019

Site History: There was degradation of the underlying soil and groundwater associated with several ASTs. The ASTs contained total petroleum hydrocarbons as diesel (TPH-d) and as gasoline (TPH-g). There are six areas of

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concern identified, including four wells and two booster pumps. Further investigation is needed to delineate the extent of the impacts (SWRCB 2025).

Current and Former Agricultural Operations

The VCIP Plan Area has been in agricultural cultivation for many years. Agricultural operations include several elements with the potential for hazardous materials contamination as discussed below.

Above Ground Storage Tanks (ASTs), Trailer Tanks, 55-Gallon Drums, and Other Containers

Various sizes of polyvinyl ASTs exist in several fertilizer mixing areas located throughout the Plan Area. These tanks are used to store fertilizer until it is mixed with water and pumped out to crops. Trailer tanks are used to spray fertilizers and insecticides on crops. 55-gallon steel drums containing motor oil are associated with the mixing areas and agricultural wells. Other steel and plastic containers are used to store fuels, lubricants, fertilizers, and pesticides. All of these tanks and containers have the potential for spills or leaks which may result in staining of soils, concrete pads, and other surfaces, and potential contamination of groundwater.

Agricultural Wells and Pump Systems and Filter Stations

Agricultural wells and associated pumps and filtration stations are located throughout the Plan Area. Spills or leaks near agricultural wells or pump systems would be evident by staining on equipment pads and soil nearby.

Agricultural Chemical Application

Past and current agricultural practices within the Plan Area include application of agricultural chemicals such as fertilizers, pesticides, and herbicides. Environmentally persistent pesticides may have been applied, and their residues may still be present in hazardous concentrations. See Impact HAZ-3 below for detailed discussion.

Agricultural Structures, Septic Systems, and Waste Disposal Sites

Ranch shops utilize petroleum products such as lubricants, fuels and solvents. Ranch buildings may also include asbestos-containing materials. Ranch septic systems may be subject to failure resulting in potential groundwater contamination. Farming operations may also include unregulated waste disposal sites, waste ponds, detention ponds, tailwater ponds, or burn piles or pits.

Pole-Mounted Electrical Transformers

Pole-mounted transformers are present near production well sites throughout the Plan Area. The transformers are typically owned and operated by PG&E. Older transformers contain polychlorinated biphenyls (PCBs) which can leak and result in staining or stressed vegetation nearby.

PCBs historically were used in dielectric (insulating) fluids in electrical transformers. Due to their high toxicity, the manufacture of PCBs was banned in 1979 and the frequency with which PCBs were found as a component of dielectric fluids decreased significantly over time. Consequently, transformers manufactured and installed before 1979 may be classified as PCB transformers (defined as having a PCB content greater than 500 parts per million) or PCB-contaminated transformers (defined as having a PCB content of 50 to 499 parts per million).

Transformers manufactured and installed after 1979 are more likely to be non-PCB transformers (defined as having a PCB content less than 50 parts per million) or to contain no PCBs in the dielectric fluid. Previous site assessments conducted in the District have found that most transformers are “non-PCB containing.” It is

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expected that this will be the case with other pole-mounted transformers in the Plan Area, such that the potential release of dielectric fluids is a low-level (not substantial) environmental concern.

Natural Gas and Crude Oil Pipelines

Several natural gas transmission pipelines pass through the Plan Area. These mainly consist of the following PG&E gas pipelines: 1) A 33-42-inch diameter trunk pipeline running parallel to I-5 on the east, including two compressor stations; 2) several 12-26-inch diameter pipelines branching off the main pipeline to the east and northeast to Fresno and Mendota areas; 3) several 13-18-inch diameter pipelines branching off the main pipeline to serve local areas within the Plan Area (PG&E 2025). A non-PG&E natural gas transmission pipeline, owned by the Energy Operations Management Corporation, branches off the main PG&E pipeline near W. Nebraska Avenue and heads north through the north-central portion of the Plan Area. A major crude oil pipeline runs through the western margin of the Plan Area along the base of the Diablo Range (US EIA 2025a). The concern with pipelines, especially high-pressure natural gas pipelines, is the risk of explosion caused by inadvertent contact by excavating equipment. This potential hazard is discussed in detail under Impact HAZ-6.

Abandoned Oil and Gas Wells

According to CalGEM, several designated oil and gas fields exist within or partially within the Plan Area. In the Plan Area lands east of I-5, there is one small gas field and five small oil fields, all of which have been officially classified as “abandoned.” In the foothills around Coalinga, there are several large active oil fields which partially extend into the Plan Area. These oil fields include thousands of formerly producing oil wells, most of which are idle or have been plugged and abandoned. Outside the designated oil and gas fields, there are hundreds of non-producing oil and gas wells scattered throughout the Plan Area, most of which were dry holes. There are no remaining actively producing oil or gas wells within or near the Plan Area. Several new exploratory wells exist within the Plan Area, however, including two wells southwest of the I-5/SR-145 interchange, and three new wells to the west of Five Points (CalGEM 2025a). All these new wells are outside of potential DFAs.

Non-operating wells are required to be plugged and abandoned (permanently closed and sealed) in accordance with state requirements. Typically, abandoned wells are plugged by placing cement in the well bore at certain intervals and buried by filling the bore hole with drilling mud. The section of pipe in the upper five feet of soil is removed and closed with a welded ½-inch steel cap, then covered with soil. Typically, no surface evidence of properly abandoned wells remains. Of the hundreds of former oil and gas wells in the Plan Area, seven wells are listed as “idle” (i.e., not producing, but not closed) by CalGEM, all of which are outside of potential DFAs. Two of the idle wells are located along SR-198 near S. Butte Avenue and are 0.3 and 1.2 miles from the nearest potential DFA, respectively. A cluster of five idle wells is located two miles west of Five Points and is 0.1 to 0.3 miles from the nearest potential DFA. These seven wells may represent orphan wells that have been deserted by their operators (CalGEM 2024a). Since deserted wells pose a threat to groundwater quality, CalGEM has an orphan well program to abandon the thousands of orphan wells in California. In cases where there is no financially solvent responsible operator, the Department of Conservation (DOC) will complete the abandonment with state and federal funds. Where there is a financially solvent responsible operator, DOC will undertake plugging and abandonment at the owner’s expense (CalGEM 2025b).

High Voltage Power Lines

Two parallel PG&E 230-kV transmission lines pass through the Plan Area along the east side of I-5. A PG&E 500-kV transmission line runs parallel to the two 230-kV lines as far north as SR-198 where it branches off to the west,

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crosses over I-5, and then follows the lower foothills of the Diablo Range. A second 500-kV transmission line, owned by the Western Area Power Administration (WAPA), extends west from the Gates Substation to the foothills where it turns northwest and runs parallel to the PG&E 500-kV transmission line to the Los Banos Substation on SR-152 in Santa Nella. Segments of the 230-kV transmission lines pass through potential DFAs north of SR-145, and north of the I-5/SR-33 interchange. The concern with high-voltage lines (i.e., 115 kV or greater) is that they pose an electrocution hazard to nearby construction, and potentially expose persons to electromagnetic fields (EMFs). These potential hazards are discussed in detail below under Impacts HAZ-6 and HAZ-9, respectively.

Public Use Airports

Robert William Johnston Municipal Airport in Mendota is a general aviation airport approximately 0.7 miles east of the Plan Area, 2.1 miles from the nearest potential DFA, and 1.9 miles from the connecting transmission corridor at its nearest point. The western portion of the Airport Influence Area (AIA) extends into the Plan Area for approximately one mile. This portion of the AIA includes only the Traffic Pattern Zone and does not include any approach/departure zone, runway protection zone, or other safety zones. The affected portion of the Plan Area is within the Conical Surface where structure heights are regulated under Federal Aviation Administration (FAA) Part 77 (Fresno COG 2023). This area is within the City of Mendota Proposed Sphere of Influence and is not planned for development under the VCIP.

New Coalinga Municipal Airport is a general aviation airport adjacent to the southwest portion of the Plan Area on the west. The nearest potential DFAs are located eight to ten miles north and northeast of the airport. The connecting transmission corridor and Substation 5 are located 13 miles northeast and are well outside the AIA.

Harris Ranch Airport is an airstrip near Coalinga on the western margin of the Plan Area near the I-5/SR-198 interchange. The nearest potential DFAs are located two miles northeast and 3.3 miles north of the airport. The connecting transmission corridor and Substation 5 are located eight miles northeast and are well outside the AIA.

Firebaugh Airport is a general aviation airport approximately three miles east of the Plan Area at its nearest point. The AIA for Firebaugh Airport extends as far west as the Delta-Mendota Canal approximately 1.6 miles east of the Plan Area.

There are also six private airstrips distributed throughout the Plan Area, and another five airstrips within five miles of the Plan Area.

NAS Lemoore

The military airfield at NAS Lemoore is in Kings County adjacent to the southeastern boundary of the Plan Area. The nearest potential DFAs are located 0.7 to 2.0 miles west and southwest of the airfield. The approach/departure zones for flight operations at the airfield extend west about eight miles from the airfield to SR-269. Most of the potential DFAs east of SR-269 are within the approach/departure zones (JLUSPC 2011). The restrictions on land use within this zone are discussed below under Impact HAZ-11.

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4.9.2. Regulatory Context

Federal

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

CERCLA establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites, provides for liability of persons responsible for releases of hazardous waste at these sites, establishes a trust fund to provide for cleanup when no responsible party can be identified, and authorizes response actions. The U.S. EPA has principal authority for administration of CERCLA.

Resource Conservation and Recovery Act (RCRA)

RCRA authorizes the U.S. EPA to control hazardous waste, including generation, transportation, treatment, storage and disposal. It defines hazardous waste, provides for a “cradle-to-grave” tracking system and imposes stringent requirements on treatment, storage and disposal facilities. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses only on active and future facilities and does not address abandoned or historical sites, which are covered under CERCLA.

In 1992, primary responsibility for administration of RCRA in California was delegated to DTSC. The U.S. EPA continues to regulate hazardous substances under CERCLA.

Occupational Safety and Health Administration (OSHA)

OSHA is responsible for assuring worker safety in the handling and use of chemicals in the workplace. The federal regulations pertaining to worker safety are contained in Title 29 of the Code of Federal Regulations, which provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. For workers who will be potentially exposed to hazardous substances, OSHA requires training under its Hazardous Waste Operations and Emergency Response Standard (HAZWOPER). It also requires preparation of health and safety plans to establish procedures to protect workers and the public from exposure to potential hazards at contaminated sites.

In California, federal OSHA regulations are enforced by the California Occupational Health and Safety Administration (Cal/OSHA), discussed below.

Federal Toxic Substances Control Act (TSCA)

TSCA authorizes the U.S. EPA to secure information on all new and existing chemical substances and to control any of these substances determined to cause an unreasonable risk to public health or the environment. TSCA also includes requirements for storage, use, and disposal of PCB-containing materials.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

FIFRA provides federal control of pesticide distribution, sale, and use. Under FIFRA, the U.S. EPA requires users (farmers, utility companies, and others) to register when purchasing pesticides. Users also must take exams for certification as applicators of pesticides. All pesticides used in the U.S. must be registered (licensed) by the

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U.S. EPA. Registration assures that pesticides will be properly labeled and, if applied in accordance with label instructions, will not cause unreasonable harm to the environment.

Federal Hazardous Materials Transportation (HMT) Act

The HMT Act regulates transportation of hazardous materials. The primary regulatory authorities are the U.S. Department of Transportation (DOT), the Federal Highway Administration (FHWA), and the Federal Railroad Administration. The HMT Act specifies driver-training requirements, load labeling procedures, and container design and safety specifications. The HMT Act requires carriers to immediately notify the DOT of certain hazardous materials incidents that occur during the course of transportation, including loading, unloading, and temporary storage. The California Department of Transportation (Caltrans) implements the federal legislation at the state level, and the regulations are enforced by the California Highway Patrol.

Federal Aviation Regulations (FAR)

Part 77 of the Federal Aviation Regulations (FAR) – “Objects Affecting Navigable Airspace,” (CFR Title 14) establishes standards for determining obstructions to navigable airspace and the effects of such obstructions on the safe and efficient use of that airspace. The regulations require that the FAA be notified of proposed construction or alteration of objects – whether permanent, temporary, or of natural growth – if those objects would be of a height which exceeds the FAR Part 77 criteria. The height limits are defined in terms of imaginary surfaces in the airspace extending about two to three miles around airport runways and approximately 9.5 miles from the ends of runways having a precision instrument approach.

State of California

The California Environmental Protection Agency (Cal-EPA), the SWRCB, and its nine Regional Water Quality Control Boards (RWQCBs) have primary responsibility for the use and management of hazardous waste. Within Cal-EPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency for management of hazardous materials and generation, transport and disposal of hazardous waste. Depending on the nature of contamination, the lead agency responsible for regulating hazardous materials at a site can be DTSC, the RWQCB, or both. In general, contamination affecting groundwater is handled by the RWQCB and soil contamination is handled by DTSC. DTSC evaluates contaminated sites to ascertain risks to human health and the environment. DTSC also maintains a list of potentially contaminated sites in the state, known as the Cortese List, which is required under California Government Code section 65962.5. The Cortese List, which is publicly accessible on DTSC’s EnviroStor database, includes: DTSC-listed hazardous waste facilities and sites; California Department of Public Health (CDPH) lists of contaminated drinking water wells; sites listed by the SWRCB as having underground storage tank leaks and which have had a discharge of hazardous wastes or materials into the water or groundwater; and lists from local regulatory agencies of sites that have had a known migration of hazardous waste/material.

Hazardous Waste Control Act

The California Hazardous Waste Control Act is the state’s equivalent to RCRA and closely parallels RCRA by regulating generation, storage, transportation, treatment and disposal of hazardous waste in the state, and particularly those wastes and activities not covered by the federal program. The primary authority for enforcement lies with DTSC, which also administers the state’s delegated responsibilities under RCRA.

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Hazardous Substance Account Act (HSAA)

The HSAA (California Superfund) has three purposes: 1) to respond to releases of hazardous substances; 2) to compensate for damage caused by such releases; and 3) to pay the state's ten percent (10%) share in CERCLA cleanups. Contaminated sites that do not qualify for cleanup under CERCLA may be placed on the California Superfund list of hazardous wastes requiring cleanup.

Porter-Cologne Water Quality Control Act (Porter-Cologne Act)

The Porter-Cologne Act grants the RWQCBs, through the SWRCB, authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Hazardous Material Release Response Plans and Inventory Act of 1985

Businesses that handle specified hazardous materials must submit to the permitting agency (typically the local fire department), an inventory of hazardous materials, an emergency response plan, and an employee training program. The business plans must provide a description of the types of hazardous materials/waste on site and the location of these materials. A business plan is required for any business that uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following: 500 pounds of a solid substance, 55 gallons of a liquid, 200 cubic feet of compressed gas, a hazardous compressed gas in any amount, hazardous waste in any quantity. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)

The Unified Program is the administrative consolidation of six hazardous materials and waste programs (Program Elements) under a single local agency as a Certified Unified Program Agency (CUPA). The Program Elements consolidated under the Unified Program are: Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs; Aboveground Petroleum Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC); Hazardous Materials Release Response Plans and Inventory Program (aka Hazardous Materials Disclosure or "Community Right-to-Know"); California Accidental Release Prevention Program (California ARP); Underground Storage Tank Program; and Uniform Fire Code Plans and Inventory Requirements. The Unified Program is implemented at the local level by CUPAs, which provide a single point of contact for issuance of permits. The CUPA for Fresno County is the Department of Public Health, Environmental Health Division.

Underground Storage of Hazardous Substances Act

Steel underground fuel tanks must be fitted with secondary containment or both interior lining and cathodic protection, as well as other leak prevention features. Permitting of each underground storage tank is administered by each county's CUPA under a Memorandum of Agreement with the state RWQCBs.

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Aboveground Petroleum Storage Act

Owners or operators of aboveground petroleum storage tanks must file a storage statement, take specific action to prevent spills, and in certain instances, implement a monitoring program. Owners and operators of aboveground petroleum storage tanks with a single tank or cumulative storage capacity of greater than 1,320 gallons are required to file a Storage Statement with the SWRCB. Immediately upon discovery of any spill or release of one barrel (42 gallons) or more into any waters of the State, each owner or operator of a tank facility must notify the State, the county, and the city in which the tank facility is located.

Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

Proposition 65 is administered by Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA). The law requires that anyone at reasonable risk of exposure be informed when substances classified as toxins are present, and this notice takes the form of specific required information on consumer product labels. Along with the label requirements, an official list of toxic substances, including their known or suspected risk factors, is maintained and made publicly available.

California Department of Pesticide Regulation (DPR)

The DPR regulates the use of pesticides and herbicides under Title 3, Division 6 of the California Code of Regulations. The DPR's Licensing and Certification Program is responsible for examining and licensing qualified pesticide and herbicide applicators and for certifying pesticide and herbicide applicators who use or supervise the use of restricted pesticides and herbicides.

California Green Building Standards Code (CALGreen)

CALGreen, part 11, title 24 of the California Code of Regulations (CCR), sets forth requirements for disposal and recycling of hazardous and universal wastes. Specific standards and requirements are included for the identification, collection, transport, disposal, and recycling of hazardous wastes. These include universal wastes, such as batteries, electronic devices, mercury-containing equipment, lamps, cathode ray tubes, and aerosol cans. Requirements are detailed for recycling, recovery, returning spent items to the manufacturer, or disposal at an appropriately permitted facility.

PV Modules Universal Waste Management Regulations

In late 2020, the California Office of Administrative Law (OAL) approved regulations (OAL Reference Number: A-2019-0409-04), effective January 1, 2021, for managing PV modules as universal waste. Under the regulations, all PV modules are classified as universal waste (e-waste) and are not considered to be hazardous waste (CCR, Title 22, section 66261.9). The adopted regulations include specific requirements for handling, transport, treatment, and disposal of discarded PV modules.

California Office of Emergency Services (OES)

California OES is responsible for establishing and managing statewide standards for business and area plans relating to the handling and release or threatened release of hazardous materials. Basic information on hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and the health risks) must be available to firefighters, public safety officers, and regulatory agencies and must be included in Hazardous Materials Business Plans (HMBPs) in order to prevent or mitigate the damage to the health and

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safety of persons and the environment from the release or threatened release of these materials into the workplace and environment.

California Occupational Safety and Health Administration (Cal/OSHA)

Cal/OSHA is responsible for adoption and administration of workplace safety standards, including standards related to hazardous materials handling. Cal/OSHA standards are generally more stringent than federal regulations. Cal/OSHA regulations concerning use of hazardous materials in the workplace include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, preparation of health and safety plans to protect workers at hazardous waste sites, and emergency action and fire prevention plan preparation.

California Highway Patrol (CHP)

A valid Hazardous Materials Transportation License, issued by the CHP, is required by California Vehicle Code Section 32000.5 for transportation of either: hazardous materials shipments for which the display of placards is required by state regulations; or hazardous materials shipments of more than 500 pounds, which would require placards if shipping greater amounts in the same manner. Additional requirements for transportation of explosives, inhalation hazards, and radioactive materials are enforced by the CHP under the authority of the California Vehicle Code.

State Aeronautics Act

The State Aeronautics Act (Public Utilities Code section 21001 et seq.) provides for the right of flight over private property, unless conducted in a dangerous manner or at altitudes below those prescribed by federal authority. This Act also gives CalTrans and local governments the authority to protect the airspace defined by FAR Part 77 criteria. It prohibits any uses of the airspace above a property which would interfere with the right of flight, including established approaches to a runway. The act also prohibits any person from constructing any structure or permitting any natural growth of a height which would constitute a hazard to air navigation as defined in FAR Part 77, unless CalTrans issues a permit. The permit is not required if the FAA has determined that the structure or growth does not constitute a hazard to air navigation or would not create an unsafe condition for air navigation (Caltrans 2011).

California Public Utilities Commission (CPUC) General Order No. 95

CPUC General Order 95, “Rules for Overhead Electric Line Construction,” sets forth uniform requirements for overhead electrical line design, construction and maintenance, the application of which will ensure adequate service and secure safety to persons engaged in the construction, maintenance, operation or use of overhead electrical lines and to the public in general. General Order 95 sets forth standards for minimum distances for conductor spacing and ground clearance, maximum conductor sag, vegetation clearance requirements, and maintenance and inspection rules, among other standards and requirements.

CPUC General Order No. 167-C, SB 38 (2022), and SB 1383 (2023)

On March 13, 2025, the CPUC adopted General Order (GO) 167-C to implement SB 38 (2022) and SB 1383 (2023), which address the need for safety oversight of battery energy storage (BESS) facilities. SB 38 requires each battery energy storage facility owned by an electrical corporation or located in the state to prepare an emergency response and emergency action plan that covers the premises of the battery energy storage facility {AM0013.1}

and submit the plan to the county and city where the facility is located. It also requires the owner or operator of the facility to coordinate with the local emergency management agencies, unified program agencies, and local first response agencies. SB 1383 directs CPUC to implement and enforce maintenance and operation standards for energy storage facilities owned by an electrical corporation or located in the state. CPUC GO 167-C applies to all BESS facilities in the state with a capacity of 50 MW or greater, which must comply with CPUC GO 167-C's "Maintenance Standards" and "Operations Standards." These standards establish guiding principles that must be incorporated into the maintenance plan and operation plan submitted to CPUC for each BESS facility subject to CPUC GO 167-C (CPUC 2025b, 2025c).

The current Fresno County Ordinance Code adopts the 2022 California Fire Code (CFC) which is based on the 2021 IFC with supplements and additions (Fresno County 2024c). The current codes and standards applicable to BESS facilities are described in detail below.

California Fire Code (CFC)

The 2022 CFC adopts the 2021 International Fire Code (IFC) as the state's fire code. CFC 1207 Electrical Energy Storage Systems (ESS) addresses fire safety for BESS. Section 1207.1.4 requires a failure modes and effects analysis. Section 1207.1.4.1 requires hazard mitigation analysis of seven failure modes. Section 1207.1.5 requires a large-scale fire test of a representative ESS in accordance with UL 9540A. Section 1207.3.4 requires an energy storage management system that monitors and balances cell voltages, currents and temperatures, and provides for automatic shutoff when unsafe conditions are detected. Section 1207.4.7 requires the installation of exhaust systems for toxic gases. Section 1207.5.1 requires 3 feet of separation between ESS groups. Section 1207.5.4 requires automatic smoke detection systems or radiant energy sensing systems with connection to remote alarm systems. Section 1207.5.5 requires automatic fire suppression systems, with alternative automatic systems required for ESSs that utilize water-reactive materials. Section 1207.5.6 limits the size of BESS containers to 53 feet by 8 feet by 9.5 feet high. Section 1207.5.7 requires that areas within 10 feet of a BESS container be cleared of combustible vegetation. Section 1207.6.1 requires mechanical exhaust ventilation of flammable gas exceeding 25 percent of the volume of the room, as measured by a gas detection system with automatic trouble signaling to a remote alarm in the event of failure. Section 1207.6.3 requires explosion control (e.g., automatic release of gases through vents in top of container). Section 1207.6.5 requires the BESSs be provided with an approved method to prevent, detect and minimize the impact of thermal runaway (ICC 2024).

National Fire Protection Association (NFPA) 855

The NFPA 855 *Standard for Installation of Stationary Energy Storage* is similar to IFC section 1207, but has not been adopted as part of the fire code for California. However, most of NFPA 855 has been adopted in IFC section 1207, so the BESS-related content of the IFC is largely harmonized with NFPA 855 (EPRI 2023).

UL Qualification Standards for BESS

U.S. fire and electrical codes require that energy storage systems be tested by a Nationally Recognized Testing Laboratory (a private-sector organization recognized by the OSHA) and certified to meet consensus-based test standards. The leading testing organization is UL Solutions (UL) (formerly Underwriters Laboratories). For BESS, the standard is UL 9540, *Energy Storage Systems and Equipment*, which was published in 2016. The most recent third edition was published on June 28, 2023, and was last revised on March 7, 2025. UL 9540 is a safety standard for the construction, manufacturing and performance testing and marking of battery energy storage systems (UL 2025). UL 9540A is a test method to evaluate the fire safety hazards associated with propagating

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thermal runaway within battery systems. The tests establish that a storage technology is capable of reaching thermal runaway and then assess the fire and explosion hazards of that technology (UL 2025b; Mayfield 2024). (For a detailed description of UL testing requirements for BESS, see Section 4.9.3.1. *Direct and Indirect Impacts*, under Impact HAZ-2.)

Fresno County

Fresno County General Plan

The Fresno County General Plan (Fresno County 2024b) includes the following goals and policies related to hazards and hazardous materials that may be relevant to the VCIP:

Health and Safety Element

E. Airport Hazards

GOAL HS-E To minimize the exposure of the public to high noise levels and safety hazards through land use controls and policies for property in the vicinity of airports, and to limit urban encroachment around airports in order to preserve the safety of flight operations and the continued viability of airport facilities.

Policy HS-E.2 **Airport Safety Hazards**
The County shall ensure that new development, including public infrastructure projects, does not create safety hazards such as glare from direct or reflective sources, smoke, electrical interference, hazardous chemicals, or fuel storage in violation of adopted safety standards.

Policy HS-E.3 **Federal Airport Safety Zones**
The County shall ensure that development, including public infrastructure projects, within the airport approach and departure zones complies with Part 77 of the Federal Aviation Administration Regulations (Objects Affecting Navigable Airspace).

F. Hazardous Materials

GOAL HS-F To minimize the risk of loss of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes.

Policy HS-F.1 **Hazardous Materials Facilities**
The County shall require that facilities that handle hazardous materials or hazardous wastes be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.

Policy HS-F.2 **Hazardous Waste Applications**
The County shall require that applications for discretionary development projects that will use hazardous materials or generate hazardous waste in large quantities include detailed information concerning hazardous waste reduction, recycling, and storage.

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Policy HS-F.3 Hazardous Materials Incident Response Plan
The County, through its Hazardous Materials Incident Response Plan, shall coordinate and cooperate with emergency response agencies to ensure adequate countywide response to hazardous materials incidents.

Policy HS-F.4 Soil and Groundwater Contamination Reports
For redevelopment or infill projects or where past site uses suggest environmental impairment, the County shall require that an investigation be performed to identify the potential for soil or groundwater contamination. In the event soil or groundwater contamination is identified or could be encountered during site development, the County shall require a plan that identifies potential risks and actions to mitigate those risks prior to, during, and after construction.

Policy HS-F.5 Demolition Standards
The County shall require that demolition of structures where friable asbestos or other hazardous materials could be released into the environment comply with applicable regulations and standards.

Policy HS-F.6 Timely Site Cleanup
The County shall work cooperatively with the State Department of Toxic Substances Control and Regional Water Quality Control Board to promote the timely and efficient cleanup of contaminated sites under the regulatory oversight of these agencies.

Open Space and Conservation Element

G. Air Quality

Policy OS-G.13 Valley Fever Mitigation
The County shall continue to promote public awareness of Valley Fever risks relating to ground disturbing activities through the provision of educational materials, webpages and resource contact information. For projects involving ground disturbance on unpaved areas left undisturbed for 6 months or more, the County shall require developers to provide project-specific Valley Fever training and training materials.

Division of Environmental Health

The Fresno County Department of Public Health, Environmental Health Division, serves as the CUPA for Fresno County. As required under the state’s Unified Hazardous Waste and Hazardous Materials Management Regulatory Program described above, the Fresno County CUPA has primary authority for administration and enforcement of hazardous materials regulations in Fresno County. In accordance with state law, in 1996 the County created the CUPA to consolidate all County hazardous materials programs under one agency. The Environmental Health Division is the designated lead agency for hazardous materials programs and acts as the single point of contact for issuance of permits. Site inspections of all hazardous materials programs (e.g., ASTs and LUSTs, hazardous waste treatment, hazardous waste generators, hazardous materials management plans, etc.) are consolidated and accomplished by a single inspection. All businesses that handle or store hazardous

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materials above 55 gallons for liquids, 400 pounds for solids; and 200 cubic feet for compressed gases are required to complete forms and file a Chemical Inventory with the Environmental Health Division. Lower thresholds are typically mandated for “Acutely Hazardous Substances.” A site map and emergency plan are also required to be submitted by all businesses that submit a HMBP and Chemical Inventory. The program provides for emergency response to chemical events to furnish substance identification; health and environment risk assessment; air, soil, water and waste sample collection; incident mitigation and cleanup feasibility options and on-scene coordination for state superfund incidents. The program also provides for the oversight, investigation and remediation of unauthorized releases from LUSTs.

Fresno County Hazard Mitigation Plan

Adopted by the Board of Supervisors in 2024, the Fresno County Hazard Mitigation Plan (HMP) was developed to better guide hazard mitigation planning in the County. The HMP discusses risks associated with human-caused hazards such as hazardous waste. Facilities that involve hazardous material or hazardous waste are identified, counted and located. The HMP also identifies sites of previous hazardous material release and previous transportation incidents involving hazardous waste and past hazardous materials incidents. The HMP establishes goals and policies aimed to mitigate potential hazards including requiring permitting and specialized building design and regulation for handling hazardous materials, cooperation with state and federal agencies with expertise in hazardous materials, assessment and remediation of any contamination, disaster and emergency preparedness and public information.

Fresno County Multi-Jurisdictional Hazard Mitigation Plan

The Fresno County Office of Emergency Services (OES) is responsible for the preparation and implementation of the Fresno County Multi-Jurisdictional Hazard Mitigation Plan. This plan serves as a guide for the County’s response to emergencies and disasters in the unincorporated areas of the County. In a large-scale emergency, the plan would be activated by the Fresno County OES which would take the lead in coordinating multiple jurisdictions in implementing the plan. The plan provides support services and coordination activities to response agencies that assess, mitigate, and respond to threats to the public and the environment in the event of hazardous material releases, including the recovery and removal of the hazardous materials. While the plan outlines a general structure for emergency responders in the event of an emergency in the County, it does not establish any specific evacuation routes or plans, standards, goals, or policies (Fresno County 2018).

Fresno County Master Emergency Services Plan

In October 2017, Fresno County Office of Emergency Services (OES) prepared the updated Master Emergency Services Plan to serve as a guide for response to an emergency or disaster in the unincorporated areas of the County, and to coordinate and assist with the disaster response in jurisdictions both within and outside of the County. The plan outlines a general structure for emergency responders in the event of an emergency in the County and does not establish any specific evacuation routes or plans, standards, goals, or policies (Fresno County 2017d).

Fresno County Airport Land Use Compatibility Plan (ALUCP)

The Fresno County ALUCP, prepared for the Fresno County Airport Land Use Commission (ALUC) in 2018, is intended to protect and promote the safety and welfare of residents, businesses, and airport users near the public use airports and NAS Lemoore in Fresno County, while supporting continued operation of these facilities. Specifically, the ALUCP seeks to: ensure that people and facilities are not concentrated in areas

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susceptible to aircraft accidents; protect the public from the adverse effects of airport noise; and ensure that no structures or activities encroach upon, or adversely affect, the use of navigable airspace. The ALUCP contains a land use compatibility plan for each of the nine public use airports in Fresno County, which form the basis for the ALUC's review of local agency land use actions for consistency with the land use compatibility policies and criteria of the ALUCP (Fresno COG 2023).

Fresno County Fire Code

Fresno County Ordinance Code Chapter 15.10, "Fire Code," adopts the 2022 CFC, which is based on the 2021 IFC (Fresno County 2024c). The CFC is described above.

4.9.3. Environmental Impact Analysis

METHODOLOGY

The following impact analysis is based on a review of relevant environmental databases, published technical literature, and previous environmental assessments prepared on projects in the region. The analysis considered the potential impacts of construction, operation and maintenance, and decommissioning in the context of applicable regulations, guidelines, and standards. Potential impacts were evaluated against the applicable thresholds of significance to determine whether implementation of the VCIP would result in potentially significant impacts on the physical environment related to hazards and hazardous materials. The mitigating effects of existing regulations and policies aimed at abating hazards and hazardous materials were considered in making impact conclusions. When an impact is determined to be potentially significant, mitigation measures are identified to avoid or reduce impacts to less-than-significant levels.

SIGNIFICANCE CRITERIA

Based on Appendix G of the state CEQA Guidelines, implementation of the VCIP would be considered to have a potentially significant impact related to hazards and hazardous materials if it would:

- a. Create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials.
- b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would create a significant hazard to the public or the environment.

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- e. Be located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, and the project would result in a safety hazard or excessive noise for people residing or working in the project area.
- f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Note: The Environmental Checklist in Appendix G of the CEQA Guidelines includes the following significance criterion related to wildfire under “IX. Hazards and Hazardous Materials” for projects that would:

- g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

In 2018, a new impact category – “XX. Wildfire” – was added to the Appendix G Checklist, which requires additional analysis of the wildfire issue. To provide a comprehensive analysis of the wildfire issue in one section of this PEIR, item ‘g’ above has been added as a significance criterion to Section 4.18. *Wildfire* and is not addressed in this section.

4.9.3.1. DIRECT AND INDIRECT EFFECTS

Impact HAZ-1. Potential Hazard from Routine Transport, Use, or Disposal of Hazardous Materials

Hazardous materials could be released during construction, operation, and decommissioning of the VCIP facilities. Potential hazards would be reduced to less-than-significant levels through compliance with applicable laws, regulations, and other requirements governing the transport, handling, use, storage, and disposal of hazardous materials. (*Less-than-Significant Impact*)

VCIP Energy Resource Plan– Analysis of Impact HAZ-1

Construction, operation, and decommissioning of the VCIP solar and energy storage projects would involve the use, transport and disposal of hazardous materials, as discussed below.

Project Construction

The hazardous materials used during construction of the VCIP solar and energy storage projects would include gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, welding and soldering supplies, pressurized gases, etc. All hazardous materials would be stored in containers that are specifically designed for the materials to be stored.

During construction, substantial quantities of gasoline, diesel fuel, and transformer insulating oil (mineral oil) would be transported to the project sites. A spill of these hazardous liquids *en route* to a project site could result in potentially significant impacts related to soil, surface water, groundwater, or public health and safety. Such materials are routinely and safely transported on public roadways, however. The transport of large quantities of hazardous materials is strictly regulated by the CHP. Large quantities of hazardous materials used {AM0013.1}

during project construction would be transported along regulated routes by a licensed transporter and would not pose a significant hazard to the public or the environment.

During construction of the solar and energy storage facilities, minor spills or discharges of hazardous materials could occur due to improper handling, storage, and/or disposal. The potential for significant release of hazardous materials would be minimized through preparation and implementation a Storm Water Pollution Prevention Plan (SWPPP) for each project, as required by the SWRCB (for a detailed discussion, see section 4.10. *Hydrology and Water Quality*). The SWPPPs would require Best Management Practices (BMPs) for control and containment of hazardous materials during construction, including housekeeping measures for control of contaminants such as petroleum products, paints and solvents, detergents, fertilizers, and pesticides, as well as vehicle and equipment fueling and maintenance practices, and waste management and disposal control practices, among other things. Construction workers would be trained in the proper handling and storage of hazardous materials and waste, such as during fueling of construction vehicles and equipment, and containment and cleanup actions to take in the unlikely event of a spill of hazardous materials or waste. Implementation and enforcement of SWPPPs at each project site is the responsibility of the CVRWQCB, whose responsibilities include conducting inspections of the project construction sites to ensure effective implementation of BMPs specified in the SWPPPs prepared for each project.

Implementation of SWPPPs in conjunction with the construction of the VCIP solar and energy storage projects, with regulatory oversight, would ensure that hazardous materials used in project construction are properly handled, stored, and disposed of. Therefore, the potential for impacts to the public and the environment from routine transport, use, and disposal of hazardous materials during construction of the VCIP solar and energy storage projects would be *less than significant*.

Project Operation

Operation and maintenance of the VCIP solar and energy storage facilities would involve transportation, use, and disposal of minor amounts of hazardous materials, including motor vehicle fuel, lubricants, antifreeze, used coolant, janitorial supplies, paint, degreasers, pesticides, herbicides, and fire suppressants. During operation of the facilities, minor spills or discharges of hazardous materials could occur due to improper handling, storage, and/or disposal. The potential for significant release of hazardous materials would be minimized through preparation and implementation of HMBPs for each project as required under the Hazardous Materials Release Response Plan and Inventory Act of 1985. Under this state law, the project proponent is required to prepare an HMBP to the satisfaction of the Fresno County Public Health Department, Environmental Health Division, which is the CUPA for Fresno County. The HMBP would include a hazardous material inventory, emergency response procedures, training program information, and basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of at the project site, and procedures for handling and disposing of unanticipated hazardous materials encountered during construction. The HMBP would include an inventory of the hazardous waste generated on site and would specify procedures for proper disposal. As required, hazardous waste would be transported by a licensed hauler and disposed of at a licensed facility. According to the HMBP reporting requirements, workers must be trained to respond to releases of hazardous materials in accordance with state and federal laws and regulations governing hazardous materials and hazardous waste (e.g., HAZWOPER training required by OSHA). Any accidental release of small quantities of hazardous materials would be promptly contained and abated in accordance with applicable regulatory requirements and reported to the Fresno County CUPA. Implementation of the HMBPs in conjunction with operation of the VCIP solar and energy storage projects would ensure that any minor spills or releases of hazardous materials would not pose a significant risk to the public or the environment.

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The large transformers within the project substations would contain mineral oil, which ordinarily does not require replacement. The transformers would have secondary containment to minimize hazards from any leaks or spills. The smaller transformers distributed throughout the solar fields at the Power Conversion Stations, and those located in the BESS facilities would contain F3 (a vegetable-based oil as an insulating fluid, or similar) which do not require secondary containment. The battery storage systems may be considered hazardous, including but not limited to lithium ion, sodium sulfur, sodium hydride, and nickel hydride. The batteries would be stored in metal-framed storage containers that house multiple battery modules mounted in racks. The energy storage containers would be insulated, air conditioned, and equipped with a fire suppression system. The containers would be sealed such that no fluid leaks could escape from the containers.

Herbicides used at the VCIP solar and energy storage facilities to control noxious weeds and invasive species would be applied in accordance with the Pest Management Plan to be prepared for each project consistent with the Fresno County Solar Facility Guidelines (Fresno County 2017c). The herbicides would be applied by licensed herbicide applicators, in compliance with the regulations of the U.S. EPA, and the California DPR. As discussed under Impact HAZ-3 below, modern herbicides and pesticides degrade rapidly and therefore are not considered to pose a contamination hazard according to DTSC (DTSC 2008).

Past agricultural practices within the Plan Area would have involved the use of environmentally persistent pesticides. Soil sampling and testing at other project sites in the District have found that residual concentrations of these “legacy” pesticides in soils are typically well below hazardous levels (see detailed discussion under Impact HAZ-3 below.)

It is possible that some VCIP solar projects could employ thin-film modules containing Cadmium-Telluride (CdTe) which is classified as a hazardous material. As is the case with all solar facilities, it is expected that some modules will occasionally need replacement during the life of the facility. The potential hazards associated with CdTe PV modules are addressed under “Decommissioning” below.

Compliance with applicable federal, state, and County regulations governing transportation, use, handling, and disposal of hazardous materials and hazardous waste, with regulatory oversight, during operation of the solar and energy storage facilities would minimize the risk to the public and the environment of exposure to hazardous materials. Therefore, the potential for impacts to the public and the environment from routine transportation, use, and disposal of hazardous materials during operation of the VCIP solar and energy storage facilities would be *less than significant*.

Decommissioning

As described in Chapter 2. *Project Description*, when the VCIP solar and energy storage facilities reach the end of their productive lives, the solar arrays, battery containers, and supporting infrastructure would be disassembled and removed, with all materials recycled, reused, or disposed of as appropriate in accordance with the Reclamation Plan prepared for the solar facility, consistent with Fresno County’s Solar Facility Guidelines (Fresno County 2017c). The materials to be removed would include solar arrays, inverters, transformers, cabling and wiring, and perimeter fencing, among other things, which would be either reused or recycled. Concrete equipment pads would be removed and recycled or reused as clean fill. The batteries in the energy storage facilities would be recycled or disposed of at a hazardous waste facility in accordance with applicable regulations for the disposal of hazardous materials.

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During decommissioning of the solar and energy storage facilities, minor spills or discharges of hazardous materials could occur due to improper handling, storage, and/or disposal. As described above for the construction and operational phases, compliance with existing laws and regulations governing the handling, storage, containment, cleanup, and disposal of hazardous materials and hazardous waste during decommissioning of solar and energy storage facilities would minimize the risk to the public and the environment from exposure to hazardous materials. In addition to the other applicable laws and regulations described above, impacts would be avoided or substantially reduced through the preparation and implementation of SWPPPs, which are required for decommissioning as well as construction.

Hazardous Materials in Solar Panels

There are two predominant semiconducting materials used in PV technology including: crystalline silicon (c-si) which is the conventional material used in flat plate panels; and thin-film semiconductors such as amorphous silicon (a-si) and CdTe. The silicon-based solar cells do not contain hazardous materials, although they may use lead-containing solders. Project operators would be required to plan for and fund recycling, reuse, or disposal of solar PV cells in compliance with a Reclamation Plan for each potential project and with all applicable local, state, and federal regulations to avoid improper decommissioning of these panels and associated potential impacts.

The CdTe employed in thin-film solar panels is a hazardous substance when not imbedded within a PV module. (Cadmium compounds are classified by US EPA as a probable human carcinogen (US EPA 2016)). During the manufacturing process, the CdTe semiconductor layer is sealed between two sheets of glass. CdTe contained within PV modules is highly stable and no emissions of any kind are generated when PV modules are used under normal conditions (Fthenakis 2003). The modules meet rigorous performance testing standards demonstrating durability in a variety of environmental conditions, and are subject to several independent safety certifications. First Solar, the primary manufacturer of CdTe panels, has a program for recycling modules at the end of their 25-year life cycle. During the recycling and refining process, up to 90 percent of the semiconductor material is recovered for reuse in new modules (First Solar 2024).

Under California law, all PV modules are classified as universal waste (e-waste) and are not considered to be hazardous waste (CCR, Title 22, section 66261.9). In late 2020, the California Office of Administrative Law (OAL) approved regulations (OAL Reference Number: A-2019-0409-04), effective January 1, 2021, for managing PV modules as universal waste (DTSC 2025a). The adopted regulations include specific requirements for handling, transport, treatment, and disposal of discarded PV modules. All PV modules brought to a project site that are deemed unusable would be recycled at a private facility by the project operator or handled and disposed of as universal waste.

Potential use and disposal of PV modules at the VCIP solar facilities would not result in a significant risk of release of hazardous materials that would be harmful to the public or the environment and the impact is considered *less than significant*.

The handling, use, storage, transport, and disposal of hazardous materials during construction, operation, and decommissioning of the VCIP solar and energy storage facilities could potentially result in significant hazards to the public and the environment. Implementation of SWPPPs and HMBPs in conjunction with the construction, operation, and decommissioning of the VCIP solar and energy storage projects, with regulatory oversight and compliance with regulatory requirements described in Section 4.9.2. *Regulatory Context*, would ensure that hazardous materials used at the solar and energy storage facilities are properly handled, stored, and disposed

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of during all project phases. Therefore, the potential for impacts to the public and the environment from routine transport, use, and disposal of hazardous materials during the construction, operation, and decommissioning of the VCIP solar and energy storage projects would be *less than significant*.

VCIP Infrastructure Plan – Analysis of Impact HAZ-1

Construction and maintenance of the VCIP substations, gen-tie lines, and transmission lines would involve the handling and use of hazardous materials such as fuels, lubricants, solvents, welding supplies and other materials. The transport, use, and disposal of hazards and hazardous materials in connection with these projects is highly regulated under existing federal and state laws and construction and operating standards for electrical utilities for the purpose of protecting public health and safety. Construction and maintenance workers would be trained in the proper handling and storage of hazardous materials and waste, such as during fueling of construction vehicles and equipment, and containment and cleanup actions needed in the unlikely event of a spill of hazardous materials or waste. The VCIP infrastructure projects would also be required to implement SWPPPs during construction, which would include provisions for handling, use, and disposal of hazardous materials, as described above for the VCIP solar and energy storage projects.

Implementation of applicable laws and regulations governing the transport, use, and disposal of hazardous materials, with regulatory oversight and compliance with regulatory requirements described in Section 4.9.2. *Regulatory Context*, would ensure that hazardous materials used in construction and operation of VCIP infrastructure facilities are properly handled, stored, and disposed of. Therefore, the potential for impacts to the public and the environment from routine transport, use, and disposal of hazardous materials during construction and operation of the VCIP infrastructure facilities would be *less than significant*.

Conclusion

Implementation of the VCIP Energy Resource and Infrastructure Plans would not create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials. Therefore, the overall impact in this regard would be *less than significant*.

Mitigation Measures: No mitigation is required.

Impact HAZ-2. Hazards Related to Battery Energy Storage Systems (BESS)

Installation and operation of BESS in VCIP projects would potentially result in health, safety, and environmental hazards. These hazards can largely be avoided or reduced to a level that is less than significant through compliance with the codes and objective standards applicable to BESS facilities; however, additional mitigation measures may be applicable at the project level to address site-specific conditions. (*Less-than-Significant Impact with Mitigation*)

Introduction and Background

BESS facilities play a key role in reaching California’s carbon neutrality goal by 2045 by balancing intermittent renewable energy and managing grid reliability and stability. BESS technology is capable of absorbing energy, {AM0013.1}

storing it for a period of time, and thereafter dispatching the energy, particularly during peak evening periods when solar facilities are not generating clean energy. Statewide, BESS capacity has increased from 500 MW in 2019 to 13,300 MW in 2024. The state's projected need for BESS capacity is estimated to be 52,000 MW by 2045 (CPUC 2025b).

The most common BESS technologies are based on lithium ion batteries (LIB) which are widely used because of their high energy density, long life cycle and low cost. BESS installations typically consist of pre-fabricated large containers that resemble ocean shipping containers with several battery cells inside. Common LIB cell chemistries include iron-phosphate (LFP), nickel-manganese-cobalt (NMC), lithium-nickel-cobalt-aluminum oxide (NCA), and others. A major supplier of prefabricated BESS modules is Tesla Energy, whose current model Megapack 2 XL utilizes LFP chemistry (see Figure 2.5-4).

Potential Hazards Associated with BESS

Fire, Explosion, and Thermal Runaway

Large lithium-ion BESS installations pose potential fire hazards. Because they store large amounts of energy, one of the principal hazards associated with lithium-ion BESSs is fire, which can be ignited if a charged battery cell is somehow damaged, for example by being opened, punctured, or crushed. A fire could also be caused if a battery cell is short circuited, overheated, or experiences thermal runaway. Thermal runaway is a process in which the lithium-ion cell enters an uncontrollable, self-heating state where the cell releases more heat than it can typically safely dissipate. This state can result in extremely high temperatures, fire, and off-gassing of flammable gases resulting in explosion within the BESS container and release of smoke and toxic gases.

During the past several years, there have been battery fires in California and elsewhere, which have heightened concerns with BESS safety and prompted legislation and changes to fire codes with the objective of reducing potential safety hazards associated with BESS. On January 16, 2025, a severe battery fire occurred at the 300 MW Moss Landing Battery Storage Facility owned by Vistra Energy, which had been completed in 2020. The blaze prompted the evacuation of over 1,200 residents from nearby communities and released plumes of black smoke, raising concerns with health safety (Monterey Co. 2025a). The main factors contributing to the severity of the Moss Landing incident included outmoded battery chemistry, poor facility design, and insufficient safety regulation, as discussed below.

The first factor that contributed to the Moss Landing event involved battery chemistry. The batteries in the Moss Landing fire were NMC batteries manufactured by LG Corporation. NMC batteries have high energy density and were first widely used to respond to the exponential demand of electric vehicles (EVs) and became the prominent battery chemistry used for early energy storage facilities. High energy density is a vulnerability when defects cause these batteries to heat up to a threshold temperature and enter thermal runaway, a chain reaction that can quickly run out of control. Several other battery fires involved LG batteries, most notably a 2019 battery explosion in Arizona. Currently, the dominant battery chemistry is LFP, which provides greater stability and fire safety at the cost of lower energy density. The estimated temperature threshold for thermal runaway in LFP batteries is around 518°F, versus 302°F to 392°F for NMC batteries, which makes NMC batteries more susceptible to overheating and failure (Spector 2025).

The second factor contributing to the severity of the January 2025 Moss Landing event was the outmoded design of the facility (by current standards), which completed construction in 2020. The uncontained batteries were stacked on top of each other, arranged in rows and enclosed within an old PG&E gas turbine building from the {AM0013.1}

1950s which had been converted to a battery vault. This packed too much concentrated battery fuel into one enclosed space, creating conditions for a large unstoppable fire. Because battery fires cannot be extinguished by water, the fire was allowed to burn itself out over several days. The absence of containers to isolate the battery cells contributed to the spread of the fire. The 2019 Arizona event also demonstrated how combustible gases emitted from the burning batteries can accumulate in an enclosed space and result in an explosive concentration of gases, which highlighted the importance of ventilation. Current practice is to place battery storage projects outdoors, with batteries enclosed in modular containers that are spaced apart to reduce the potential for fire to propagate and spread to neighboring containers. Each container includes batteries, controls, and safety equipment. Projects are currently designed so that if a fire breaks out in one individual container, it will not propagate to neighboring units. This limits the amount of fuel to feed a fire and makes it easier for emergency responders to access surrounding containers and cool them off with water. The effectiveness of this design was evident in an earlier fire in 2022 that occurred in a different part of the Vistra Moss Landing facility where 256 Tesla Megapack battery containers (with LFP chemistry) had been installed outdoors in a spaced modular configuration. During the Moss Landing fire, only one Tesla Megapack battery container caught fire and did not spread to other nearby containers. The elements that were critical in limiting the fire included proper training for first responders, with the appropriate fire water supply infrastructure, and an effective monitoring system (Spector 2025).

The third factor contributing to the severity of the 2025 Moss Landing event was the absence of enforceable safety regulations specific to the design of large-scale battery storage at the time of installation in 2018-2020. The design and installation of early BESS projects were not regulated by specific building, electrical, fire and product qualification codes and standards. Instead, generic, or less relevant requirements for smaller battery packs were applied, which did not address hazards associated with much larger BESS batteries (EPRI 2023). As described subsequently, fire codes and standards have evolved rapidly in recent years to specifically address BESS fire safety issues.

Release of Toxic Gases and Hazardous Materials

Lithium-ion battery fires generate intense heat and considerable amounts of gas and smoke. The gases that are released from battery energy storage systems are highly flammable and toxic. The type of gas released depends on the battery chemistry involved but typically includes gases such as: carbon monoxide, carbon dioxide, hydrogen, methane, ethane, and other hydrocarbons. As noted, the 2025 Vistra Moss Landing fire event prompted the evacuation of over 1,200 residents from the surrounding area due to concern with the release of toxic gases from the battery fire.

At the Vistra Moss Landing fire incident, the U.S. EPA began air quality monitoring within hours of the start of the fire and continued monitoring for three days while the fire was burning. Air quality was monitored at nine locations including stations near the facility, and in the surrounding communities. Throughout the incident, EPA's air monitoring data showed that particulate matter concentrations were within good to moderate air quality index (AQI) thresholds deemed safe for the general public and posed no risk to public health. Monitoring for hydrogen fluoride gas, which is a highly toxic gas produced by lithium-ion battery fires, was conducted at one second intervals and was found not to exceed California human health standards. Additional mobile monitoring from Vistra's third-party contractor and from the Monterey Bay Air Resources District further supported this finding (Monterey Co. 2025a, 2025b, 2025c; US EPA 2025a). During the Escondido lithium battery fire in San Diego County in 2024, contemporaneous air quality monitoring found that only normal products of combustion of a structure fire were detected and at levels considered by NIOSH and OSHA to be well below exposure thresholds (Escondido 2024a).

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A few days after the Vistra Monterey Landing fire was extinguished, soil and water sampling and analysis was conducted in the area by the California Department of Toxic Substances Control (DTSC) in coordination with the Monterey County Environmental Health Bureau (EHB). OEHHA performed a residential screening level human health risk assessment on PAHs, metals, and other inorganic chemicals measured in surface soil and surface water samples collected by DTSC. The key findings from the lab testing of the soil samples were: 1) Metal and polycyclic aromatic hydrocarbons (PAHs) concentrations in six out of the eight sampling locations were within acceptable screening levels for residential soil; 2) One sample from the marshy area near the facility had cobalt concentrations that exceed the residential soil screening level and ambient soil concentrations in the area; 3) One sample from the residential area southeast of the facility had PAH concentrations that exceeded residential screening levels. OEHHA noted that elevated concentrations of cobalt and PAHs may or may not be fire related. Additional post-screening sampling and testing was recommended at the latter two sampling locations to establish potential for health impacts (OEHHA 2025). The results of this additional testing had not been published as of July 14, 2025.

In other marsh soil samples taken at San Jose State University's Moss Landing Marine Laboratories (MLML), soil analysis measured a dramatic increase in surface concentrations of nickel, manganese and cobalt, all of which are used in NMC batteries (SJSU 2025).

Surface water samples taken at the Elkhorn Slough Reserve located north of the Moss Landing facility detected several metals including barium, chromium, cobalt, nickel, vanadium, and zinc. The levels of barium and nickel did not exceed acceptable screening levels for human recreational water activities, including ingesting water or eating aquatic organisms. The other metals that were detected do not have applicable screening levels for recreational exposure. No immediate public health recommendations were made for surface water samples (OEHHA 2025). Similarly, during the Escondido battery fire in San Diego County in 2024, water quality sampling of runoff from the applied fire water found trace amounts of metals like zinc, copper, and barium at levels typical in an urban environment. No toxic metals such as lead, cadmium, or mercury were detected (Escondido 2024b).

Following the Moss Landing event, drinking water samples were taken by the Monterey County EHB and tested in the lab. The results indicated that the water quality was consistent with historical sampling information and did not exceed the applicable drinking water standards. The County of Santa Cruz Environmental Health Division conducted surface water and agricultural sampling in areas of the County north of the Moss Landing facility and the lab tests did not suggest elevated public health risks or food safety concerns (Monterey Co. 2025d).

The smoke from the Moss Landing fire created a smoke plume that covered the nearby areas of Monterey and Santa Cruz counties. Residents within the smoke plume reported physical symptoms ranging from sore throats, headaches, rashes, and shortness of breath (NBC Bay Area 2025).

In summary, monitoring and testing conducted during and after BESS fire incidents to date indicate that air and water quality standards were not exceeded by those events, indicating there is a low potential for exposure to toxic air emissions from such events. However, exposure to combustion smoke emissions from battery fire is a health concern. In the unlikely case of a thermal runaway or fire incident at a BESS, there could be smoke that could last for many hours, even if the incident is limited to a single container.

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Regulatory Response

Currently, two model fire safety codes address grid battery installations. Most states, including California, have adopted the International Fire Code (IFC) as the basis for their state fire codes, including provisions for large battery installations (IFC Section 608), while the remainder adhere to the National Fire Protection Association's standard, NFPA 855 (ICC 2024, NFPA 2023). Committees of battery experts update these codes on a three-year cycle with the best new information (Spector 2025).

In 2018 the IFC added section 1206 which specifically covered large battery storage projects for the first time. IFC section 1206 set fire safety standards for energy storage systems, including setback, ventilation, cooling, and fire extinguishing requirements. Construction at the Moss Landing facility was nearing completion in 2020 when the State of California began enforcing the 2018 IFC. By 2021, the IFC had been updated again, with battery energy storage requirements now listed under Section 1207. The 2021 IFC update was the first to define different requirements for indoor and outdoor systems and include requirements for commissioning and decommissioning. The last update to the IFC was completed in 2024. The current IFC fire safety standards provide a vastly improved and rigorous set of fire safety standards and requirements which were not in effect when the Vistra Moss Landing BESS was constructed.

The current codes and standards applicable to BESS facilities are described in detail below.

Applicable Codes and Standards that Mitigate Potential BESS Hazards

California Fire Code (CFC)

The 2022 CFC adopts the 2021 IFC as the state's fire code. The current Fresno County Ordinance Code adopts the 2022 California Fire Code (CFC), which is based on the 2021 IFC with supplements and additions (Fresno County 2024c). The 2024 IFC is expected to be adopted by the state in 2025, and by Fresno County in 2026 (CBSC 2025). The future updated 2027 IFC is expected to be completed and adopted by the time first VCIP BESS projects begin construction in 2029.

2024 IFC section 1207 Electrical Energy Storage Systems (ESS) addresses fire safety for BESS. Section 1207.1.6 requires a failure modes and effects analysis. Section 1207.1.7 requires a large-scale fire test of a representative ESS in accordance with UL 9540A. Section 1207.3.4 requires an energy storage management system that monitors and balances cell voltages, currents and temperatures, and provides for automatic shutoff when unsafe conditions are detected. Section 1207.4.7 requires the installation of exhaust systems for toxic gases. Section 1207.5.1 requires a minimum of 3 feet of separation between ESS groups. Section 1207.5.4 requires automatic smoke detection systems or radiant energy sensing systems with connection to a remote alarm system. Section 1207.5.5 requires automatic fire suppression systems, with alternative automatic systems required for ESSs that utilize water-reactive materials. Section 1207.5.6 limits the size of BESS containers to 53 feet by 8 feet by 9.5 feet high. Section 1207.5.7 requires that areas within 10 feet of a BESS container be cleared of combustible vegetation and other combustible growth. Section 1207.6.1 requires mechanical exhaust ventilation of flammable gas exceeding 25 percent of the volume of the room, as measured by a gas detection system with automatic trouble signaling to a remote alarm in the event of failure. Section 1207.6.2 requires that areas containing free-flowing liquid electrolyte or hazardous materials shall be provided with spill control and neutralization (no flow batteries are anticipated for the VCIP, and BESS do not include liquids). Section 1207.6.3 requires explosion control (e.g., automatic release of gases through vents in top of container). Section 1207.6.5

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requires the BESSs be provided with a listed device or other approved method to prevent, detect and minimize the impact of thermal runaway (ICC 2024).

National Fire Protection Association (“NFPA”) 855

The NFPA 855 *Standard for Installation of Stationary Energy Storage* is similar and parallel to the IFC Section 1207, but has not been adopted as the fire codes for California or Fresno County. However, most of NFPA 855 has been adopted in IFC 1207, so the BESS-related content of the IFC is largely harmonized with NFPA 855 (EPRI 2023).

UL Qualification Standards for BESS

U.S. fire and electrical codes require that energy storage systems be tested by a Nationally Recognized Testing Laboratory (a private-sector organization recognized by the OSHA) and certified to meet consensus-based test standards. The leading testing organization is UL Solutions. For BESS, the standard is UL 9540, *Energy Storage Systems and Equipment*, which was initially published in 2016. The most recent third edition, published on June 28, 2023, was last revised on March 7, 2025. UL 9540 is a safety standard for the construction, manufacturing and performance testing and marking of battery energy storage systems. UL 9540 defines electrical, mechanical, fluid containment, and environmental performance tests, along with system safety tests. As part of UL 9540, lithium-ion based energy storage systems are required to meet the standards of UL 1973 for battery systems and UL 1642 for lithium batteries. UL 1973 requires tests for electrical, electromagnetic, mechanical, environmental and failure tolerance. UL 1642 requires evaluation of the battery cell’s performance when subject to adverse electrical, mechanical, environmental, and projectile conditions. Additionally, all utility interactive systems are required to be listed and labeled in accordance with UL 1741 for inverters, converters, and controllers. Essentially, under UL 9540, all components within the BESS system are evaluated and qualified to an individual standard, ensuring that all the components in the system work together. Once all the components are qualified individually, the system can be certified to UL 9540 standard (UL 2025a).

IFC Section 1207 requires a large-scale fire test of a representative BESS in accordance with UL 9540A. UL 9540A testing is performed by the battery manufacturer/vendor to analyze the ability of the system design to prevent thermal runaway propagation and mitigate fire risk. Some of the measures to mitigate fire risk include thermal management system, fire detection system, alarms, deflagration control (i.e., reduction of explosion potential through mechanical exhaust ventilation), and remote monitoring. Specifically, UL 9540 now limits the maximum energy capacity of BESSs (which includes NMC and LFP batteries) to 50 kWh unless they comply with UL 9540A fire test criteria. UL 9540A is an evaluation method that forces a thermal runaway event to test the flammability of cells, potential for fire to spread from unit to unit, capacity for thermal runaway to spread from one cell to others within a module, and to analyze the ability of the system design to mitigate such an event and prevent propagation (UL 2025b). The latest technology in battery storage has established a design such that in the unlikely scenario of a thermal event, the thermal event would be contained to a single battery container and not result in thermal runaway that could affect neighboring units. The fire protection and prevention technology employed in battery storage units based on battery models currently available on the market is specifically designed to prevent a thermal event.

Despite UL 9540’s initial introduction in 2016, it was not until the release of IFC 1206 in 2018 and NFPA 855 in 2019 that UL 9540 certification was mandated as a condition for the installation of energy storage. This is another instance of an additional safety standard that was not mandated at the time of the Vistra Moss Landing facility’s construction in 2018-2020 (Spector 2025).

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CPUC General Order No. 167-C

On March 13, 2025, the CPUC adopted General Order (GO) 167-C to implement SB 38 (2022) and SB 1383 (2023) which address the need for safety oversight of battery energy storage facilities. SB 38 requires each battery energy storage facility owned by an electrical corporation or located in the state to prepare an emergency response and emergency action plan that covers the premises of the battery energy storage facility and submit the plan to the county and city where the facility is located. It also requires the owner or operator of the facility to coordinate with the local emergency management agencies, unified program agencies, and local first response agencies. SB 1383 directs the Commission to implement and enforce maintenance and operation standards for energy storage facilities owned by an electrical corporation or located in the state. CPUC GO 167-C applies to all BESS facilities in the state with a capacity of 50 MW or greater and would therefore apply to all potential BESS facilities under the VCIP.

Potential BESS Model to be Utilized in VCIP Facilities

Although the specific model of BESS that will be selected by various individual VCIP energy storage projects cannot be predicted, it is likely that most BESSs would utilize LFP chemistry which is becoming widely adopted due to its stable chemistry, favorable thermal runaway characteristics, and fire safety. There is a high probability that most VCIP BESS systems would consist of Tesla Megapacks, or a similar system. These BESS models have been manufactured since 2019, and have been made in Lathrop, California since 2021. Tesla Megapacks have been deployed in many projects including two solar project within the District (e.g., Solar Blue, and Castenea Solar in Kings County). Since 2021, Tesla Megapacks have been involved in four reported fires worldwide, three of which occurred in Australia, and the fourth was in Moss Landing in 2022 (discussed above). In two cases, the fires were confined to one unit, and in another instance the adjacent unit was ignited, and in the fourth case an adjacent unit was damaged (CPUC 2023a).

The experience with fire incidents has resulted in improvements in design and safety features which have been incorporated into Tesla's Megapack 2 XL model which was introduced in 2024. The following safety discussion is from Tesla's "Megapack Safety Overview" (Tesla Inc. 2022).

"All Tesla products also undergo rigorous testing at the module level. While standards such as UL 1973 and IEC 62619 ensure propagation resistance to single-cell thermal runaway, testing has shown that Megapack battery modules are resistant to multiple co-located cells sent into runaway at the same time. This greatly mitigates the risk of a thermal event.

At the system level, Megapack is designed with a combination of dedicated runaway gas igniters and overpressure vents built into the roof that passively mitigate the risk of deflagration hazards (i.e., pre-explosion conditions) in case of unlikely accumulation of flammable gases due to arc flash events or thermal runaways. In the unlikely event of a fire, rigorous full-scale fire testing has shown that Megapack performs in a safe and controlled manner, consuming itself slowly and without explosive bursts, projectiles, or unexpected hazards. The vents are designed to direct all gases, smoke, and flame out of the top of the Megapack, minimizing risk to nearby response personnel and exposures. In the event of a fire at a Megapack site, the fire service will be able to manage the event with standard fire service response equipment. The cells used in Tesla products do not contain solid metallic lithium and thus do not react with water. When required by local code, Tesla recommends fire detection at the site level with the use of third-party thermal imaging cameras that can detect fires on site."

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Summary of Potential Impacts Associated with BESS

The primary factor that contributed to the severity of the catastrophic battery fire at Vistra's Moss Landing facility in January 2025 was the high concentration of thousands of uncontained high energy density battery cells in an enclosed and poorly ventilated building. Current BESS installations consist of numerous battery containers where fires would be confined to one container without propagating. In contrast to Vistra's Moss Landing facility, the typical solar/BESS project under the VCIP would be expected to have 250 separate prefabricated battery containers. Use of these separate containers limits the extent of fire and release of smoke and toxins. (The 2025 Vistra Moss Landing Battery fire consumed the equivalent of 300 modular battery containers.) Lithium ion batteries such as those anticipated to be utilized in potential VCIP BESS projects are generally safe and unlikely to fail. In the unlikely event of a battery fire, the effectiveness of emergency preparedness and response is essential for minimizing impacts.

The codes and standards governing installation and operation of BESS are evolving rapidly as experience with potential hazards is gained and allows development of effective safety measures to be incorporated into fire codes and testing standards. As discussed above, the codes, standards, and best practices for BESS safety and emergency response have advanced sufficiently that it can be concluded that the implementation of existing laws, codes, standards, and industry-standard practices at the project level would avoid or reduce to less than significant the potential health, safety, and environmental hazards associated with BESS operation.

Specifically, fire protection design for VCIP BESSs would comply with Section 1206 Electrical Energy Storage Systems, which adopts the National Fire Protection Association (NFPA) Standard for the Installation of Stationary Energy Storage Systems (NFPA 855). Depending on technology, UL, an independent engineer's test method, would certify that the batteries to be used are manufactured in accordance with UL-9540A, an industry-standard *Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems*. Compliance with these standards and certification includes a system design that detects high temperatures at the battery cell or battery module level and automatically shuts down the battery rack. The thermal management systems would be connected to an uninterruptible power supply.

In addition to current code safety requirements, it is recognized that local conditions unique to each BESS project may indicate the need for additional safety measures under given conditions and circumstances. Therefore, Mitigation Measure (MM) HAZ-1 is set forth below to ensure that appropriate adjustments can be made to respond to site specific and local conditions in the context of advancements in applicable codes and standards. With the application of MM HAZ-1 at the project level, the potential health, safety, and environmental impacts associated with BESS facilities installed and operated under VCIP would be avoided or reduced to *less than significant*.

Mitigation Measure HAZ-1: Hazards Associated with BESS

To ensure that potential health, safety, and environmental hazards associated with the operation of Battery Energy Storage Systems under the VCIP are avoided or reduced to less than significant, the following measures are applicable at the project level:

- 1) Code Compliance in Facility Planning and Design: All BESS systems and components shall be designed and constructed in accordance with the most up-to-date applicable provisions of the California Fire Code, as supplemented and amended by the Fresno County Fire Code, and administered by the Fresno County Fire Protection District (FCFPD).**

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- 2) **Coordinate with FCFPD (and other relevant local agencies) in Facility Planning and Design:** To ensure compliance with all applicable objective facility planning and design standards, in the early stages of facility planning and design, the project proponent shall coordinate with the FCFPD (and other relevant local agencies) on the details of facility design, taking into account climatic and environmental conditions and proximity to sensitive receptors, and incorporating lessons learned from previous incidents involving BESS. Depending on site location and local conditions, this coordination shall inform decisions regarding the application of objective facility planning and design standards, such as the need for setbacks or perimeter walls, the design of fire suppression systems including minimum volume of water storage and minimum water pressure for fire suppression, emergency vehicle access, in addition to other relevant facility design considerations for reduction of potential hazards to health and safety to less than significant.

- 3) **Coordination with FCFPD (and other relevant local agencies) in Preparing Emergency Preparedness and Response Plans:** In accordance with CPUC GO 167-C, the project proponent shall establish and implement Maintenance and Operation Standards for Energy Storage Systems, and Emergency Response and Emergency Action Plans for Energy Storage Systems. The project proponent shall coordinate with FCFPD (and other relevant local agencies) in the preparation and implementation of these objective standards and associated plans. For installation and maintenance, the plans shall include provisions to ensure proper installation, regular inspections, real-time monitoring systems to identify any defects, and malfunctioning systems to prevent potential failures that could result in fire incidents. For emergency response, the plans shall include provisions for the establishment of proactive and effective communication links, sharing of technical knowledge unique to BESS technology and safety issues, and regular training and education programs specific to potential BESS safety and incident response. In addition to the required elements of the Emergency Response and Action Plans, the Plans shall include the following provisions: 1) the Plans shall be submitted to the District and FCFPD no less than 60 days prior to construction; and 2) the project owner/operator shall notify the District and FCFPD within one hour, after it is safe and feasible, of specified incidents, such as activation of onsite emergency detection system.

- 4) **Post-Fire Environmental Monitoring.** The project proponent shall develop an air quality and water quality sampling plan to address potential container fires at the BESS. The plan shall include actions to implement so that appropriate air quality measurements can be taken immediately/automatically on-site during a fire and off-site measurements can be taken in real time to identify areas that are affected by smoke from the fire vs. areas that are not affected by the smoke plume from the fire. The project proponent shall have a contract in place (as part of the sampling plan) with an air testing company (or the local Air District) that can respond within hours to collect air samples from a thermal runaway event. The project proponent shall submit the proposed sampling plan to the District and FCFPD 45 days prior to proposed BESS operations for review, revisions, and approval prior to BESS operations. In the event of a fire incident at a BESS facility, the FCFPD shall immediately request that the U.S. EPA and SJVAPCD conduct continuous air quality monitoring during and after the fire incident, and shall request that DTSC and County Environmental Health conduct surface water, soil, and drinking water sampling and testing for the presence of contaminants in actionable concentrations. Based on the results of the testing for contaminants, the health and safety agencies shall issue public health advisories and clean-up orders as appropriate.

Significance After Mitigation: Less-than-significant impact.

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Project-level application of the above mitigation measures during planning, design, and construction of VCIP BESS projects would reduce potential health, safety, and environmental hazards to less than significant.

Impact HAZ-3 Hazards Related to Past and Present Agricultural Operations

The ground disturbing activities associated with implementation of the VCIP Energy Resource and Infrastructure Plans pose potential environmental health hazards by mobilizing petroleum products and agricultural chemicals that may be present in the soil. Any potential hazards would be addressed by environmental assessments and completion of any required remediation for each project site prior to development. (*Less-than-Significant Impact with Mitigation*)

VCIP Energy Resource Plan – Analysis of Impact HAZ-3

Storage, Handling, and Use of Hazardous Materials in Agricultural Operations

As discussed in *Section 4.9.1. Environmental Setting*, potential sources of hazardous materials contamination are typical of agricultural operations, including the following: ASTs, 55-gallon drums, trailers, and other containers for fuels, lubricants, fertilizers, and pesticides; agricultural wells and pump systems; septic systems, waste disposal sites, waste ponds, detention ponds, tailwater ponds, or burn piles or pits; and pole-mounted electrical transformers. There is no record of any spills, leaks, incidents, or violations within the Plan Area. Any spilled chemicals, petroleum products or other hazardous waste that may remain in the soil and groundwater in hazardous concentrations can be mobilized by ground disturbing activities, and this could present a health hazard to construction workers during installation of the solar facilities, and a potential health hazard to operational staff at the completed facilities. This would represent a *potentially significant impact*.

Residual Agricultural Pesticides in Soils

Past and current agricultural practices on the VCIP project sites include the application of agricultural pesticides and herbicides. The potential for agricultural chemicals to be present in hazardous concentrations due to agricultural activities is discussed below for past and current agricultural practices, respectively.

Organochlorine Pesticides from Past Agricultural Practices

In the past, agricultural practices commonly included the application of environmentally persistent pesticides such as DDT, Aldrin, dieldrin, and mirex. Collectively known as organochlorine pesticides (OCPs), these compounds were found to be toxic and bioaccumulative, and were banned from use, beginning in 1974 for DDT, and soon thereafter for other OCPs in California. Due to the environmental persistence of these compounds, residual concentrations may still be present in the soils where they were applied. For example, the half-life of DDT in soil is 2-15 years depending on local climate conditions, while most other OCPs (and Persistent Organic Pesticides (POPs), like Toxaphene) have half-lives of up to 12 years. Thus, a compound with a 15-year half-life would be 50 percent degraded after 15 years, and 75 percent degraded after 30 years and so on. Assuming DDT was applied on a given site, and that the last application was in 1974, and also assuming the high end of the range for its half-life (i.e., 15 years), the concentration of DDT would have degraded to less than 10 percent of its original strength by 2025.

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While there is some potential for these “legacy pesticides” to be present on agricultural lands in hazardous concentrations, it is considered more likely that high concentrations would be found in areas where the chemicals were loaded, stored, or mixed. Incidences of such contamination are associated with the “hot spots” resulting from occasional spillage at chemical storage sites and have not been found to be associated with areas where the chemicals were merely broadcast over the crops. Thus, unless chemical mixing has occurred, there is typically a low potential for environmentally persistent pesticides/herbicides related to crop cultivation to exist in the near-surface soils at concentrations that would require regulatory action.

It is likely that legacy OCPs or POPs were applied within the Plan Area before they were banned in the 1970s. If so, there is a low likelihood that soils within the Plan Area are contaminated, except possibly at former chemical mixing sites where the potential for contamination is higher. Some farmlands acquired by the District in the early 2000s and retired from irrigated agriculture have been subject to soil tests in order to determine if the soils contained any significant concentrations of environmentally persistent agricultural chemicals. In all cases, the analytical results indicated that the soils are well below regulatory screening levels for organochlorine pesticides, as well as Toxaphene and the metal Arsenic. It is noted however that soil contamination from agricultural chemicals was detected at the former Bullard Avenue Airstrip in the Plan Area, as discussed in detail under Impact HAZ-8 below.

Recent Use of Agricultural Chemicals

Any pesticides applied in the Plan Area in the recent past would have consisted of non-persistent compounds that degrade rapidly (within a few days or weeks) after application. The longest-lived pesticides that may have been applied include paraquat and glyphosphate (Roundup), which have half-lives of approximately 1,000 days and 47 days, respectively (UCD 2025, NPIC 2022). As such, the pesticide concentrations would likely degrade to low levels between the time of last application and the time of VCIP development. DTSC does not recommend sampling for currently permitted pesticides since they have relatively short half-lives. While paraquat does have a longer half-life in soil, it has not been detected or detected rarely at trace levels at sites where DTSC has had oversight. As such, routine analysis for paraquat is not required for field areas. Analysis for paraquat may be required in storage and mixing/loading areas (DTSC 2008). Therefore, recently applied pesticides are not an environmental concern except at chemical mixing sites that involved the handling of paraquat.

Phase I Environmental Site Assessments (ESAs)

To investigate the potential presence of site contamination at each VCIP development site, Phase I ESAs will be undertaken in conjunction with each project consistent with Fresno County General Plan Policy HS-F.4 related to soil and groundwater contamination reports for projects where past site use suggests environmental impairment. Phase I ESAs are also required for due diligence in property transactions and are required to provide liability protection under CERCLA. Phase I ESAs have been conducted for all past solar projects in Fresno and Kings counties prior to development, and are also specified in Mitigation Measure HAZ-2 below. The Phase I ESAs would consist of the following: review of available regulatory lists from state and federal agencies; visual inspections of the site and surrounding areas; reviews of historical aerial photographs, historical topographic maps, building permit records, and other property data sources; reviews of Fresno County Division of Environmental Health Services (EHS) files; and interviews with persons with knowledge of present and past uses of the property. These site-specific ESAs would identify the need for any follow-up environmental assessments (Phase II ESAs), such as soil sampling and testing for contamination. The Phase II ESAs would include site-specific cleanup recommendations, if appropriate, for each VCIP project. These recommendations would be

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included as conditions of approval for each VCIP project, as applicable. With the implementation of Mitigation Measure HAZ-2, and follow-up cleanup actions for any soil or groundwater contamination, as stipulated in Phase II ESAs and follow-up investigations for site contamination, the potential VCIP solar and energy storage project impacts related to hazardous materials from past agricultural uses would be *less than significant*.

VCIP Infrastructure Plan – Analysis of Impact HAZ-3

Construction of the VCIP collection substations, gen-tie lines, and connecting transmission lines would involve ground disturbance associated with site clearance, grading, and excavation for substation sites, transmission towers, access roads, staging and pulling sites. As described in Chapter 2. *Project Description*, it is estimated that the total area of temporary ground disturbance for the infrastructure projects would be approximately 2,860 acres. The affected lands may be subject to contamination from past or recent agricultural use, and this would be investigated by site characterization studies in Phase I ESAs and any follow-up investigations prior to construction, as specified in Mitigation Measure HAZ-2. If areas of contamination are discovered, these would need to be cleaned up prior to construction. Therefore, with the implementation of Mitigation Measure HAZ-2, the potential hazardous materials impacts to VCIP infrastructure projects from past agricultural use would be *less than significant*.

Conclusion

With the application of Mitigation Measure HAZ-2 at the project level, implementation of the proposed VCIP Energy Resource and Infrastructure Plans would not create a significant hazard to the public or environment due to hazardous materials contamination from past agricultural use in the Plan Area. Therefore, the overall impact in this regard would be *less than significant*.

Mitigation Measure HAZ-2: Complete Phase I Environmental Site Assessments

Phase I ESAs shall be completed by project proponents of individual projects in the VCIP Plan Area. The Phase I ESAs shall be performed in conformance with the scope and limitations of ASTM E 1527-13 “Standard Practice for Environmental Site Assessments” and EPA “Standards and Practices for All Appropriate Inquiries,” 40 CFR Part 312. If potential hazardous materials contamination is identified in a project Phase I ESA, and the Phase I ESA recommends further review, the project proponent shall retain a Registered Environmental Assessor or other qualified professional to conduct follow-up sampling to characterize the contamination and to identify any required remediation that shall be conducted. These recommendations shall be implemented, and the site shall be deemed remediated by the appropriate agency (DTSC, Fresno County Department of Environmental Health Services [FCDEHS]).

Significance After Mitigation: Less-than-significant impact.

Project-level application of the above mitigation measure during construction and decommissioning of VCIP energy resource and infrastructure projects would reduce potential hazardous materials impacts related to past and present agricultural operations to less-than-significant.

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Impact HAZ-4. Worker Exposure to Valley Fever Fungal Spores

The soils of the VCIP Plan Area may contain Valley Fever fungal spores, which can be released to the atmosphere during soil disturbing activity and expose construction workers to risk of Valley Fever. Implementation of Dust Control Plans, worker awareness training, and respiratory protection programs, as required by existing laws and regulations, would avoid or substantially reduce the health risk to construction workers from potential exposure to Valley Fever during implementation of the VCIP Energy Resource and Infrastructure Plans. (*Less-than-Significant Impact*)

The VCIP Plan Area includes lands that may harbor the fungus that causes Valley Fever (*coccidioidomycosis*), a lung disease common in the southwestern United States. Valley Fever is caused by the fungus *Coccidioides immitis*, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. The fungus is prevalent in the soils of the San Joaquin Valley, including the western area of Fresno County. In 2023, Fresno County had 567 cases of Valley Fever, or 56 cases per 100,000 population, which is 2.4 times the rate for California as a whole (CDPH 2024a). The fungal spores become airborne when the soil is disturbed by winds, construction, farming, or other activities. Most people who inhale the spores do not get sick, and those who have been infected will acquire immunity from future infection. Usually, susceptible individuals experience flu-like symptoms and will feel better on their own within weeks, although some people require antifungal medication (CDC 2025, CDPH 2024b). There is an increased risk of exposure to people working in construction and agriculture due to their proximity to potential release of airborne spores (CDPH 2021).

The fungal spores that cause Valley Fever are most prevalent in undisturbed soils. Since the land in western Fresno County consists predominantly of disturbed agricultural land, the risk of infection due to potential VCIP development is considered low. However, there is a potential for on-site workers to become infected. The potential for airborne release of Valley Fever spores would be greatest during construction and decommissioning of VCIP projects when soils are temporarily exposed and disturbed by grading and excavation activity.

Cal/OSHA administers state and federal laws that require employers to address occupational health and safety for workers, including protection from unsafe or unhealthy conditions. Under California Code of Regulations, Title 8, section 5144, employers are required to evaluate respiratory hazards in the workplace, and if present, to develop and implement a respiratory protection program. In 2013, Cal/OSHA issued citations to contractors at two large solar projects in San Luis Obispo County after workers became infected with Valley Fever. The citations included the following violations: failure to implement appropriate control measures for coccidioidomycosis as part of their injury and illness prevention programs, failure to provide adequate employee respiratory protection, and failure to report serious employee illnesses and hospitalizations resulting from coccidioidomycosis (CDC 2015).

Section 6709 of the California Labor Code, added by AB 203 in 2019, requires awareness training on Valley Fever to all workers subject to substantial dust disturbance. The training is to provide information on exposure prevention methods, recognition of symptoms, treatment, and other relevant information.

Construction of the VCIP energy and infrastructure projects would involve temporary ground disturbance activity resulting in potential release of Valley Fever fungal spores that may be present in the soils.

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Construction workers who have not developed immunity to Valley Fever through previous exposure would be at risk of infection and serious illness. To control dust, each VCIP project would implement an approved Dust Control Plan as required by the San Joaquin Valley Air Pollution District under District Regulation VIII (see Section 4.3. *Air Quality*, Impact AQ-1 for a full list of required dust control measures). Each VCIP project would be required to provide awareness training specifically focused on Valley Fever, and would also be required to evaluate respiratory hazards in the workplace, and if present, to develop and implement a respiratory protection program. On other solar projects in the District, this has resulted in requirements to provide respirators to construction workers. With implementation of Dust Control Plans, worker awareness training, and respiratory protection programs, as required by existing laws and regulations, the health risk to construction workers from potential exposure to Valley Fever during implementation of the VCIP Energy Resource and Infrastructure Plans would be *less than significant*.

Mitigation Measures: No mitigation is required.

Impact HAZ-5. Hazards from Abandoned Oil and Gas Wells

The former oil and gas wells within the VCIP Plan Area pose a risk of potential groundwater contamination and a risk that toxic gases would be released at the well sites which would pose a potential hazard to the public and the environment. Compliance with all applicable regulatory requirements and preparation of soil and groundwater contamination studies, and site remediation if necessary, would avoid or substantially reduce the potential hazard to the public and the environment. (*Less-than-Significant Impact with Mitigation*)

As discussed in Section 4.9.1. *Environmental Setting*, hundreds of former oil and gas wells exist within the VCIP Plan Area, many of which were dry holes, and most of which were plugged and abandoned in accordance with state law. There are no remaining actively producing oil or gas wells within or near the Plan Area. There are several new exploratory wells within the Plan Area, however, including two wells southwest of the I-5/SR-145 interchange and three new wells to the west of Five Points. These wells are outside of potential DFA lands.

Of the hundreds of former oil and gas wells in the Plan Area, seven wells are listed as “idle” by CalGEM, all of which are outside of potential DFAs. Two of the idle wells are located along SR-198 near S. Butte Avenue and are 0.3 and 1.2 miles from the nearest DFA, respectively. A cluster of five idle wells is located two miles west of Five Points and are 0.1 to 0.3 miles from the nearest potential DFA. None of the idle wells are near the VCIP connecting transmission corridor. These seven wells may represent orphan wells that have been deserted by their operators (CalGEM 2025a). Deserted wells pose a threat to groundwater quality, and there is also the potential for hydrocarbons such as oil, methane, or toxic gases (aromatic hydrocarbons or hydrogen sulfide) to migrate up through these wells and to release to the environment. For idle and plugged/abandoned wells located within development sites, Phase I ESAs, as specified in Mitigation Measure HAZ-2, and follow-up studies (Phase II ESAs) undertaken prior to site development would include soil sampling and testing in the vicinity of the former oil and gas wells to determine whether petroleum hydrocarbons and volatile organic compounds are detectable which may have resulted from leaks or spills at the well sites. If so, site remediation

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may be required prior to site disturbance in the vicinity of the well, and the well itself may need to be properly abandoned or re-abandoned in accordance with current CalGEM requirements.

For developments proposed on lands where idle or plugged/abandoned wells are present, CalGEM requires that physical access to the well be maintained in the event abandonment or re-abandonment becomes necessary in the future. This includes providing sufficient clear area for equipment operation and maneuvering, as well as unimpeded access to the well sites from a public road.

In accordance with CalGEM requirements, VCIP energy and infrastructure projects would be designed to provide any idle or abandoned oil/gas wells on site with secure separation from project facilities and with direct physical access to the well sites for equipment and materials, if needed. Thus, the potential for VCIP projects to have a physical impact upon the abandoned or idle oil/gas wells on the site is not substantial. Also, given the potential for oil, methane, or toxic gases to migrate up through idle or plugged/abandoned wells and to release to the environment, soil contamination studies would be conducted prior to ground disturbance, as specified in Mitigation Measure HAZ-2 consistent with Fresno County General Plan Policy HS-F.4. If field inspections and soil analyses indicate that there is residual contamination associated with the idle or abandoned oil/gas wells on a given VCIP project site, remedial action would be required as recommended in the contamination study. With the application of Mitigation Measure HAZ-2, the potential hazard to project workers, other sensitive receptors, or the environment from residual contamination from the oil/gas wells would be *less than significant*.

Mitigation Measures: Implement MM HAZ-2.

Significance After Mitigation: Less-than-significant impact.

Impact HAZ-6. Safety Hazards Associated with Existing Natural Gas and Petroleum Pipelines and Power Transmission Lines

The existing natural gas and petroleum pipelines and electrical transmission lines that are present within the VCIP Plan Area may pose safety hazards to construction activities in proximity to those facilities. Compliance with existing regulations and safety protocols would avoid or substantially reduce these risks. (*Less-than-Significant Impact*)

Existing Natural Gas and Crude Oil Pipelines

As described in Section 4.9.1. *Environmental Setting*, a major high-pressure natural gas transmission pipeline runs through the Plan Area along the east side of I-5, with several gas transmission lines branching off this trunk line to the east and north. A crude oil pipeline runs along the base of the Diablo Range west of I-5 along the western margin of the Plan Area. The concern with pipelines, especially high-pressure natural gas pipelines, is the risk of explosion caused by inadvertent contact by excavating equipment.

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It is anticipated that these transmission pipelines would pass through or alongside some of the potential VCIP solar and energy storage project sites and infrastructure sites, and that pipeline crossings over these pipelines would be required. Any such work would be subject to the applicable provisions of the California Government Code, which sets forth detailed procedures for protecting underground infrastructure and specifies substantial financial penalties for failure to comply (Government Code sections 4216-4216.9). Government Code section 4216.2 provides that an excavator must contact a regional notification center (e.g., Underground Service Alert [USA]) at least two days prior to excavation near any subsurface installation. The existing warning markers along the pipeline alignments indicate only the general location of the pipeline. The USA is then required to notify the utilities that may have buried lines within 1,000 feet of the planned excavation. Representatives of the utility are required to field mark the specific location of their facilities within the planned work area before excavation can commence. Since a high-pressure natural gas pipeline is deemed a “high priority subsurface installation” under Government Code section 4216, the excavator and pipeline operator are required to conduct an on-site meeting to determine actions required to verify the location of the pipeline. If the planned excavation is to occur within two feet of the field marked pipeline location, the exact location of the subsurface pipeline shall be determined by excavation with hand tools only, prior to using power-driven excavation equipment in the pipeline vicinity. In addition, it is anticipated that a transmission crew from the pipeline operator would stand by during construction activity near the pipeline. General workplace safety would be ensured through compliance with Cal/OSHA’s standard safety requirements and protocols. With implementation of applicable laws, regulations, and protocols in conjunction with work near the transmission pipelines, the potential hazards associated with the pipelines would be *less than significant*.

Existing High Voltage Power Transmission Lines

As described in Section 4.9.1. *Environmental Setting*, several high-voltage transmission lines pass through the Plan Area. These include two parallel PG&E 230-kV transmission lines and a PG&E 500-kV line that runs alongside the 230-kV lines, plus a WAPA 500-kV transmission line that runs through the southwest portion of the Plan Area. It is anticipated that at least one VCIP transmission segment and one or more gen-tie segments would cross the PG&E 230-kV and 500-kV transmission lines, but not the WAPA 500-kV transmission line.

Any construction work within an existing PG&E transmission line easement would require coordination in advance with, and authorization by, PG&E, and would require implementation of utility notifications and other protocols as well as clearances and design criteria prescribed by CPUC General Order 95. Construction safety protocols would implement Cal/OSHA requirements to ensure safety of workers during work within the easement. With implementation of these design criteria and standard safety protocols in conjunction with work near the existing transmission easements, as required, the potential hazards associated with the existing transmission lines would be *less than significant*.

Potential safety hazards posed by the construction of VCIP facilities across or near existing natural gas pipelines and power transmission lines would be avoided or substantially reduced by standard safety requirements and protocols required by existing laws and regulations. Therefore, the potential safety impact related to work in the vicinity of these facilities would be *less than significant*.

Mitigation Measures: No mitigation is required.

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Impact HAZ-7. Hazards or Hazardous Materials within One-Quarter Mile of Schools

One elementary school is located within one-quarter mile of a potential VCIP Development Focus Area where a solar PV generating facility and/or energy storage facility would be constructed. Compliance with existing laws, regulations, codes, protocols, and standards required during construction and operation of the VCIP solar and energy storage facilities would ensure that hazardous materials used at VCIP project sites are transported, handled, stored, and disposed of in a manner that would avoid or substantially reduce the risk of release of hazardous materials. (Less-than-Significant Impact)

Cantua Creek Elementary School is located within the Plan Area on W. Clarkson Avenue in Cantua Creek. Westside Elementary School is located within the Plan Area on W. Excelsior Avenue in the community of Westside. Four other schools are located within one-quarter mile of the VCIP boundary, including McCabe Elementary and Mendota High School in Mendota and Huron Elementary, Huron Middle School, and Chestnut High School in Huron. Except for Cantua Creek Elementary School, none of these schools are located within one-quarter mile of a potential VCIP DFA, connecting transmission corridor, or collection substation. The Cantua Creek Elementary School is located adjacent to a potential DFA where a VCIP solar PV facility and/or energy storage facility may be constructed. As discussed under Impact HAZ-1, however, compliance with all applicable legal requirements, protocols, and standards during construction and operation of the VCIP solar and energy storage facilities would ensure that any hazardous materials used at this potential VCIP project site are transported, handled, stored, and disposed of in a manner that would avoid or substantially reduce the risk of release of hazardous materials. Therefore, any potential impacts to the school would be *less than significant*.

Mitigation Measures: No mitigation is required.

Impact HAZ-8. Any Listed Hazardous Materials Sites on or Near Plan Area

Upon the cleanup and regulatory closure of the two contamination sites within and adjacent to the proposed VCIP DFAs, there would be no contamination sites within the VCIP development areas that would create a significant hazard to the public or the environment. (Less-than-Significant Impact with Mitigation)

As discussed in Section 4.9.1. *Environmental Setting*, there are numerous hazardous contamination sites in Fresno County, with several occurring within the Plan Area. Contamination cases are administered and tracked by the DTSC which maintains the Hazardous Waste and Substances Site List (Cortese List) pursuant to Government Code section 65962, which is publicly accessible on DTSC's EnviroStor database. In addition, the SWRCB maintains the GeoTracker database which is focused on groundwater contamination cases. These databases indicate four open contamination cases subject to regulatory action within the Plan Area: 1) Bullard Avenue Airstrip, located within a potential DFA at the north end of the Plan Area; 2) Airway Farms – Five Points Ranch Shop located adjacent to a potential DFA; 3) TMT Chemical Company on Oakland Avenue, at least one {AM0013.1}

mile from a potential DFA; and 4) Airway Farms Duster Ranch near Huron, approximately 10 miles south of the nearest potential DFA (DTSC 2025b, SWRCB 2025). The status of each of these cases is described in Section 4.9.1. *Environmental Setting*.

The sites with the potential to affect VCIP development are the Bullard Avenue Airstrip and the Airway Farms – Five Point Ranch Shop. The potential contaminants at the Bullard Avenue Airstrip include aviation fuel, pesticides, herbicides, fumigants, Toxaphene, and waste oil. Prior to development of the property associated with this site for solar and/or energy storage facilities, site contamination studies would be undertaken as specified in Mitigation Measure HAZ-2 consistent with Policy HS-F.4 of the Fresno County General Plan regarding soil and groundwater contamination reports for projects where past site use suggests environmental impairment. This would include soil sampling and testing followed by remediation, if necessary, to remove the contaminants prior to development. At Airway Farms the contaminants consisted of gasoline and diesel fuel from above ground storage tanks which were removed in 2007. Prior to development on the adjacent DFA, soil and groundwater sampling and testing would be performed to determine the extent of any plume and whether it extends into the DFA. If so, the contaminated soil would need to be removed, and the contaminated groundwater would need to be remediated prior to development. The remediation of each contamination site would allow for regulatory closure of the respective cleanup cases.

With the cleanup of the two contamination sites within and adjacent to the VCIP DFAs, and the formal closure of the cleanup cases with the regulatory agencies, there would be no known contamination sites within the VCIP development areas that would create a significant hazard to the public or the environment. Therefore, the impact in this regard would be *less than significant*.

Mitigation Measures: Implement MM HAZ-2.

Significance After Mitigation: Less-than-significant impact.

Impact HAZ-9. Electromagnetic Fields (EMFs) from Electrical Facilities

Residents and workers in the vicinity of the planned VCIP transmission lines, gen-tie lines, and substations could be exposed to Electromagnetic Fields (EMFs) emitted by those facilities. These infrastructure facilities therefore are planned to be routed, located, and designed in a manner to ensure that the nearest residents and workers would not be exposed to long-term EMF levels any greater than existing ambient or background levels. (*Less-than-Significant Impact with Mitigation*)

Introduction

All electrical devices and conductors emit low frequency electromagnetic fields (EMFs). The unit of measurement of magnetic fields is milligauss (mG). The strength of the magnetic field depends on the strength of the electrical current (amperage). The strength of a magnetic field diminishes rapidly as distance increases from the source of the EMF. For example, the EMF emitted by a desktop light at a distance of one foot is about 33 mG, which drops to about 1.2 mG at a distance of 3 feet. Measurements of household EMF taken during a sample survey of over 700 dwellings by the California Department of Health Services (DHS) found that the average EMF level was 0.71

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mG, and 90 percent of homes had levels below 1.58 mG. Individual exposures can vary depending on proximity to appliances and equipment, and on whether a high-current source is nearby (DHS 1999).

Scientific studies have not resulted in sufficient evidence to substantiate an association between EMF exposure from electric utility lines and adverse health effects in humans. It is the position of the CPUC that it is not appropriate to adopt any specific numerical standard in association with EMF until there is a firm scientific basis for adopting a particular value. In the absence of such evidence regarding health effects, no maximum acceptable levels of EMFs have been established in California. The CPUC's policy is to avoid unnecessary exposure to EMFs if such avoidance can be achieved at reasonable cost in light of the risk identified (CPUC 2006). A review of the scientific research by the WAPA similarly concluded that there is very little evidence of human health risk associated with EMF, and that exposure to normal field levels of EMF is not a major human health issue. Normal or average exposure is suggested to be the household background EMF of about 2 mG (WAPA 2005).

Currently, no federal or state exposure limits or significance thresholds have been established for human exposure to EMFs. However, there is general agreement that the prudent approach is to avoid exposure to high levels of EMF. Several organizations have issued recommendations for permissible levels of EMF exposure from powerlines. The International Commission on Non-Ionizing Radiation Protection recommends a continuous exposure limit of 833 mG for the general public, and the American Council of Governmental Industrial Hygienists recommends a maximum occupational exposure of 10,000 mG (WAPA 2005).

In this context, the California Department of Education (CDE) has enacted regulations that require minimum distances between a new school and power transmission lines. The distances vary depending on the voltage of the transmission line and the strength of their electric fields, which diminish to near background or common ambient levels (2 mG) at known distances. The required minimum distances for schools from the edge of transmission rights-of-way are as follows: 100 feet for 50-133 kV lines; 150 feet for 220-230 kV lines; and 350 feet for 500-550 kV lines (CDE 2024). These distances are intended to provide general indications of average EMF levels, since actual levels fluctuate depending on amperage of the individual transmission lines and other variables.

The CDE setback requirements correspond well with measured EMF levels at numerous transmission lines of various voltages, as measured by the Bonneville Power Administration. For example, for 230-kV lines, typical EMF levels drop off to 1.8 mG at 200 feet from the transmission centerline, or 150 feet from the edge of the right-of-way (ROW) (for a 100-foot ROW). For 500-kV lines, typical EMF levels drop off to 1.4 mG at 300 feet from the transmission centerline, 250 feet from the edge of the ROW (for a 100-foot ROW). As noted, the average household background EMF is about 1 to 2 mG (WAPA 2005).

In the absence of regulatory thresholds for EMF exposure, it is reasonable to apply average household background EMF of 2 mG for design guidance since these levels are not considered to pose a major human health issue. Based on the distances at which EMFs drop to average household levels, EMF levels would be reduced to ambient 2 mG at about 150 feet from a 230-kV transmission ROW, and 250 to 350 feet from a 500 kV transmission ROW. These distances are applied for guidance in the qualitative evaluation of potential EMF impacts resulting from the high voltage power lines planned for the VCIP Plan Area.

While EMFs are produced within substations, the spacing of the electrical equipment results in low measured field strengths outside the substation fence line (WAPA 2005). For purposes of this PEIR, however, it is assumed

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that the CDE's recommended setbacks for 230-kV and 500-kV transmission lines would apply to the 230-kV and 500-kV substations, respectively.

Discussion of EMF Exposure Associated with VCIP Projects

The proposed VCIP Infrastructure Plan includes high-voltage internal gen-tie lines (230 kV) and connecting transmission lines (500 kV). Construction workers at the VCIP solar and energy storage projects would likely work in proximity to high-voltage transmission lines for relatively brief periods and would be exposed to EMFs if the lines are energized at the time of construction.

The Plan Area gen-tie and transmission lines would consist of 230-kV or 500-kV lines with ROWs up to 350 feet wide. The transmission centerlines would be as near as 50 feet from the solar facility fence line. Based on the CDE's setback distances, it is expected that EMF levels from the 230-kV and 500-kV lines would fall back to approximate background levels at distances of 150 feet and 350 feet, respectively, from the outside edge of the transmission ROW.

Within the Plan Area, the nearest dwellings to the planned 500-kV connecting transmission corridor are located within the UC Westside Research Station on W. Oakland Avenue, west of SR-269. The nearest dwelling is located 630 feet from the transmission corridor centerline. Given a corridor width of 450 feet for two parallel transmission lines (with the ROW extending 225 feet from both sides of the centerline), the nearest dwelling would be 405 feet from the edge of the ROW. At this distance, EMF levels would drop off to background levels. Since all other dwellings in the Plan Area would be greater distances from the connecting transmission corridor, no existing dwellings would be exposed to EMFs at levels greater than ambient. There are no other sensitive receptors (e.g., schools) within at least one mile of a VCIP substation or transmission corridor, so those receptors also would not be exposed to EMFs greater than background levels.

The routes of the 230-kV gen-tie lines have not been identified in the VCIP Concept Plan since their alignments will depend on the specific locations and timing of VCIP solar and energy storage development, which are currently unknown and will only become clear when projects are brought forward for consideration. However, it is expected that the gen-tie lines would be routed so that the edge of the gen-tie ROW is located at least 150 feet from the nearest dwellings and other sensitive receptors, the distance at which EMF levels would drop off to ambient.

There is also a potential that permanent operational staff at the VCIP solar and energy storage facilities could be exposed to higher than ambient EMF emissions when they are working within about 150 feet of an existing 230-kV gen-tie line, or within about 350 feet of an existing 500-kV transmission line. During the construction phase, some solar modules would be installed within these distances, and workers would be exposed to greater than background EMF levels for short periods. Average exposure levels would be about 19.5 mG for 230-kV facilities, and 29.4 mG for 500-kV facilities at the edges of the rights-of-way, both of which levels would be significantly lower than the recommended permissible occupational exposure levels of 10,000 mG. Additionally, most project work areas would be located farther than 350 feet from these EMF sources, so the overall amount of time construction workers would be exposed to EMFs above background levels would not be substantial. Permanent operational staff for the solar facilities would be stationed at the O&M buildings sited at least 350 feet from 500 kV lines and project substations, and 150 feet from 230 kV gen-tie lines. In addition, workers who would be on site periodically for maintenance or panel-washing duties would also spend short periods of time exposed to above-ambient EMF levels while in proximity to gen-tie lines, transmission lines, or substations. However, as

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most of their on-site work would take place at substantial distances from these facilities, these workers would not be subject to EMFs at greater than background levels.

In summary, no existing residences in the Plan Area are located in proximity to proposed VCIP substations, transmission lines, or gen-tie lines such that they would be subject to greater than ambient EMF levels. In addition, construction and operational workers occasionally would be subject to EMFs at higher than background levels, but the exposure levels would be far below recommended occupational exposure levels, and the periods of exposure would be relatively short in duration. However, since the potential gen-tie routes and locations of potential project substations have not been established, and the connector transmission alignments may be subject to adjustment at the project level, the distances where EMFs would fall to ambient levels are specified as setback distances in Mitigation Measure HAZ-3. With implementation of Mitigation Measure HAZ-3 at the project level, any potential impacts related to the exposure of residents, workers, and other sensitive receptors to EMFs due to implementation of the VCIP Energy Resource and Infrastructure Plans would be *less than significant*.

Mitigation Measure HAZ-3: EMF Setbacks

To ensure that EMF levels from VCIP infrastructure do not exceed ambient EMF levels at sensitive receptor locations, the following setback distances are applicable at the project-specific stage:

- 1) For 230-kV gen-tie lines and transmission lines, the edge of the right-of-way shall be set back a minimum distance of 150 feet from the nearest residential property line.
- 2) For 500-kV transmission lines, the edge of the transmission right-of-way shall be set back a minimum distance of 350 feet from the nearest residential property line.
- 3) For 230-kV project substations, the exterior fence line of the substation shall be set back a minimum distance of 150 feet from the nearest residential property line.
- 4) For 500-kV collection substations, the exterior fence line of the substation shall be set back a minimum distance of 350 feet from the nearest residential property line.

Significance After Mitigation: *Less-than-significant impact.* Project-level application of the above mitigation measures during design and construction of VCIP energy resource and infrastructure projects would reduce potential EMFs levels to less than significant.

Impact HAZ-10. PhotoVoltaic Heat Island Effect

Air temperatures at the VCIP solar facilities could increase due to the potential heat island effects of solar PV arrays. The best available scientific information indicates, however, that any potential increases in air temperature would be insubstantial and would dissipate within short distances from the solar facilities. (*Less-than-Significant Impact*)

There is a concern that the PV panels at VCIP solar facilities would create a photovoltaic “heat island” effect that would raise ambient air temperatures. This is similar to the “urban heat island” effect that occurs when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb or

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retain heat and contribute to higher temperatures relative to undeveloped areas.¹ Few scientific studies have been conducted on this effect relative to large utility-scale solar facilities, although two important studies prepared to date provide some clarity on this issue.

The first study, called the “Columbia PV Heat Island Study,” found that the annual average air temperature in the center of a PV project can increase by up to 3.5°F above ambient temperatures measured at about 8 feet above ground surface (or 3 feet above the solar panels in the horizontal position), and that this thermal energy completely dissipates to the environment at heights of 16 to 64 feet above ground surface. The study also found that temperatures declined to within 0.54°F of ambient at about 984 feet from the perimeter of the solar facility. Further, the study found that the solar panels cool to temperatures below ambient air temperatures at night and would not induce a day-after-day increase in ambient temperature. The Columbia PV Heat Island Study concludes: “analysis of 18 months of detailed data showed that in most days, the solar array was completely cooled at night, and, thus, it is unlikely that a heat island effect could occur” (Fthenakis 2013).

The second study was conducted by researchers from the University of Arizona and the University of Wisconsin-Madison and published in the journal *Scientific Reports*. This study measured temperature differences between a solar PV facility, an urban parking lot, and an undeveloped desert parcel with little or no vegetation. The study found that the average annual temperature in the solar facility was about 4°F higher than the natural desert environment nearby indicating a photovoltaic heat island effect (Barron-Gafford 2016). However, this study did not measure temperatures outside the solar facility to determine how far the photovoltaic heating effect persisted, as had been done in the Columbia study which determined that temperatures returned to near-ambient within 16 to 64 vertical feet and about 1,000 horizontal feet of the facility. Additionally, the subject Arizona solar facility did not include ground vegetation beneath the solar panels. The Columbia study suggested that the solar panel heating effect could be reduced by revegetation under the solar panels, which would reduce heat island effects through the heat-dissipating effect of transpiration from vegetation.

A third study published in 2021 considered the temperature effects at locations outside two large solar facilities, one in the Mojave Desert and the other in China. The study found that both solar facilities created land surface temperature “cool islands” that extended up to 730 meters from the solar facilities with temperature reductions of up to 2.3°C (4.1°F) on adjacent lands. The study explained that this effect results from cooling of ground beneath solar arrays that absorb incoming solar energy as electricity and the panels shade the ground beneath. The cooler denser air from solar facility then moves laterally and displaces the warmer denser air over the ground on adjacent lands which convects upward (RSET 2021).

Scientific research to date indicates that any increases in air temperature resulting from operation of a utility-scale solar PV facility would not be substantial and would dissipate within short distances upward and outward from the solar facility, and may even result in ground level cooling of nearby lands. Based on the best available information, there is no evidence that any possible increase in ambient temperature from VCIP solar facilities would have a significant impact on human health or the environment.

Mitigation Measures: No mitigation is required.

¹ As discussed in Sections 4.2 (Agriculture and Forestry Resources), 4.7 (Geology and Soils), and 4.10 (Hydrology and Water Quality), over 90 percent of a typical VCIP solar array project site would remain permeable. Vegetative cover would be maintained under the solar arrays. Therefore, the character of potential VCIP projects would be significantly different from permanent conversion to urban development.
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Impact HAZ-11. Hazards to Aviation due to Physical Features and Reflective Surfaces

Tall physical features could pose a hazard to aircraft operation due to physical obstruction. No proposed VCIP structures would be tall enough to present a physical obstruction to aviation. The glare from reflective surfaces can be a hazard to aviation, but solar PV modules are dark in color and have low reflectivity and have not been shown to pose a hazard to aviation. (*Less-than-Significant Impact*)

Airports and Airstrips

Four public use airports are within, adjacent to, or near the Plan Area. These include the Robert William Johnston Municipal Airport in Mendota, the New Coalinga Municipal Airport in Coalinga, and the Harris Ranch Airport in Coalinga, and the Firebaugh Airport in Firebaugh, as described below (Fresno COG 2023). There are also six private airstrips distributed throughout the Plan Area, and another five airstrips within five miles of the Plan Area.

The Robert William Johnston Municipal Airport in Mendota is a general aviation airport located approximately 0.7 miles east of the Plan Area, 2.1 miles from the nearest potential DFA, and 1.9 miles from the connecting transmission corridor at its nearest point. The western portion of the AIA extends into Plan Area for approximately one mile. This portion of the AIA includes only the Traffic Pattern Zone and does not include any approach/departure zone, runway protection zone, or other safety zones. The affected portion of the Plan Area is within the Conical Surface where structure heights are regulated under FAA Part 77. However, this area is within the City of Mendota's Proposed Sphere of Influence and is not planned for solar or energy storage development under the VCIP.

The New Coalinga Municipal Airport is a general aviation airport located adjacent to the southwest portion of the Plan Area. The nearest potential DFAs would be located 8 to 10 miles north and northeast of the airport, and the proposed VCIP connecting transmission corridor and Substation 5 would be located 13 miles northeast, well outside the AIA.

The Harris Ranch Airport is located on the western margin of the Plan Area near the I-5/SR-198 interchange. The nearest potential DFAs would be located two miles northeast and 3.3 miles north of the airport, and the connecting transmission corridor and Substation 5 would be located eight miles northeast, well outside the AIA.

The Firebaugh Airport is a general aviation airport approximately three miles east of the Plan Area at its nearest point. The AIA for Firebaugh Airport extends as far west as the Delta-Mendota Canal approximately 1.6 miles east of the Plan Area.

Physical Obstructions

Under Title 14 of the Code of Federal Regulations, any structures taller than 200 feet above ground level (including structures outside of AIAs) are considered a potential collision hazard (CFR, Title 14, Aeronautics and Space, § 77.17 Obstruction Hazards). The height of the tallest structures associated with the proposed VCIP facilities would be as follows: gen-tie poles, 100 to 150 feet; substation elements, up to 140 feet; O&M

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buildings, up to 30 feet; anemometers, up to 30 feet; inverters, up to 12 feet; water storage tanks, up to 15 feet; and the solar arrays, which may reach as high as 12 feet at their maximum inclination. The energy storage facilities would consist of enclosed containers with a maximum height of ten feet. Major VCIP infrastructure, such as connecting transmission towers, may be as high as 180 feet. Since all VCIP facilities and infrastructure would be less than 200 feet tall, they would be considered minimum collision hazards.

The aircraft arriving or departing from the nearby airports and airstrips would traverse the Plan Area *en route* to their destinations; however, the VCIP clean energy facilities and infrastructure would not include structural elements of sufficient height to be considered a collision hazard. Nevertheless, all VCIP projects in the vicinity of public use airports would be required to comply with FAA notification requirements with respect to compatibility of their vertical structures with airport operations. In cases where VCIP facilities and infrastructure may be sited in proximity to private airstrips, the facilities would include required safety features (e.g., striping on gen-tie and transmission towers; marker balls on gen-tie and transmission conductors, as required by the FAA) to increase their visibility to pilots (FAA 2020). Therefore, the VCIP clean energy facilities and infrastructure would not present a hazard to the public or general aviation.

Glare from Reflective Surfaces

Glare is an intense light effect resulting primarily from the reflection of sunlight off reflective surfaces when the angle of the sun to the surface is such that sunlight is reflected toward the receiver, causing potential discomfort or distraction of the receiver, or potential impairment of vision under extreme conditions. The main source of potential glare from potential VCIP project sites would be solar panels, but other sources could include vehicle windshields and reflective building materials, as well as direct illumination.

All solar panels planned for VCIP projects would be composed of PV cells. Solar PV employs glass panels designed to maximize absorption and minimize reflection to increase electricity production efficiency. To limit reflection, solar PV panels are constructed of dark, light-absorbing materials, and are given an anti-reflective coating or a textured surface that can reduce reflectivity to less than four percent of incoming sunlight (EE Times 2012). When viewed from the air, solar arrays have a consistent dark gray color with little or no reflected light. In comparison, the reflectivity of standard glass is over 20 percent.

In contrast to the solar panels planned for VCIP projects, concentrating solar thermal systems employ arrays of highly polished mirrors to refocus the radiation on a receiver tube or tower and reflect about 90 percent of the incoming sunlight (FAA 2018).

Potential Glare Effects on Aviation

Since solar panels reflect sunlight skyward, there is a potential for the glare from reflected sunlight to affect low flying aircraft passing over or near the solar facility. Any glare effect would occur only as long as the angle between the sun, the aircraft, and solar array is constant. Since aircraft would be traveling at high speeds and the angle between the sun, the aircraft, and the solar arrays would be constantly changing, any glare effect would be fleeting. Also, since the solar panels would have low reflective intensity and would be covered with anti-reflective coating, any resulting glare effects would not be so bright as to disrupt aircraft operations in the area. The potential for glare from VCIP clean energy facilities to result in a hazard to aviation would be *less than significant*.

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Safety Hazard to People Working or Residing in the Area

A typical 250 MW solar facility on a 1,600-acre site would have a permanent staff of about five employees, plus five staff for an on-site battery storage system, with an additional ten workers who would occasionally be on site for panel cleaning, maintenance and repair activities. Thus, up to approximately 20 staff could be on site at any given time for facility operations, maintenance, and security. Since 3.3 of these solar facilities could fit within a square mile, the maximum employment density would be about 66 employees per square mile. The Fresno County ALUCP sets a land use intensity limit of 300 persons per acre for new non-residential uses in the Traffic Pattern Zone (TPZ). The land use intensity of VCIP clean energy facilities would be well below that occupancy limit. No portion of the Plan Area is within the AIA of any other public use airport in Fresno or Kings County. Therefore, the VCIP clean energy facilities would not result in a significant safety hazard to people working or residing in the area due to the proximity of public use airports. As such, the potential for the project to be associated with aviation hazards is *less than significant*.

Aviation Hazards Associated with Naval Air Station Lemoore (NASL)

The military airfield at NASL in Kings County is located adjacent to the southeastern boundary of the Plan Area. The nearby portions of the Plan Area are included in the Military Influence Area (MIA) of NASL and are within the study area of the NASL Joint Land Use Study (JLUS). The JLUS has no jurisdictional effect on the VCIP but includes relevant information regarding potential safety hazards. The nearest potential VCIP DFAs are located 0.7 to 2.0 miles west and southwest of the NASL airfield. The height restrictions zones for flight operations at the airfield extend west about eight miles from the airfield to SR-269. Most of the potential DFA locations east of SR-269 are within the height restrictions zones (JLUSPC 2011). The restrictions on land use within this zone are discussed below.

A small portion of the Plan Area is within the mapped accident potential zone for NASL. The NASL flight approach/departure zones also extend into the nearby portions of the Plan Area in Fresno County. The height restriction zones extend farther out from the base and are regulated by the FAA. The Plan Area lands within the height restriction zones have height limits ranging from 150 feet nearest NASL, with height limits increasing to 500 feet at a point approximately three miles west of the airfield, and this 500-foot height limit extends a further five miles to just beyond SR-269 (JLUSPC 2011). The tallest structures within the affected portion of the Plan Area would consist of structural elements associated with the electrical substations that would be as high as 140 feet, which would fall within the height restrictions applicable to the nearest potential DFAs. However, any gen-tie poles that might be installed in this area would be subject to height restrictions as low as 150 feet at locations nearest to NASL, with height limits increasing to 500 feet at a point approximately three miles west of the airfield. A 10-mile segment of the VCIP connecting transmission corridor, which could include towers as tall as 180 feet, runs along the east side of SR-269, within the 500-foot height limit area for NASL. The nearest VCIP substation (No. 5) is located approximately 0.5 mile west of (outside) the outer height restriction area. Thus, all structural elements would readily comply with the height limits for physical obstructions within the applicable NASL height restriction zones. Nevertheless, all VCIP projects in the vicinity of NASL would be required to comply with FAA notification requirements with respect to compatibility of the vertical structures planned within those projects with airport operations. With respect to land use intensity, the JLUS states that renewable energy projects and related structures are normally compatible without restrictions (JLUSPC 2011, p. 4-31).

Given the proximity of the Plan Area to NASL, there is potential concern with the effect of glare from solar panels on flight operations originating from the base. All solar panels installed at the VCIP facilities would be composed {AM0013.1}

of PV cells. As discussed above, solar PV employs glass panels that are designed to maximize absorption and minimize reflection to increase electricity production efficiency.

The JLUS addresses concerns with aviation hazards from reflection and glare. Solar facilities are mentioned specifically for their potential to produce reflective surfaces, but the JLUS acknowledged that the main concern is with highly reflective mirrors used in concentrating solar thermal facilities. Concentrating solar thermal systems employ arrays of highly polished mirrors to refocus the radiation on a receiver tube or tower and reflect about 90 percent of the incoming sunlight (FAA 2018). The JLUS acknowledges that “if there is no central collection tower, the new solar panels can be made non-reflective and arrays could be installed to not cause any height or reflective issues” (JLUSPC 2011).

It is noted that a glint and glare study using the Sandia Laboratory’s Solar Glare Analysis Tool (SGHAT) was prepared for a large solar project planned adjacent to NASL within the approach zone for the airfield on the base. The study was prepared for the CEQA document on the Mustang Two Solar project in Kings County in 2016. In the analysis, impacts from solar glare were given three ranks in order of severity: 1) potential for permanent eye damage; 2) potential for temporary after-image (a lingering image of the glare in the field of view); and 3) low potential for temporary after-image. Results from the analysis indicated that pilots flying over and near the solar facility would experience a low potential for a temporary after-image, and the potential would be limited to early morning from approximately April through September. The low potential for temporary after-image, the least severe level of solar glare, is generally considered to be safe for pilots (Kings County 2017). The results of this glint and glare analysis are considered applicable to VCIP solar projects that may be constructed near the NASL approach and departure zones because the Mustang II project site is directly beneath the flight approach path and thus represents the worst-case for glint and glare effects on flight operations. Therefore, the PV solar panels proposed within portions of the Plan Area in the NASL approach and departure zones would not result in light or glare that would pose a hazard to flight operations.

The proposed VCIP solar facilities would not result in a significant safety hazard to aviation by creating physical obstructions or excessive reflective glare. Therefore, any potential aviation-related safety hazard posed by proposed VCIP clean energy facilities to people working or residing in the area would be *less than significant*.

Mitigation Measures. No mitigation is required.

Impact HAZ-12. Impair or Interfere with Emergency Response or Evacuation Plan

Implementation of the VCIP Energy Resource and Infrastructure Plans would not impair implementation of or physically interfere with an adopted emergency response plan or an emergency evacuation plan. (*Less-than-Significant Impact*)

In times of emergency or disaster response, the state highways would serve as primary routes, and designated county arterial roadways in the area would serve as secondary routes. In the Plan Area and vicinity, there are numerous routes in and out of the area for effective emergency response and evacuation. These include State Routes 33, 145, 180, 198, 269, and I-5. Among the many County roads serving the area, the principal routes would be W. Nees, W. Bullard, W. Shields, N. Fairview, N. Russell, Belmont, W. Panoche, W. Manning, W.

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Kamm, W. Mount Whitney, W. Oakland Avenues, W. Jayne Avenue, and others. The State Routes and County roads connect with I-5 at eight interchanges within and near the Plan Area. All these County roads and State Routes are in good condition and have low ambient traffic volumes, and thus would have surplus traffic carrying capacity if they are needed as access routes for emergency vehicles. The availability of multiple escape routes from any location in the Plan Area minimizes the potential for residences or workers to become trapped and unable to evacuate from the scene of a disaster. Implementation of the proposed VCIP would not result in changes to the state and county roadway network.

During construction and decommissioning, the VCIP projects would temporarily generate traffic from commuting construction workers and delivery trucks. However, as discussed in Section 4.16. *Transportation*, this temporary increase in traffic volumes would be largely confined to the AM and PM peak traffic periods and would not affect carrying capacity on the subject roadways during most times of the day. During construction, slow moving vehicles or trucks delivering large pieces of equipment or components could result in temporary traffic slow-downs that could interfere with emergency response or evacuation procedures on the nearby County Roads. Such conditions would be infrequent and would be managed pursuant to traffic controls specified in Mitigation Measure TRA-1, which would control incoming and outgoing project traffic and avoid traffic conflicts and congestion (see Section 4.16. *Transportation*).

During operation of the VCIP solar and energy storage facilities, the small operational workforce at each of the widely dispersed facilities would not create or increase traffic congestion during times of emergency or disaster.

Construction of the gen-tie and transmission lines would involve small crews with limited equipment and materials that would be spread over a large area. Most construction activity would occur off-road, except for brief periods when trucks delivering equipment, tower components and conductor spools enter and exit public roads. Construction of transmission line crossings over roadways would be performed without interfering with traffic flow. The potential for creating traffic conflicts or congestion during times of emergency is not substantial.

Operation of the gen-tie and transmission lines would involve occasional site visits for inspections, maintenance and repairs, which would have a negligible effect on traffic congestion during times of emergency or disaster. The collection substations would be unmanned and would be operated remotely.

As discussed in Section 4.9.2. *Regulatory Context*, in a large-scale emergency, the Fresno County Multi-Jurisdictional Hazard Mitigation Plan would be activated by the Fresno County OES, which would take the lead in coordinating multiple jurisdictions in implementing the plan. The plan provides support services and coordination activities to response agencies that assess, mitigate, and respond to threats to the public and the environment in the event of hazardous material releases, including the recovery and removal of the hazardous materials. While the plan outlines a general structure for emergency responders in the event of an emergency in the County, it does not establish any specific evacuation routes or plans, standards, goals, or policies.

Implementation of the VCIP Energy Resource and Infrastructure Plans would not impair implementation of or physically interfere with an adopted emergency response plan or an emergency evacuation plan, and therefore the impact in this regard would be *less than significant*.

Mitigation Measures: No mitigation is required.

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4.9.3.2. TRANSMISSION CORRIDORS OUTSIDE THE VCIP

The transmission corridors for delivery of solar generation from VCIP projects to urban electricity markets in northern and southern California have been identified at a conceptual level in this PEIR to allow a very general discussion of environmental impacts associated with transmission line development in these corridors for informational purposes. These transmission delivery corridors extend far beyond the District's boundaries and are not part of the proposed VCIP. Planning and approval of these outside transmission lines are under the jurisdiction of state and federal energy regulatory agencies (e.g., CPUC, WAPA), and public utilities (e.g., PG&E, SCE), and counties and cities traversed by the transmission corridors. The following discussion provides an overview of potential impacts of the outside transmission lines with respect to hazards and hazardous materials and is presented for informational purposes only.

Project and Site Related Hazards and Contaminant Sources

Construction of the outside transmission lines would involve the use of hazardous materials such as fuels, lubricating oils, hydraulic fluids, glycol-based coolants, lead-acid batteries, solvents, paints, cleaning agents, coatings, and herbicides. Existing contamination from former agricultural or other land uses could pose a risk to workers and the environment during construction and operation. There are also potential health and safety hazards associated with old oil and gas wells located in the southern San Joaquin Valley, and safety hazards associated with work in proximity to natural gas transmission pipelines that are present throughout the transmission routes. In the valley and desert areas, there is a potential for health risk due to exposure to Valley Fever fungus. As discussed under Impacts HAZ-1 through HAZ-8, the potential impacts due to hazards and hazardous materials would be addressed through compliance with all applicable federal, state, and local laws and regulations that require safe transport, handling, storage, use, disposal and spill response for hazardous materials used during project construction and operation. Existing site contamination would be addressed through compliance with local policies and protocols that require site characterization of development sites to identify the nature and extent of any on-site contamination from previous lands uses, and which require cleanup and site remediation prior to development if needed.

Compliance with existing regulatory requirements would avoid or substantially reduce any potential impact due to hazards and hazardous materials associated with the outside transmission lines, and this impact would be *less than significant*.

Electromagnetic Fields (EMFs)

The outside transmission lines all would consist of 500-kV lines. As discussed under Impact HAZ-9, above, the EMFs from a 500-kV line would decrease to background or ambient levels at about 350 feet from the edge of the right-of-way. Since the new transmission lines are assumed to run parallel to existing transmission lines in all corridors, the increase in EMF levels would occur on one side of the existing transmission lines. In segments with one new transmission line, the distance between the existing transmission right-of-way and the point where EMFs drop to ambient next to the new transmission line would be 600 feet. For segments with two new parallel transmission lines, this distance would be 850 feet from the existing transmission right-of-way.

A review of the conceptual transmission corridors shows that in the northern transmission corridor extending to the Tracy and Tesla Substations, there are no existing dwellings within the above setback distances where EMFs would increase above background levels. Along the western transmission corridor there are several dwellings {AM0013.1}

south of Hollister and northeast of Salinas located within the setback zones. In Prunedale, the corridor passes through or near residential areas with a total of over 100 dwellings within the applicable setback distances. In subsequent detailed route planning, these transmission segments may need to be realigned away from the existing transmission line to a new alignment with few or no dwellings subject to potential increases in EMF levels, or the transmission projects could include alternative design measures as may be identified in engineering design studies.

Along the southern transmission corridor, there are several instances where existing sensitive receptors would occur within the indicated setback distances. These include approximately 30 dwellings and the elementary school in Kettleman City; approximately 40 rural dwellings in western Kern County; and about 20 rural dwellings in the northern foothills of the San Gabriel Mountains northwest of the Vincent Substation, and several rural properties in Monterey County. No dwellings would be located within setback distances in the Tehachapi Mountains or Antelope Valley. In subsequent detailed route planning, these transmission segments may need to be realigned away from the existing transmission line to a new alignment with few or no dwellings subject to potential increases in EMF levels, or the transmission projects could include alternative design measures as may be identified in engineering design studies.

With the incorporation of planning or engineering measures to ensure that EMF levels near existing residences and other sensitive receptors remain at or near ambient levels, the impact from potential EMF exposure related to the outside transmission lines would be *less than significant*.

Hazards to Aviation

The transmission towers in the outside transmission corridors could include physical flight obstructions if the towers are near public use airports. A review of the transmission routes shows that the northern corridor to the Tesla and Tracy Substations passes through the AIA of the Tracy Municipal Airport, but the corridor is outside the compatibility zones of the airport and therefore would not be subject to height restrictions (San Joaquin County ALUC 2018). Along the western transmission corridor to Moss Landing there are no municipal airports or other general aviation airports or airstrips within several miles of the corridor. Along the southern transmission corridor there are no municipal airports or other public use airports within several miles of the corridor, and the corridor passes through no military influence areas in the Antelope Valley. In summary, the outside transmission corridors would not be subject to physical height restrictions associated with public use airports in the regions they pass through, and the potential hazard to aviation would be *less than significant*.

Interfere with or Impair Emergency Response or Evacuation Plans

The outside transmission lines would traverse valley and mountain areas that are sparsely settled, although the lines would pass over State Routes and County roads that would be used for evacuation and emergency response. During construction, all activity would occur off-road except for occasional widely dispersed deliveries of equipment and components that would not impede vehicular movement on emergency travel routes. Construction of transmission line crossings over roadways would be performed without interfering with traffic flow. Operation of the transmission lines would involve occasional site visits for inspections, maintenance and repairs that would not have a substantial effect on traffic congestion during times of emergency or disaster. Therefore, construction and operation of the outside transmission lines would not impair implementation of or physically interfere with or impair emergency response or evacuation plans, and the impact would be *less than significant*.

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4.9.3.3. CUMULATIVE IMPACTS

Project-Related Contaminant Sources

As discussed under Impact HAZ-1 above, construction, operation, and decommissioning of the VCIP projects would involve the use of hazardous materials such as fuels, lubricants, solvents, and welding supplies, among other substances. The transport, use, and disposal of these materials are governed by federal and state laws and regulations aimed at preventing release of contaminants specifically through safe handling and disposal protocols and emergency procedures to be followed in case of spills or accidental discharges. The transport of large quantities of hazardous materials is strictly regulated by the CHP. Any large quantities of hazardous materials used during project construction would be transported along regulated routes by a licensed transporter and would not pose a significant hazard to the public or the environment. During construction and decommissioning, SWPPPs would prescribe protective measures to prevent spills and respond to uncontrolled discharges of hazardous materials. During facility operation, HMBPs would provide for safe handling, storage, disposal, and spill response. Compliance with applicable laws and regulations would ensure that impacts associated with the use of hazardous materials would be less than significant for VCIP development. These same requirements would be applicable to the other cumulative projects, including cumulative projects associated with the outside transmission corridors, such that the potential impacts would be less than significant for each cumulative project. The residual hazardous materials impact from each project would not combine to produce a cumulatively significant effect. Therefore, the cumulative impact due to routine transport, use, and disposal of hazardous materials would be *less than significant*.

Existing Sources of Potential Hazards and Contamination

Several existing conditions within the VCIP Plan Area may pose a safety or contamination hazard during construction of the proposed VCIP clean energy and infrastructure projects. These include existing regulatory cleanup sites, hazardous materials associated with agricultural operations, residual pesticides in the soils, the presence of Valley Fever fungal spores in the soil, abandoned oil and gas wells, existing natural gas and crude oil pipelines, and electrical transmission lines. As discussed under Impacts HAZ-3 through HAZ-8 above, the potential health and safety impacts associated with these conditions would be addressed through investigations and follow-up measures in accordance with applicable laws, regulations, and policies, or in compliance with safety protocols, as applicable. The cumulative project sites, including projects associated with the outside transmission corridors, may also include some or all of these same environmental conditions, which would be similarly addressed to ensure any health and safety impacts are avoided or substantially reduced. The residual health and safety impacts at each project, including the VCIP projects, would not combine to produce a cumulatively significant effect. Therefore, the cumulative impact due to existing sources of potential hazards and contamination would be *less than significant*.

Electromagnetic Fields

As discussed under Impact HAZ-9, EMF levels from VCIP gen-tie and transmission lines would drop off rapidly to background or ambient levels within a few hundred feet of their transmission rights-of-way. The planned VCIP connecting transmission corridor does not pass near any existing dwellings or other sensitive receptors (e.g., schools), with the nearest existing residences located at least 400 from the edge of the planned ROW where EMF levels would drop to ambient levels. Therefore, the impact of EMF exposure from potential VCIP projects to existing residences would be less than significant. Other cumulative solar and energy storage projects in western {AM0013.1}

Fresno and Kings counties include gen-tie lines for interconnection to the power grid. A review of the plans for these projects indicates that the associated gen-tie lines would be set back sufficient distances from existing residential and other receptors such that EMF levels at those residences would be at background levels. As such, there is little or no potential for cumulative projects to result in EMF levels at sensitive receptor locations that are greater than background or ambient levels. Therefore, the cumulative impact in terms of EMF exposure to existing sensitive receptors from cumulative transmission and gen-tie projects, including potential VCIP projects, would be *less than significant*.

Regarding the outside transmission corridors, it is expected that those transmission lines would be routed and designed to maintain EMFs to levels at or near background levels at existing residences and other sensitive receptors in their proximity. It is not anticipated that other EMF emitting projects would be planned in the vicinity of the outside transmission lines, where any residences and other sensitive receptors in the area would be subject to increased levels of EMFs due to the combined emissions from two cumulative sources.

Within the VCIP solar and energy storage projects, some solar arrays and supporting electrical components would be installed in proximity to existing transmission lines; however, the overall duration of worker exposure would be brief, and would be well within recommended occupational exposure levels. There may be instances where gen-tie or transmission lines planned for the cumulative projects may cross or run parallel to existing transmission lines. Although the EMF levels would be compounded at such crossing locations, and workers may be briefly exposed to such cumulative EMFs, the time of exposure would be relatively brief and overall levels would still be well below recommended occupational exposure levels. Therefore, cumulative impacts associated with EMF emissions to worker from cumulative transmission and gen-tie projects, including potential VCIP projects, would be *less than significant*.

Hazards to Aviation

As discussed under Impact HAZ-11, the potential VCIP clean energy and infrastructure projects would not include structures tall enough to pose physical obstructions to flight operations at NASL or to general aviation airports in the area. Similarly, the low-reflectivity solar modules and other facilities that may be installed in the Plan Area would not result in glare impacts that would disrupt flight operations. Therefore, the safety hazard posed by potential VCIP development to aviation would be less than significant. Most of the other cumulative projects consist of solar PV generating facilities with very similar physical characteristics to potential VCIP solar development, and thus would not disrupt flight operations. The non-energy cumulative projects such as commercial, residential, and agricultural processing facilities likewise would not include tall structures or glare-producing elements that would disrupt flight operations. The outside transmission lines would not have an adverse effect on aviation and thus would not make a considerable contribution to any cumulative impact on aviation.

Hazards related to aviation at each cumulative project, including the potential VCIP projects, would be less than significant. The less-than-significant hazards related to aviation posed by each cumulative project would not combine to produce a cumulatively significant aviation hazard. Therefore, the cumulative impact of hazards related to aviation would be *less than significant*.

Summary

The potential impacts related to hazards and hazardous materials associated with implementation of the VCIP Energy Resource and Infrastructure Plans would be less than significant without mitigation or would be avoided {AM0013.1}

or substantially reduced through Implementation of mitigation measures identified in this PEIR, or through compliance with all applicable laws and regulations. Potential impacts related to any potential hazards and hazardous materials associated with other cumulative projects would be less than significant or would be similarly avoided or substantially reduced such that the cumulative impact would be *less than significant*. The potential VCIP clean energy and infrastructure projects would *not make a considerable contribution to a cumulative impact*, and as such the cumulative impact associated with VCIP implementation would be *less than significant*.

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