APPENDIX B

FINAL ENVIRONMENTAL ANALYSIS

FOR THE

Proposed 2022 State Strategy for the State Implementation Plan

California Air Resources Board
1001 I Street
Sacramento, California 95814

Date of Release: September 16, 2022

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Table of Contents

TABLES

LIST OF ABBREVIATIONS

µg/m^3	microgram per cubic meter
2022 State SIP Strategy	2022 State Strategy for the State Implementation Plan
AB	Assembly Bill
APE	area of potential effect
APU	auxiliary power unit
BACT	Best Available Control Technology
BAR	Bureau of Automotive Repair
BARCT	Best Available Retrofit Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CARB or Board	California Air Resources Board
CCAA	California Clean Air Act
CCR	Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CHC	commercial harbor crafts
CHE	Cargo Handling Equipment
CI	compression-ignition
CLEEN II	Continuous Lower Energy, Emissions, and Noise Phase II
CMAQ	Congestion Mitigation and Air Quality Improvement
CO	carbon monoxide
dBA	A-weighted decibels
DPF	diesel particulate filters
Draft EA	Draft Environmental Analysis
EGR	exhaust gas recirculation
Final EA	Final Environmental Analysis
FTA	Federal Transit Administration

GHG	greenhouse gas
hp	horsepower
ICE	internal combustion engines
ICT	Innovative Clean Transit
IMO	International Maritime Organization
kW	kilowatt
LDV	light-duty vehicles
LEAP	Leading Edge Aviation Propulsion
L_{eq}	equivalent level measurements
L_{max}	maximum sound level
LNG	liquified natural gas
$MTCO_2e$/year	metric tons of carbon dioxide equivalent per year
MV Fees	California Motor Vehicle Registration Fee
MVEB	Motor Vehicle Emissions Budget
MW	megawatts
NAAQS	national ambient air quality standards
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NOx	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
OGV	ocean-going vessels
PGM	platinum-group metals
PM	particulate matter
PM_{10}	respirable particulate matter with aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$	fine particulate matter with aerodynamic diameter of 2.5 micrometers or less
PMT	passenger miles travelled
ppb	parts per billion
PPV	peak particle velocity

RACM	Reasonably Available Control Measures
RCW	regulated California waters
ROG	reactive organic gas
RPS	Renewable Portfolio Standard
RTC	Response to Comments
SB	Senate Bill
SCR	selective catalytic reduction
SIP	State implementation plan
SO_2	sulfur dioxide
SORE	Small Off-Road Engines
TAC	toxic air contaminant
TAPS	Twin Annular Premixing Swirler
TCM	Transportation Control Measures
TCR	tribal cultural resources
TDM	transportation demand management
The Act	Clean Air Act
TNC	transportation network companies
TRU	transport refrigeration units
U.S. EPA	United States Environmental Protection Agency
VdB	vibration decibels
VMT	vehicle miles traveled
VOC	volatile organic compounds
WSA	Water Supply Assessment
ZEV	zero-emission vehicle

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PREFACE

The California Air Resources Board (CARB or Board) released a Draft Environmental Analysis (Draft EA) for the Draft 2022 State Strategy for the State Implementation Plan, herein referred to as the 2022 State SIP Strategy (i.e., the proposed project under the California Environmental Quality Act [CEQA]) on March 29, 2022, for a 45-day public review and comment period that concluded May 13, 2022. During the public comment period for the Draft EA, a total of 6 comments were submitted electronically on or before May 13, 2022, to the comment docket set up for the Draft EA. While not all of the 6 comments received raised what are considered significant environmental issues related to the Draft EA, they were all submitted to a comment docket that was exclusively for the Draft EA. Therefore, while not all of the comments received meet the criteria to require a written response under CARB's certified regulatory program and CEQA, all 6 comments received a response for transparency.

On August 12, 2022, CARB posted a notice of public meeting for the CARB Board to consider adopting the Proposed 2022 State SIP Strategy. Along with that notice, CARB opened a docket for the public to submit comments on the Proposed 2022 State SIP Strategy through September 12, 2022. While this noticed comment period was explicitly for the Proposed 2022 State SIP Strategy and not the Draft EA prepared for the proposed 2022 Sate SIP Strategy, CARB received 2 comment letters that purported to raise environmental issues related to the Proposed 2022 State SIP Strategy. Comments raising environmental issues submitted on this public hearing docket related to the Proposed 2022 State SIP Strategy were untimely submitted and do not require a response. (17 Cal. Code Regs., § 60004.2(b)(2).) Nevertheless, while it is not required to do so, CARB did respond to these comments for transparency.

CARB staff made minor modifications to the Draft EA based on responses to comments received during the public review and comment period and based on other updates to the measures included in the Proposed 2022 State SIP Strategy. To facilitate identifying modifications to the document, modified text is presented with ~~strike-through~~ for deletions and underline for additions. None of the modifications to the proposed Draft EA alter any of the conclusions reached in the EA or provide new information of substantial importance relative to the EA. As a result, these minor revisions do not require recirculation of the document pursuant to the CEQA Guidelines, California Code of Regulations, title 14, Section 15088.5, before consideration by the Board.

1.0 INTRODUCTION AND BACKGROUND

A. Introduction

This ~~draft~~ final environmental analysis (~~Draft~~ Final EA) is a program environmental document prepared for the 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy). This ~~Draft~~ Final EA is included as Appendix B of the 2022 State SIP Strategy that will be presented to the Board for consideration. The Project Description section of this ~~Draft~~ Final EA presents a summary of the 2022 State SIP Strategy, as defined under the California Environmental Quality Act (CEQA). A detailed description of the 2022 State SIP Strategy is included in the "~~Draft~~ Proposed 2022 State Strategy for the State Implementation Plan" date of release ~~January 31~~ August 12, 2022, which is hereby incorporated by reference.

This ~~Draft~~ Final EA is intended to identify and disclose the 2022 State SIP Strategy's potential significant impacts on the environment and identify potential feasible mitigation measures and alternatives to lessen or avoid those significant environmental impacts. The 2022 State SIP Strategy is intended to create environmental benefits, including criteria air pollutant reductions and air quality improvements. However, in some cases, as described in Chapter 4 of this ~~Draft~~ Final EA, potentially significant effects to environmental resources may occur due to implementation of compliance responses (i.e., actions take in response to measures contained in the 2022 State SIP Strategy that would have a physical impact) associated with the 2022 State SIP Strategy. It is expected that many of these potentially significant impacts can be feasibly avoided or mitigated to a less than significant level, as described in each resource area, due to project-specific environmental review processes associated with compliance responses and compliance with local and State laws and regulations. However, the ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusions (i.e., tending to overstate the risk that feasible mitigation may not be sufficient to mitigate an impact to less than significant or may not be implemented by other parties) and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable.

B. Scope of Analysis and Assumptions

The degree of specificity required in a CEQA document corresponds to the degree of specificity inherent in the underlying activity it evaluates. An EA for broad programs cannot be as detailed as it can be for specific projects (Title 14 CCR § 15146). For example, the assessment of a construction project would be naturally more detailed than one concerning the adoption of a local general plan because construction-related effects can be predicted with more accuracy (Title 14 CCR §15146(a)). Because this analysis addresses a broad regulatory program, a general level of detail is appropriate. However, this ~~Draft~~ Final EA makes a rigorous effort to evaluate significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses that could result from implementation of the 2022 State SIP Strategy and contains as much

information about those impacts as is currently available, without being unduly speculative.

The scope of analysis in this ~~Draft~~ Final EA is intended to help focus public review and comments on the 2022 State SIP Strategy, and ultimately to inform the California Air Resources Board (CARB or Board) of the environmental benefits and adverse impacts of the 2022 State SIP Strategy. This analysis specifically focuses on potentially significant adverse and beneficial impacts on the physical environment resulting from reasonably foreseeable compliance responses to implementation of the 2022 State SIP Strategy.

The analysis of potentially significant adverse environmental impacts of the 2022 State SIP Strategy is based on the following assumptions:

1. The analysis addresses the potentially significant adverse environmental impacts resulting from implementation of the 2022 State SIP Strategy compared to existing conditions.

2. The analysis of environmental impacts and determinations of significance are based on reasonably foreseeable compliance responses taken in response to implementation of the 2022 State SIP Strategy.

3. The analysis addresses environmental impacts within California and outside the State to the extent they are reasonably foreseeable and do not require speculation.

4. The level of detail of impact analysis is necessarily and appropriately general because the 2022 State SIP Strategy is programmatic. While the general locations of existing facilities and infrastructure are known, decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the 2022 State SIP Strategy are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure, source and production of materials, and other activities undertaken in response to implementation of the 2022 State SIP Strategy would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is some inherent uncertainty in the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this ~~Draft~~ Final EA. Consequently, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusions (i.e., tending to overstate the potential that feasible mitigation may not be implemented by the agency with authority to do so, or may not be sufficient) and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable, where appropriate. It is also possible that the amount of mitigation necessary to reduce environmental impacts to below a significant level may be less than disclosed in this ~~Draft~~ Final EA on a case-by-case basis. Specific actions undertaken to implement the 2022 State SIP Strategy would undergo project-level environmental review and compliance processes as required at the time they are proposed. It is expected that many individual development projects would

be able to feasibly avoid or mitigate potentially significant impacts to a less than significant level.

5. This ~~Draft~~ Final EA generally does not analyze site-specific impacts when the location of future facilities or other infrastructure changes are speculative. However, the ~~Draft~~ Final EA does examine regional (e.g., local air district and/or air basin) and local issues to the degree feasible where appropriate. As a result, the impact conclusions in the resource-oriented sections of Chapter 4, Impact Analysis and Mitigation Measures, cover broad types of impacts, considering the potential effects of the full range of reasonably foreseeable actions undertaken in response to the 2022 State SIP Strategy.

C. Background

The United States Environmental Protection Agency (U.S. EPA) has been charged with implementing national air quality programs. U.S. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970 (42 United States Code Chapter 85). The most recent major amendments made by Congress were in 1990.

The CAA required U.S. EPA to establish national ambient air quality standards (NAAQS) for six common air pollutants found all over the U.S. referred to as criteria air pollutants. U.S. EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with aerodynamic diameter of 10 micrometers or less (PM_{10}) and fine particulate matter with aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. The primary standards protect public health and the secondary standards protect public welfare. The CAA also required each state to prepare a State implementation plan (SIP) for attaining and maintaining the NAAQS. The federal Clean Air Act Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. California's SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. U.S EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and whether implementation will achieve air quality goals. If U.S. EPA determines a SIP to be inadequate, U.S. EPA may prepare a federal implementation plan that imposes additional control measures. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

SIPs are not single documents. They are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations and federal controls. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations and limits on emissions from consumer products. State law makes CARB the

lead agency for all purposes related to the SIP. Local air districts and other agencies, such as the Bureau of Automotive Repair and the Department of Pesticide Regulation, prepare SIP elements and submit them to CARB for review and approval. CARB forwards SIP revisions to the U.S. EPA for approval and publication in the Federal Register. The Code of Federal Regulations Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all of the items which are included in the California SIP. At any one time, several California submittals are pending U.S. EPA approval.

In 2015, U.S. EPA revised the 8-hour ozone standard from 75 parts per billion (ppb) to the more stringent and health protective level of 70 ppb. Nineteen regions in California are designated as nonattainment areas under the 70 ppb 8-hour ozone standard, with two areas having the most critical air quality challenges at a regional level – the South Coast Air Basin and the San Joaquin Valley. These regions are the only two areas in the nation classified as Extreme for the 70 ppb 8-hour ozone standard and also record some of the nation's highest fine particulate matter ($PM_{2.5}$) levels. While the 2022 State SIP Strategy will include measures and commitments for the 70 ppb 8-hour ozone standard, the emissions reductions will also support attainment of other national ambient air quality standards including the 75 ppb 8-hour ozone standard (2008) and 80 ppb 8-hour ozone standard (1997), and the 12 microgram per cubic meter (µg/m3) annual and 35 µg/m3 24-hour PM2.5 standards.

The most recently adopted statewide SIP Strategy is the *2016 State Strategy for the State Implementation Plan* (2016 State SIP Strategy). CARB is collaborating with local air districts on development of regional SIPs and soliciting stakeholder input on the development of the 2022 State SIP Strategy, the State action evaluated in this ~~Draft~~ Final EA. This includes workshops and participation in local air district outreach efforts. Public feedback and input has informed the development of ~~CARB staff will finalize~~ the Proposed 2022 State SIP Strategy and Final Environmental Analysis which will be ~~and~~ presented ~~it~~ to the Board for consideration in September 2022. The 2022 State SIP Strategy builds upon the measures and commitments already made in the 2016 State SIP Strategy and expands on the scenarios and concepts included in the *2020 Mobile Source Strategy*, CARB's multi-pollutant planning effort that identifies pathways forward to achieve the State's many air quality, climate, and community risk reduction goals.

D. Environmental Review Process: Requirements Under the CARB Certified Regulatory Program

CARB is the lead agency for the 2022 State SIP Strategy and has prepared this ~~Draft~~ Final EA pursuant to its regulatory program certified by the Secretary of the Natural Resources Agency (Title 14 California Code of Regulations (CCR) § 15251(d); Title 17 CCR §§ 60000-60008). In accordance with Public Resources Code section 21080.5 of the California Environmental Quality Act (CEQA), public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to preparing environmental impact reports, negative declarations, and initial studies (Title 14 CCR § 15250). CARB has prepared this ~~Draft~~ Final EA to assess the potential for significant adverse and beneficial environmental impacts associated with

the 2022 State SIP Strategy, as required by CARB's certified regulatory program (Title 17 CCR § 60005(b)). The resource areas from the CEQA Guidelines Environmental Checklist were used as a framework for assessing the potential for significant impacts (Title 17 CCR § 60005(b)).

~~If comments received during the public review period raise significant environmental issues, staff will summarize and respond to the comments in the~~ Comments submitted that raised significant environmental issues were summarized and responded to in the Response to Comments (RTC) document prepared for the ~~Draft~~ Final EA. The written responses to environmental comments will be approved prior to final action on the 2022 State SIP Strategy (Title 17 CCR § 60007(a)).

E. Organization of the ~~Draft~~ Final EA

The ~~Draft~~ Final EA is organized into the following chapters to assist the reader in obtaining information about the 2022 State SIP Strategy and its specific environmental issues.

- **Chapter 1, Introduction and Background,** provides a project overview and background information, and other introductory material.
- **Chapter 2, Project Description,** summarizes the 2022 State SIP Strategy, the potential reasonably foreseeable compliance responses taken in response to the 2022 State SIP Strategy, and implementation assumptions.
- **Chapter 3, Environmental and Regulatory Setting,** contains the environmental and regulatory setting relevant to the environmental analysis of the 2022 State SIP Strategy.
- **Chapter 4, Impact Analysis and Mitigation,** identifies the potential environmental impacts associated with the 2022 State SIP Strategy and mitigation measures for each resource impact area.
- **Chapter 5, Cumulative and Growth-Inducing Impacts,** analyzes the potential for cumulative effects of implementing the 2022 State SIP Strategy against a backdrop of past, present, and reasonably foreseeable future projects.
- **Chapter 6, Mandatory Findings of Significance,** discusses the potential for adverse impacts on human beings, cumulatively considerable environmental impacts, and whether the 2022 State SIP Strategy would have the potential to degrade the quality of the environment.
- **Chapter 7, Alternatives Analysis,** discusses a reasonable range of potentially feasible alternatives that could reduce or eliminate adverse environmental impacts associated with the 2022 State SIP Strategy.
- **Chapter 8, References,** identifies sources of information used in this ~~Draft~~ Final EA.

F. Public Review Process for the Environmental Analysis

On July 13, 2021, CARB issued a Notice of Preparation (NOP) for the 2022 State SIP Strategy, announcing that it would prepare an EA. At a public workshop held on July 27, 2021, CARB staff discussed proposed regulatory concepts for the 2022 State SIP Strategy. Staff also described plans to prepare a Draft EA for the 2022 State SIP Strategy and invited public feedback on the scope of environmental analysis.

In accordance with CARB's certified regulatory program, and consistent with CARB's commitment to public review and input, ~~this~~ the Draft EA is subject to a public review process. The Draft EA, ~~is~~ was posted for a public review period that ~~begins~~ began on March 29, 2022 and ~~ends~~ ended on May 13, 2022. This period complies with requirements for a minimum of 45 days of public review. (Title 17 CCR, section 60004.2(b)(2).)

~~At the conclusion of the review period, staff will~~ CARB staff has compiled public comments and responses on the Draft EA made during the noticed 45-day comment period ~~(or during any further comment period if CARB determines recirculation of the Draft EA is necessary)~~, and prepared a final hearing package, which includes the Final EA and response to environmental comments, for the 2022 State SIP Strategy for the Board's consideration at a public hearing. This hearing is currently planned for ~~Summer~~ September 2022. If the ~~final~~ Proposed 2022 State SIP Strategy is adopted by the Board at that time, a Notice of Decision will be posted on CARB's regulatory webpage and will be filed with the Secretary of the Natural Resources Agency.

2.0 PROJECT DESCRIPTION

A. Introduction

For purposes of this ~~Draft~~ Final EA, the "project" is defined as the measures described in the Proposed 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy), which would result in emission reductions to meet air quality standards over the next 15 years and support planning efforts for nonattainment areas throughout the State. The measures are a required component of California's State Implementation Plan (SIP), prepared pursuant to the federal Clean Air Act (The Act). A summary of these measures is provided in this section. For a more detailed description, please refer to the 2022 State SIP Strategy, available at: *https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy*.

The 2022 State SIP Strategy would reduce emissions of ozone precursors, including emissions of volatile organic compounds (VOC) from consumer products and emissions of VOC and nitrogen oxides (NOx) from mobile sources. Through a combination of regulatory and programmatic actions over the next 15 years, the 2022 State SIP Strategy would:

- Establish more stringent engine performance and in-use standards for cleaner combustion and zero-emission technologies;
- Increase the penetration of zero-emission technology across a range of applications;
- Incentivize the turnover of equipment and fleets to the cleanest technologies;
- Increase system efficiencies; and
- Reduce emissions from consumer products.

The proposed measures contained in the 2022 State SIP Strategy reflect the maturity of current emission control programs (i.e., programs to regulate sources, incentivize cleaner technologies, or otherwise reduce air pollution) for each category of mobile sources (i.e. on-road light-duty vehicles, on-road heavy-duty vehicles [HDVs], off-road federal and international sources, and off-road equipment), as well as the nature of ~~further~~ clean technology deployment needed to meet federal requirements across the state. For light-duty vehicles, the need to increase the penetration of current zero-emission vehicle (ZEV) technology will be implemented through the Clean Miles Standard measure, together with other adopted and soon-to-be adopted regulations and incentive funding to expand the deployment of cleaner vehicles. New motorcycle emissions standards will transition the category to the cleanest technology with stricter exhaust and evaporative emissions standards and zero-emission motorcycle sales requirements. Further measures are proposed that would support reductions in VMT through the development of updated guidance and more rigorous analyses of available transportation control measures.

In the heavy-duty sector, the California Air Resources Board's (CARB's) current Truck and Bus Regulation is ensuring that the fleet consists of only 2010 model year and newer engines, while the Heavy-Duty Omnibus Regulation set stricter combustion exhaust emission standards. Parallel measures for manufacturers and fleets, including the Advanced Clean Fleets measure, would require the deployment of zero-emission technologies. Finally, given the long lifetime of heavy-duty trucks, further incentive funding will be critical to achieve greater fleet turnover.

Similar actions will be necessary in the off-road sector, with more stringent exhaust emissions standards for all off-road categories and an in-use requirement to remove the oldest and dirtiest equipment. There is also a focus on further federal and international actions to reduce emissions from sources primarily under their regulatory jurisdictions, which become an increasing portion of the emission inventory out through 2037. Measures within CARB's authority include, for example, a useful life limit for locomotives, as well as efforts to reduce emissions from ocean going vessels transiting, maneuvering, or anchoring in regulated California waters and docking at berth in California seaports. A new spark -ignition marine engine exhaust standard addresses engines that currently do not include the newest control technologies. Existing and developing regulations included as measures in previous strategies target transition to zero-emissions in a variety of off-road sectors such as transport refrigeration units and forklifts. As technology advancements occur, zero-emission technology deployment in additional sectors could be accelerated through proposed measures, including a targeted manufacturer zero-emission regulation.

Due to the severity of the South Coast's ozone challenge, additional measures ~~may be~~ are needed for ~~certain mobile source sectors (on-road light-duty vehicles, on-road HDVs, off-road equipment, or~~ primarily-federally and internationally regulated sources that ~~would~~ reflect the need for enhanced deployment of cleaner on- and off-road technologies in Extreme nonattainment areas such as the South Coast. These Federal Actions Needed ~~Additional Transition to Cleaner Technologies and Systems measures would be~~ are designed to target the remaining emission reductions needed for attainment and ~~could~~ include potential new regulatory actions ~~increased efficiencies, use of emerging transportation technologies,~~ and/or incentivized turnover as available under federal and international authority. ~~In some cases,~~ Actions by ~~local,~~ federal and international agencies ~~could~~ would be necessary. ~~In others, programmatic approaches must be developed and funding secured to achieve the reductions outlined in potential Additional Transition to Cleaner Technologies and Systems measures.~~

~~The approaches called for in the potential Additional Transition to Cleaner Technologies and Systems measures could include:~~

- ~~Identification of additional regulatory approaches based on further technology assessments.~~
- ~~Increased efficiency in moving people and freight.~~

~~• Use of emerging transportation technologies, such as intelligent transportation systems and autonomous and connected vehicles.~~
~~• Incentive programs to further accelerate technology penetration.~~

~~It is also important to note that some of the actions that could be incorporated in potential Additional Transition to Cleaner Technologies and Systems measures are already occurring under a business as usual scenario, outside of the SIP-related actions analyzed in this document — namely, actions to advance intelligent, autonomous, and connected vehicle technologies. For that reason, while they may generate reductions that contribute to attaining federal air quality standards, actions to deploy intelligent, autonomous, and connected vehicle technologies, are either already analyzed for environmental impacts or will be by the relevant local jurisdictions implementing the measures, and will not be further analyzed in this document.~~

The 2022 State SIP Strategy also includes a measure designed to further reduce emissions of VOC, an ozone precursor, from consumer products. To reduce VOC emissions while providing industry with additional flexibility, CARB staff would identify strategies to achieve emission reductions by encouraging the development, distribution, and sale of cleaner, very low and zero-emitting products. The proposed measure may involve establishing new reactive organic gas (ROG) emissions limits for categories and/or reactivity-based limits.

The measures as proposed by staff or adopted by the Board may provide more or less reductions than the amount shown. This discrepancy is attributable to CARB's limited authority to determine whether to implement the associated actions under the SIP or how those actions are designed. CARB's emission reduction commitments may be achieved through a combination of actions, including, but not limited to, the implementation of control measures; the expenditure of local, State or federal incentive funds; and through other enforceable measures. The Act includes a provision for approval under Section 182(e)(5) to allow this future flexibility for Extreme areas such as the South Coast needing additional reductions to meet the ozone standard. The environmental impacts of any additional measures developed in the future in accordance with 182(e)(5) will be assessed through a public process if this flexibility is utilized to ensure any impacts are mitigated.

The proposed measures and the reasonably foreseeable compliance responses are described in further detail in Section C.

B. Project Objectives

The objectives of the 2022 State SIP Strategy are to:

1. Provide the necessary emission reductions from State-regulated Sources for all of California's nonattainment areas to meet federal ambient air quality standards by the attainment dates specified by the U.S. Environmental Protection Agency (U.S. EPA), including the 70 parts per billion (ppb) ground level ozone standard;

2. Support the development and submittal of approvable SIPs to U.S. EPA. To meet U.S. EPA requirements for approvable SIPs, the measures must include commitments to achieve emission reductions that are real, permanent, quantifiable, verifiable, and enforceable;

3. Complement existing programs and plans – to ensure, to the extent feasible, that activities undertaken pursuant to the measures complement, and do not interfere with, existing planning efforts to reduce emissions and exposure in disadvantaged communities, to reduce greenhouse gas (GHG) emissions, and toxic air contaminant (TAC) emissions, and to transition California's mobile fleet to zero-emission across the sectors where feasible;

4. Establish emissions standards and other requirements for cleaner technologies (both zero- and near-zero emission technologies), coupled with cleaner renewable fuels to achieve CARB's SIP goals;

5. Introduce zero-emission technology in targeted applications to achieve CARB's SIP goals;

6. Establish manufacturer and fleet zero-emission technology requirements to accelerate the penetration of ZEV fleets to achieve CARB's SIP goals;

7. Ensure the in-use vehicle and engine fleets remain durable, and that in use vehicles continue to operate at their cleanest possible level to achieve CARB's SIP goals; and

8. Incentivize and support the early introduction of advanced clean technologies to achieve CARB's SIP goals.

C. Plan Concepts and Reasonably Foreseeable Compliance Responses

A summary is provided below of the 2022 State SIP Strategy measures and the associated reasonably foreseeable compliance responses. Table 1 provides a list of each measure, the implementing agency, and the proposed implementation schedule. For measures implemented by federal agencies, CARB will submit petitions to and/or otherwise advocate to U.S. EPA for federal action where appropriate; however, CARB would not have any authority to determine whether to implement the associated actions or how those actions are designed.

The anticipated compliance responses to various measures discussed in this section focus on those activities under CARB's jurisdiction with the potential to result in either a direct or indirect physical change in the environment. These include such things as construction activities, infrastructure and equipment installations, and substantial operational changes to facilities. The environmental impacts of the reasonably foreseeable compliance responses are discussed in Chapter 4.

Table 1: Proposed New SIP Measures and Schedule

Proposed Measure	Agency	Action	Implementation Begins
On-Road Heavy-Duty			
Advanced Clean Fleets Regulation	CARB	2023	~~2023-2045~~2024
Zero-Emissions Trucks Measure	CARB	~~TBD~~2028	~~TBD~~2030
On-Road Light-Duty			
On-Road Motorcycle New Emissions Standards	CARB	2022	~~202420352~~025
Clean Miles Standard	CARB	2021	2023~~-2030~~
Off-Road Equipment			
Tier 5 Off-Road Vehicles and Equipment	CARB	~~2024/~~2025	~~2028/~~2029
Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation	CARB	2022	~~2023-2033~~2024
Transport Refrigeration Unit Regulation Part 2	CARB	~~TBD~~2026	~~TBD~~2028
Commercial Harbor Craft Amendments	CARB	2022	2023~~-2032~~
Cargo Handling Equipment Amendments	CARB	~~TBD~~2025	~~TBD~~2026
Off-Road Zero-Emission Targeted Manufacturer Rule	CARB	~~2025~~2027	~~TBD~~2031
Clean Off-Road Fleet Recognition Program	CARB	2025	~~2026~~2027
Spark-Ignition Marine Engine Standards	CARB	~~2026/2027~~2029	~~2029-2035~~2031
Other			
Consumer Products Standards	CARB	~~2025-2028~~2027	~~2031-2037~~2028
Zero-Emission Standard for Space and Water Heaters	CARB	2025	~~2025-~~2030
Enhanced Regional Emission Analysis in SIPs	CARB	~~TBD~~2025	~~TBD~~2023
Primarily-Federally and Internationally Regulated Sources – CARB Measures			
In-Use Locomotive Regulation	CARB	2023	~~TBD~~2024

Proposed Measure	Agency	Action	Implementation Begins
Future Measures for Aviation Emission Reductions	CARB	~~TBD~~2027	~~TBD~~2029
Future Measures for Ocean-Going Vessel Emissions Reductions	CARB	~~TBD~~2027	~~2025+~~TBD
Primarily-Federally and Internationally Regulated Sources – Federal Action Needed			
On-Road Heavy-Duty Vehicle Low-NOx Engine Standards	U.S. EPA	~~TBD~~2022	~~TBD~~2027
On-Road Heavy-Duty Vehicle Zero-Emission Requirements	U.S. EPA	TBD	TBD
Off-Road Equipment Tier 5 Standard for Preempted Engines	U.S. EPA	TBD	TBD
Off-Road Equipment Zero-Emission Standards Where Feasible	U.S. EPA	TBD	TBD
More Stringent Aviation Engine Standards	U.S. EPA/ICAO	TBD	TBD
Cleaner Fuel and Visit Requirements for Aviation	U.S. EPA	TBD	TBD
Zero-Emission On-Ground Operation Requirements at Airports	U.S. EPA	TBD	TBD
Airport Aviation Emissions Cap	U.S. EPA	TBD	TBD
More Stringent National Locomotive Emission Standards	U.S. EPA	TBD	TBD
Zero-Emission Standards for ~~Switch~~Locomotives	U.S. EPA	TBD	TBD
Address Unlimited Locomotive Remanufacturing ~~Loophole~~	U.S. EPA	TBD	TBD
More Stringent NOx and PM Standards for Ocean-Going Vessels	U.S. EPA/IMO	TBD	TBD

Proposed Measure	Agency	Action	Implementation Begins
Cleaner Fuel and Vessel Requirements for Ocean-Going Vessels	U.S. EPA	TBD	TBD

Table 2: Public Measure Suggestions (May not ~~end up being~~ be Formal Measure Commitments)

Public Measure Suggestions	Agency	Action	Implementation Begins
On-Road Heavy-Duty Useful Life Regulation	~~Under Staff Review~~Refer to Zero-Emission Trucks Measure		
Additional Incentive Programs – Zero-Emission Trucks	~~Under Staff Review~~Refer to Zero-Emission Trucks Measure		
Enhanced Transportation Choices	Under Staff Review; Not included as SIP measure at this time		
Indirect Source Rule – Suggested Control Measure or Regulation	~~Under Staff Review~~Refer to Zero-Emission Trucks Measure		
BACT/BARCT Determination	Under Staff Review; Not included as SIP measure at this time		
Additional Building and Appliance Emission Standards	~~Under Staff Review~~Refer to Zero-Emission Standard for Space and Water Heaters Measure		
Pesticide Regulation	~~Under Staff Review~~Refer to Pesticides: 1, 3 Dichloropropene Health Risk Mitigation		

Public Measure Suggestions	Agency	Action	Implementation Begins
Enhanced Bureau of Automotive Repair Consumer Assistance Program	Under Staff Review; Not included as SIP measure at this time		
Light-Duty Vehicle Fleet Regulation	Under Staff Review; Not included as SIP measure at this time		

Below is a summary of the measures under each topic area along with the reasonably foreseeable compliance responses, which are used to evaluate the environmental impacts. A brief overall summary of the compliance responses is provided in Section D.

1. On-Road Medium- and Heavy-Duty

The on-road medium- and heavy-duty vehicle sector includes heavy-duty gas and diesel trucks, urban and school buses, and motorhomes. The on-road medium- and heavy-duty sector is diverse, with many different technologies and approaches that could achieve emissions reductions. Medium-duty vehicles include gasoline and diesel-fueled vehicle like heavy-duty pick-up trucks and walk-in vans. Heavy-duty trucks that operate in California travel long distances with about 60 percent of the trucks originating from out-of-state. Some trucks, however, are part of local fleets with centralized fueling that operate in shorter distances.

a) Advanced Clean Fleets Regulation

i. Measure Summary

This measure accelerates zero-emission vehicle adoption in the medium- and heavy-duty sectors by setting zero-emission requirements for fleets and 100 percent ZEV sales requirement in California for manufacturers of Class 2b through 8 vehicles. The Advanced Clean Fleets Regulation will focus on strategies to ensure that the cleanest vehicles are deployed by government, business, and other entities in California to meet their transportation needs. The requirements would be phased-in on varying schedules for different fleets including public, drayage trucks, and high priority private and federal fleets. Public fleets would be required to phase-in purchase requirement starting at 50 percent of new purchases in 2024 and 100 percent starting in 2027. All drayage trucks operating at seaports and intermodal railyards would be required to be zero-emission by 2035. Drayage trucks will also have new registration and reporting requirements, starting in 2023. High priority private and federal fleets would be required to phase-in zero-emission vehicles as a percentage of the total fleet. The fleet requirements are based on zero-emission suitability and are phased-in by vehicle body type. The Advanced Clean Fleets Regulation would also include a requirement that 100 percent of Class 2b and above vehicle manufacturer sales in California are zero-emissions starting in 2040.

ii. Potential Compliance Responses

Reasonably foreseeable compliance responses associated with the Advanced Clean Fleets Regulation would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover (i.e., replacement of existing models with new models). It is expected that manufacturing needs for new vehicles would largely be met by the existing market, and no new manufacturing facilities would be anticipated to be required, though manufacturers could choose to relocate production facilities to California. Turnover may result in recycling or scrapping of old vehicles or selling vehicles to areas outside of California.

The zero-emission vehicle sales would include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. For batteries, it is anticipated they still have a useful life at the end of vehicle life and are likely to be repurposed for a second life. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The Advanced Clean Fleets Regulation could also result in the development of new infrastructure in the form of hydrogen refueling stations, electric vehicle charging stations, and in electricity grid capacity, generation, and distribution infrastructure, which would increase as the share of zero-emissions vehicles grows over time compared to what would otherwise be anticipated under existing regulations.

b) Zero-Emissions Trucks Measure

i. Measure Summary

This measure would increase the number of ZEVs and require cleaner engines to achieve emissions reductions from fleets that are not affected by the proposed Advanced Clean Fleets measure. This would include potential zero-emissions zone concepts around warehouses and sensitive communities if given new authority to enact indirect source rules in combination with strategies to upgrade older trucks to newer and cleaner engines. This would be a transitional strategy to achieve zero-emissions medium- and HDVs everywhere feasible by 2045.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover (i.e., replacement of existing models with new or potentially used models). It is expected that manufacturing needs for new vehicles would largely be met by the existing market, and no new manufacturing facilities would

be anticipated to be required, though manufacturers could choose to relocate production facilities to California. Turnover may result in recycling or scrapping of old vehicles or selling vehicles to areas outside of California.

The increase in ZEVs would include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. For batteries, it is anticipated they still have a useful life at the end of vehicle life and are likely to be repurposed for a second life. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The measure could also result in the development of new infrastructure in the form of hydrogen refueling stations and electric vehicle charging stations, which would increase as the share of ZEVs grows over time, compared to what would otherwise be anticipated under existing regulations.

2. On-Road Light-Duty

The on-road light-duty transportation sector includes light-duty vehicles (LDVs) such as passenger cars, minivans, most sport utility vehicles and pickup trucks, and motorcycles.

a) On-Road Motorcycles New Emissions Standards

i. Measure Summary

This measure would reduce emissions from new, on-road motorcycles by adopting more stringent exhaust and evaporative emissions standards along with limited on-board diagnostics requirements and zero-emissions sales thresholds with an associated credit program to help accelerate the development of zero emissions motorcycles. The new exhaust emissions standards include substantial harmonization with the more stringent European motorcycle emissions standards already in place. The new evaporative emissions standards are based on more aggressive CARB off-highway recreational vehicle emissions standards that exist today. This measure also proposes significant zero-emission motorcycle sales thresholds beginning in 2028 and increasing gradually through 2035.

ii. Potential Compliance Responses

Reasonably foreseeable compliance responses associated with the On-Road Motorcycles New Emissions Standards would include changes in motorcycle emission control systems to include cleaner emission technology that will substantially lower emissions in new motorcycle models sold starting in 2024. It is expected that manufacturing needs for new motorcycles would largely be met by the existing market,

and no new infrastructure or manufacturing facilities would be anticipated to be required. New models that meet the new exhaust and evaporative emissions standards would be introduced through natural fleet turnover (i.e., replacement of existing models with new models).

The zero-emission motorcycle sales threshold would prompt an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The On-Road Motorcycle New Emissions Standards could also result in more utilization of existing EV charging stations, which may require some increase of charging stations as the share of zero-emission vehicles grows over time, compared to what would otherwise be anticipated under existing regulations.

b) Clean Miles Standard

i. Measure Summary

The Clean Miles Standard was adopted by CARB on May 20, 2021. The primary goals of this measure are to reduce GHG emissions from ride-hailing services offered by transportation network companies (TNCs) and promote electrification of the fleet by setting an electric vehicle mile target, while achieving criteria pollutant co-benefits. TNCs would be required to achieve zero grams CO_2 emissions per passenger mile traveled and 90 percent electric VMT by 2030.

ii. Potential Compliance Responses

Reasonably foreseeable compliance responses associated with the Clean Miles Standard requires TNC services to use an increasing number of ZEVs, compared to the TNC baseline; however, there are no additional new sales requirements beyond the Advanced Clean Cars regulations on automakers.

Additionally, the charging infrastructure that is continuing to be built out for ZEVs in California is adequate for supporting those ZEVs in TNC services. Although the 2022 State SIP Strategy will not require a scale-up of charging infrastructure, it is possible that TNC ZEV drivers will have unique electric charging needs compared to the average household ZEV driver. In addition to electrification, TNCs may use other strategies including increasing shared rides (pooling), reducing deadhead miles, (i.e., the number of miles between the point of unloading and picking up a new load/passenger), and driving more miles using fuel-efficient vehicles. In general, the increased use of pooling where more riders share vehicles, and reducing deadhead miles, specifically in Period

1, is expected to decrease VMT relative to passenger miles travelled (PMT) and therefore reduce emissions. Mode shift is also encouraged by offering optional credits for active transport infrastructure and connection to transit. Environmental benefits with this strategy primarily come from a reduction in VMT from internal combustion engines (ICE) vehicles, such as improved ambient air and water quality, decreased GHG emissions, and reduced potential for spilling of hazardous substances such as petroleum and other fossil-fuel based products.

Based on CARB staff's review, it can be seen with certainty that there is no possibility that the regulation may result in a significant adverse impact on the environment. This is because the Clean Miles Standard, which has already been adopted, requires TNC services to use an increasing number of ZEVs compared to the TNC baseline. There are no additional new sales requirements beyond the Advanced Clean Cars regulations on automakers. Further, the Clean Miles Standard is designed to protect the environment, and CARB found no substantial evidence indicating the proposal could adversely affect air quality or any other environmental resource area, or that any of the exceptions to the exemption applies (14 CCR 15300.2). Therefore, this activity is considered exempt under CEQA.

3. Reducing Vehicle Miles Traveled

In addition to the potential measures to directly control tailpipe emissions from on-road mobile sources, reducing vehicle miles traveled (VMT) is also necessary to directly and immediately reduce mobile source NOx and ROG emissions, to provide congestion mitigation and improved community mobility, and also to reduce fuel demand and the related investments and land-use impacts from advanced fuel sources (e.g. biofuels, build out of solar and wind, etc.).

a) Enhanced Regional Emissions Analysis in SIPs

i. Measure Summary

The primary goal of this measure is to reduce criteria pollutant and GHG emissions that come from on-road mobile sources through reductions in VMT. In addition, lowering VMT will help alleviate traffic congestion, improve public health, reduce consumption of fossil fuels, and reduce infrastructure costs. CARB is exploring three options to reduce ROG and NOx emissions through reductions in VMT. First, CARB will consider whether and how to change the process for developing the Motor Vehicle Emissions Budget (MVEB) by evaluating the existing MVEB development process to meet NAAQS. In addition, CARB will assess and improve the Reasonably Available Control Measures (RACM) analysis in the SIP by providing a comprehensive list of Transportation Control Measures (TCMs) and emission quantification methodology. Finally, CARB will consider updating the guidelines for the California Motor Vehicle Registration Fee (MV Fees) Program and the Congestion Mitigation and Air Quality Improvement (CMAQ) Program to fund a broader range of transportation and air quality projects that advance new approaches and technologies in reducing air pollution. CARB's role with this measure

would be to facilitate analysis, and CARB is not directly responsible for dictating or implementing the TCMs or projects.

ii. Potential Compliance Response

This measure would serve to assess and improve the MVEB development process, CMAQ guidance, and a future list of TCMs that would be implemented to assist the state in meeting the objectives of the SIP, but CARB's consideration would not result in any direct environmental impacts beyond those currently generated by transportation agencies implementing planned TCMs. Reasonably foreseeable compliance responses associated with this measure would involve local and regional transportation planning agencies continuing to fund and implement a broad range of TCMs, including measures potentially selected from a list of measures associated with the proposed SIP. It is not only speculative to determine which TCMs or projects would be implemented by these agencies, but, as mentioned above, this measure would include identification of TCMs on a list, but would not dictate the exact TCMs or projects that an agency would decide to implement. When the local and regional transportation planning agencies do move forward with adopting or implementing a TCM or project, those agencies will complete the appropriate environmental analysis at that time.

4. Off-Road Equipment

The off-road equipment category encompasses lawn and garden equipment, transport refrigeration units, vehicles and equipment used in construction and mining, forklifts, cargo handling equipment, commercial harbor craft, and other industrial equipment.

a) Tier 5 Off-Road New Compression-Ignition Engine Standards (Off-Road Tier 5 Standard)

i. Measure Summary

This measure would reduce NOx and particulate matter (PM) emissions from new off-road compression-ignition (CI) engines by adopting more stringent exhaust standards for all power categories, including those that do not currently utilize exhaust aftertreatment such as diesel particulate filters and selective catalytic reduction. This measure would be more stringent than required by current U.S. EPA and European Stage V nonroad regulations and would require the use of best available control technologies.

For this measure, CARB staff would develop and propose standards for new off-road CI engines including the following: aftertreatment-based PM standards for engines less than 19 kilowatt (kW) (25 horsepower [hp]), aftertreatment-based-NOx standards for engines greater than or equal to 19 kW (25 hp) and less than 56 kW (75 hp), and more stringent PM and NOx standards for engines greater than or equal to 56 kW (75 hp). Other possible elements include enhancing in-use compliance, proposing more representative useful life periods, and developing a low load test cycle. It is expected that this comprehensive off-road Tier 5 regulation would rely heavily on technologies

manufacturers are developing to meet the recently approved low NOx standards and enhanced in-use requirements for on road- heavy-duty engines.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with a new California off-road Tier 5 regulation would be similar to existing CARB on-road heavy-duty regulations including changes in engine manufacturing to include near-zero emission technologies to substantially lower NOx emissions in new models sold. New models that meet the off-road Tier 5 regulation would likely be accommodated within the footprint of existing manufacturing facilities and would be implemented through natural fleet turnover (i.e., replacement of existing models with new models). It is expected that manufacturing needs for new equipment would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required.

b) Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation

i. Measure Summary

This measure would further reduce emissions from the in-use off-road diesel equipment sector by adopting more stringent requirements to the In-Use Off-Road Diesel-Fueled Fleets Regulation. These amendments would create additional requirements to the currently regulated fleets by targeting the oldest and dirtiest equipment that is allowed to operate indefinitely under the current regulation's structure.

The amendments would include an operational backstop to the current In-Use Off-Road Diesel-Fueled Fleets Regulation for most Tier 0, 1, and 2 engines between 2024 and 2032. This will allow an eight-year phase out of these oldest engines. Along with the operational backstop, adding vehicle provisions in the current regulation will be extended to phase in a limitation on the adding of Tier 3 and Tier 4i vehicles to fleets. The amendments also include proposed new requirements for most fleets to use renewable diesel, proposed requirements for prime contractors and public works awarding bodies to increase the enforceability of the regulation, and optional flexibility provisions for fleet adoption of zero-emission vehicles. Additional modifications could include clarification to implementation and sunset provisions that would have allowed small fleets to continue to operate vehicles that could not be retrofitted with a verified diesel emission control strategy indefinitely.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses under the Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation would include increased demand for the cleanest engine technology currently available and required under current new emission standards. Such changes would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover. Turnover may result in recycling or scrapping of old off-road equipment or selling off-road equipment to areas outside of California.

c) ~~Zero-Emission~~ Transport Refrigeration Unit Part 2 (Non-Truck TRUs)

i. Measure Summary

This measure is the second part of a two-part rulemaking to transition diesel-powered transport refrigeration units (TRUs) to zero-emission technologies. This measure would require zero-emission equipment for non-truck TRUs (trailer TRUs, domestic shipping container TRUs, railcar TRUs, TRU generator sets, and direct-drive refrigeration units).

ii. Potential Compliance Response

Reasonably foreseeable compliance responses to the Zero-Emission TRU Part 2 include the manufacturing of new zero-emission TRU equipment, the construction and operation of new or expanded manufacturing facilities for zero-emission TRU technologies (e.g., batteries, cryogenic fuels, hydrogen fuel cells, cold plates, solar photovoltaics); the construction of supporting infrastructure, such as electric chargers and hydrogen fueling stations; increased demand for electricity, requiring more electricity generation; the construction of new hydrogen generation and fueling facilities; the displacement of fossil fuel extraction, refinement, manufacture, distribution, and combustion; new or modified recycling or refurbishment facilities to accommodate battery disposal; and increased demand for the extraction of raw minerals used in the production of batteries, such as lithium from source countries and states.

Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

d) Commercial Harbor Craft Amendments

i. Measure Summary

This measure proposes that starting in 2023 and phasing in through 2031, most commercial harbor crafts (CHCs) (except for commercial fishing vessels and categories listed below) would be required to meet the cleanest possible standard (Tier 3 or 4) and retrofit with diesel particulate filters (DPFs) based on a compliance schedule. The current regulated CHC categories are ferries, excursion, crew and supply, tug/tow boats, barges, and dredges. The amendments would impose in-use requirements on the rest of vessel categories except for commercial fishing vessels, including workboats, pilot vessels, commercial passenger fishing, and all barges over 400 feet in length or otherwise meeting the definition of an ocean-going vessel. The amendments would also remove the current exemption for engines less than 50 hp.

The measure also proposes that, starting in 2025, all new excursion vessels be required to be plug-in hybrid vessels that are capable of deriving 30 percent or more of combined propulsion and auxiliary power from a zero-emission tailpipe emission source. Starting in 2026, all new and in-use short run ferries would be required to be zero-emission; and starting in 2030 and 2032, all commercial fishing vessels would need to meet a Tier 2 standard at minimum.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses under the Commercial Harbor Craft Amendments would include increased demand for the cleanest engine technology currently available and required under new emission standards. Such changes would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover. Turnover may result in recycling or scrapping of old commercial harbor craft or selling commercial harbor craft to areas outside of California.

The zero-emission harbor craft sales would include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

e) Cargo Handling Equipment Amendments

i. Measure Summary

This measure would start transitioning Cargo Handling Equipment (CHE) to full zero-emission in 2026, with over 90 percent penetration of ZE equipment by 2036. Based on the current state of zero-emission CHE technological developments, the transition to zero-emission would most likely be achieved largely through the electrification of CHE. This assumption about aggressive electrification is supported by the fact that currently some electric RTG cranes, electric forklifts, and electric yard tractors are already commercially available. Other technologies are in early production or demonstration phases.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the CHE Amendments would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover (i.e., replacement of existing models with new models). It is expected that manufacturing needs for equipment would largely be met by the existing market, but new infrastructure or

manufacturing facilities may be required. Turnover may result in recycling or scrapping of old equipment or selling equipment to areas outside of California.

The zero-emission equipment requirement would include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). The U.S. is also a source for lithium (e.g., a mining operation currently exists in Nevada). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. For batteries, it is anticipated they still have a useful life at the end of vehicle life and are likely to be repurposed for a second life. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

f) Off-Road Zero-Emission Targeted Manufacturer Rule

i. Measure Summary

The Off-Road Zero-Emission Targeted Manufacturer Rule would accelerate the development and production of zero-emission off-road equipment and powertrains. Existing zero-emission regulations and regulations currently under development target a variety of sectors (e.g., forklifts, cargo handling equipment, off road fleets, Small Off-Road Engines (SORE), etc.). However, as technology advancements occur, more sectors including wheel loaders, excavators, and bulldozers could be accelerated. Fully addressing control of emissions from new farm and construction equipment under 175 horsepower that are preempted, will require partnership on needed Federal zero-emission standards for off-road equipment.

This measure would require manufacturers of off-road equipment and/or engines to produce for sale zero-emission equipment and/or powertrains as a percentage of their annual statewide sales volume. Sales/production mandate levels would be developed based on the projected feasibility of zero-emission technology to enter and grow in the various off-road equipment types currently operating in California. This measure is expected to increase the availability of zero-emission options in the off-road sector and support other potential measures that promote and/or require the purchase and use of such options. A targeted manufacturer regulation will need to take into account parameters such as the number of equipment and engine manufacturers producing off-road equipment for sale in California, along with sales volumes, to ensure that such an effort is cost effective and technologically feasible.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the Off-Road Zero-Emission Targeted Manufacturer Rule would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate

of fleet turnover (i.e., replacement of existing models with new models). It is expected that manufacturing needs for new vehicles would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required. Turnover may result in converting, recycling, or scrapping of old equipment or selling equipment to areas outside of California.

The zero-emission equipment sales would include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in lithium mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The Off-Road Zero-Emission Targeted Manufacturer Rule could also result in the development of new infrastructure in the form of hydrogen refueling stations and electric charging stations, which would increase as the share of zero-emission equipment grows over time, compared to what would otherwise be anticipated under existing regulations.

g) Clean Off-Road Fleet Recognition Program

i. Measure Summary

This measure would create a non-monetary incentive to encourage off-road fleets to go above and beyond existing regulatory fleet rule compliance and adopt advanced technology equipment with a strong emphasis on zero-emission technology. The Clean Off-Road Fleet Recognition Program would provide a standardized methodology for contracting entities, policymakers, state and local government, and other interested parties to establish contracting criteria or require participation in the program to achieve their individual policy goals.

The Clean Off-Road Fleet Recognition Program framework would encourage entities with fleets to incorporate advanced technology and zero-emission vehicles into their fleets, prior to or above and beyond regulatory mandates based on fleet size. The program would provide standardized criteria or a rating system for participation at various levels to reflect the penetration of advanced technology and zero-emission vehicles into a fleet. Levels could be scaled over time as zero-emission equipment becomes more readily available. CARB anticipates the next several years of technology advancements and demonstrations to drive the stringency of the rating system. Participation in the program would be voluntary for entities with fleets, however, designed in a manner that provides them motivation to go beyond business as usual. The program would offer value for entities with fleets to participate by potentially

providing them increased access to jobs/contracts, public awareness, and marketing opportunities.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses under the Clean Off-Road Fleet Recognition Program could include changes in design and manufacturing of off-road engine efficiency and performance. This would include improvements in technologies related to exhaust after treatment, engine, and transmission performance. Such changes would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover. Turnover may result in recycling or scrapping of old off-road equipment or selling off-road equipment to areas outside of California.

This measure could include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The Clean Off-Road Fleet Recognition could also result in the development of new infrastructure in the form of hydrogen refueling stations and electric charging stations, which would increase as the share of zero-emission equipment grows over time, compared to what would otherwise be anticipated under existing regulations.

h) Spark-Ignition Marine Engine Standards

i. Measure Summary

For this measure, CARB will develop and propose catalyst-based standards for outboard and personal watercraft engines less than or equal to 40 kW in power that will gradually reduce emission standards to approximately 70 percent below current levels. For outboard and personal watercraft engines under 40 kW, more stringent exhaust standards will be developed and proposed based on the incorporation of electronic fuel injection that will gradually reduce emission standards 40 percent below current levels. This measure would require a 5.0 g/kW-hr HC+NOx standard for outboard engines and personal watercraft engines at or above 40 kW in power and a 10.0 g/kW-hr HC+NOx standard for engines less than 40 kW.

In addition to requiring more stringent exhaust standards, CARB is considering actions per Executive Order N-79-20 that would require a percentage of outboard and personal watercraft vessels to be propelled by zero-emission technologies for certain applications. Outboard engines less than 19 kW, which are typically not operated

aggressively or for extended periods, could potentially be phased-out and gradually replaced with zero-emission technologies. Some personal watercraft applications could also potentially be replaced with zero-emission technologies.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with adopting more stringent spark-ignition marine engine standards would be similar to existing CARB regulations including changes in engine manufacturing to include the cleanest emissions and zero-emission technologies. New models that meet the spark-ignition marine engine standards would be accommodated within the footprint of existing manufacturing facilities and would be implemented through a natural fleet turnover (i.e., replacement of existing models with new models). It is expected that manufacturing needs for new equipment would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required.

The spark-ignition marine engine standards would include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of personal watercraft, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The spark-ignition marine engine standards could also result in the development of new infrastructure in the form of charging stations, which would increase as the share of zero-emission personal watercraft grows over time, compared to what would otherwise be anticipated under existing regulations.

5. Other

Chemically formulated consumer products such as automotive care products, household care products, and personal care products have been regulated as a source of ROG emissions in numerous rulemakings since 1989. Over the past 30 years these measures have led to an over 50 percent reduction in volatile organic compound (VOC) emissions. Despite this progress, population growth in the years ahead is expected to increase emissions from consumer products even as recently revised standards, adopted by CARB in March 2021, become effective in 2023.

Residential and commercial buildings are responsible for roughly 25 percent of California's GHG emissions, when accounting for fossil fuels consumer onsite and electricity demand, and a significant portion of Statewide NOx emissions. The fuels we use and burn in our homes, primarily natural gas, for space and water heating contribute

the vast majority of these criteria pollutant emissions and provide an opportunity for substantial emissions reductions where zero-emission technology is available.

a) Consumer Products ~~Regulation~~ Standards

i. Measure Summary

CARB's Consumer Products Program, broadly, consists of a number of regulations which set standards for consumer products to reduce emissions of VOCs, toxic air contaminants, and greenhouse gases. Through proposed amendments to the Consumer Products Regulation, this measure will further reduce VOC and equivalent VOC emissions from consumer products to expedite attainment of national ambient air quality standards for ozone. As with previous rulemakings, emission reductions will be achieved by setting regulatory standards applicable to the content of consumer products. To meet emission reduction targets for the measure, staff will evaluate categories with relatively high contributions to ozone formation, whether currently regulated or unregulated. Staff will consider the merits of proposing VOC content standards as well as reactivity limits. Staff developing proposed amendments to the Consumer Products Regulation will also consider investigating concepts for expanding manufacturer compliance options, market-based approaches, and reviewing existing exemptions. Staff will work with stakeholders to explore mechanisms that would encourage the development, distribution, and sale of cleaner, very low, or zero-emitting products. In undertaking these efforts staff will prioritize strategies that achieve the maximum feasible reductions in ozone forming, TAC and GHG emissions. This action complements a parallel measure in CARB's Climate Change Scoping Plan Update, to be considered by the Board in 2022, to phase down use of HFC-152a and other GHGs in consumer products.

ii. Potential Compliance Response

Compliance responses associated with amendments to the Consumer Products Regulation would continue CARB's commitment to reduce VOC emissions from consumer products. Staff will work with stakeholders to explore mechanisms that would encourage the development, distribution, and sale of cleaner, very low, or zero-emitting chemicals and products. Staff would continue to investigate opportunities for emission reductions by taking advantage of emerging low-emitting technologies.

b) Zero-Emission Standard for Space and Water Heaters

i. Measure Summary

For this measure, CARB would develop and propose zero GHG emission standards for space and water heaters sold in California; CARB could also work with air districts to further tighten district rules to drive zero-emission technologies. This measure would not mandate retrofits in existing buildings, but some buildings would require retrofits to be able to use the new technology that this measure would require. Beginning in 2030, 100 percent of sales of new space and water heaters (for either new construction or replacement of burned-out equipment in existing buildings) would need to meet zero-emission standards. It is expected that this regulation would rely heavily on heat

pump technologies currently being sold to electrify new and existing homes. In addition to the development process for the 2022 State SIP Strategy, the measure as proposed by staff and proposed for adoption by the Board will be subject to a full public process.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the Zero-Emission Standard for Space and Water Heaters would be accommodated within the footprint of existing manufacturing facilities. It is expected that manufacturing needs for new heaters would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required.

6. Primarily-Federally and Internationally Regulated Sources: CARB Measures

a) In-Use Locomotive Regulation

i. Measure Summary

This measure would use mechanisms available under CARB's regulatory authority to accelerate the adoption of advanced, cleaner technologies, and include zero emission technologies, for locomotive operations. The In-Use Locomotive Regulation applies to all locomotives operating in the State of California with engines that have a total rated power of greater than 1,006 horsepower, excluding locomotive engines used in training of mechanics, equipment designed to operate both on roads and rails, and military locomotives. The measure reduces emissions by increasing use of cleaner diesel locomotives and zero emission locomotives through a spending account, in-use operational requirements, and by an idling limit. By July 1, 2024, a spending account would be established for each locomotive operator. Funds in the account would only be used toward Tier 4 or cleaner locomotives until 2030, and at any time toward zero-emission locomotives, zero-emission pilot or demonstration projects, or zero-emission infrastructure.

For the in-use operational requirements, beginning January 1, 2030, only locomotives built after January 1, 2007 may operate in California. Each year after January 1, 2030, only locomotives less than 23 years old may operate in California. Additionally, under the in-use operational requirements, starting January 1, 2030, all switch, industrial, and passenger locomotives operating in California with an original engine build date 2030 or newer will be required to be zero emission. Starting January 1, 2035, all freight line haul locomotives operating in California with an original engine build date 2035 or newer must be zero emission. Locomotives equipped with automatic engine stop/start systems are to idle no more than 30 minutes unless an exemption applies. Also, locomotive operators would report locomotive engine emissions levels and activity on an annual basis.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses under the In-Use Locomotive Regulation would include changes in design and manufacturing of locomotives engine efficiency

and performance. This would include improvements in technologies related to exhaust after treatment, engine, and transmission performance. Such changes may result in the need to develop and operate new facilities and/or expand existing facilities to accommodate the manufacturing processes. The In-Use Locomotive Regulation would increase the rate of fleet turnover. Turnover may result in recycling or scrapping of old locomotives or selling locomotives to areas outside of California.

Reasonably foreseeable compliance responses under In-Use Locomotive Regulation could include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

Increases and modifications to existing locomotives and/or production and operation of hydrogen-powered locomotives and fueling infrastructure would reduce rates of oil and gas extraction and may require construction of new hydrogen generation and fueling facilities. Additionally, early development of hydrogen technologies will likely require hydrogen to be distributed by truck or brought in by train from facilities outside of a railyard. At a large scale, on-site generation of hydrogen is the most reasonable compliance response, which could be constructed adjacent to or near existing railyards or other industrial facilities due to it being accessed by other hydrogen fueled equipment.

The In-Use Locomotive Regulation could also result in the development of new infrastructure in the form of hydrogen refueling stations and electric charging stations, which would increase as the share of zero-emission locomotives grows over time, compared to what would otherwise be anticipated under existing regulations.

b) Future Measures for Aviation Emissions Reductions

i. Measure Summary

Future measures for aviation would reduce emissions from airport and aircraft related activities. The identified emission sources for the aviation sector are main aircraft engines, auxiliary power units (APU), and airport ground transportation. Emission reductions can be achieved by pursuing incentive and regulatory measures.

CARB would evaluate federal, state, and local authority in setting operational efficiency practices to achieve emission reductions. Operational practices include landing, takeoff, taxi, and running the APU, and contribute to on-ground and near-ground emissions. Near ground emissions are emissions between ground level up to 3,000 feet.

Operational practices such as de-rated take-off and reduced power taxiing have the potential to achieve emission reductions.

CARB would similarly work with U.S. EPA, Air Districts, airports, and industry stakeholders in a collaborative effort to develop regulations, voluntary measures, and incentive programs. CARB would evaluate the incentive amounts that would be required to encourage aircrafts to voluntarily use cleaner engines and fuels. Incentives to encourage the use of cleaner engines and fuels for aircraft in California would involve identification of funding sources and implementation mechanisms such as development of new programs.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses under the Future Measures for Aviation Emissions Reductions would include changes in design and manufacturing of aircraft engine efficiency and performance and fuel. This would include improvements in technologies related to exhaust after treatment, engine performance and fuel. Increased demand stimulated from cleaner aviation fuel requirements is anticipated to increase cultivation or imports of cleaner aviation fuels. In addition, increased cleaner aviation fuel demand may increase processing of those fuels, and shipment of finished cleaner aviation fuels. Infrastructure to support collection, processing, and distribution of cleaner aviation fuels may also increase.

Efficiency improvements would require no new facilities and would involve maximizing the efficiency of existing systems or optimizing operations at existing facilities.

c) Future Measures for Ocean-Going Vessel Emissions Reductions

i. Measure Summary

Future measures for ocean-going vessels (OGVs) would reduce emissions from OGVs that are transiting, maneuvering, or anchoring in regulated California waters and while docking at berth in California seaports. Despite the reductions achieved by existing regulatory and incentive programs, additional measures are needed to achieve further emissions reductions from OGVs to protect public health and meet federal air quality standards. Due to the international nature of OGVs, advocacy and coordination with federal and international oversight and regulatory organizations may be needed to achieve additional emissions reductions.

Future measures for OGVs could achieve additional reductions through the use of operational changes and new technologies currently in development, including advances in exhaust capture and control, mobile shore power connections, cleaner fuels (such as liquified natural gas [LNG], hydrogen, methanol, ammonia, etc.), alternative power sources (including batteries and fuel cells), as well as potential vessel side technologies (such as water-in-fuel emulsion). In pursuing regulatory measures, CARB would work with U.S. EPA, California Air Districts, seaports, and industry stakeholders in a collaborative effort to determine which measure would provide the most effective emissions reductions, as well as CARB's ability to implement each potential measure.

Advocacy at the federal and international levels may be necessary to achieving additional emissions reductions from OGVs given the international nature of sea trade.

Incentive or regulatory measures could be pursed to achieve further emissions reductions from OGVs, including using cleaner engines or cleaner fuels than those required by U.S. EPA and the International Maritime Organization (IMO), reducing emissions while anchored within regulated California waters (RCW), sailing at slower speeds while in RCW, and requiring bulk and general cargo vessels to reduce emissions while at berth.

Additionally, CARB staff have committed to assessing the feasibility, benefits, and cost-effectiveness of control technologies for bulk/general cargo vessels and vessels at anchor (which are not subject to emissions control requirements in the 2020 At Berth Regulation) as part of the 2020 At Berth Regulation's Interim Evaluation. This evaluation will occur in 2021-2022, with a public report due by December 1, 2022.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses under the Future Measures for OGVs Emissions Reductions would include changes in design and manufacturing of OGV engine efficiency, performance and fuel. This would include improvements in technologies related to exhaust after treatment, engine performance and fuel. Efficiency improvements would require no new facilities and would involve maximizing the efficiency of existing systems or optimizing operations at existing facilities.

Increased use for certain land-based emission control systems used to treat OGV emissions may require wharf upgrades and/or new wharf infrastructure to support equipment. Increased demand stimulated from cleaner OGV fuel requirements is anticipated to increase cultivation or imports of cleaner OGV fuels. In addition, increased cleaner OGV fuel demand may increase processing of those fuels, and shipment of finished cleaner OGV fuels. Infrastructure to support collection, processing, and distribution of cleaner OGV fuels may also increase.

7. Primarily-Federally and Internationally Regulated Sources: Federal Actions Needed

The following measures are actions that CARB will petition and/or advocate to federal and international entities that they take under consideration. CARB may petition the federal government through the application of a formal letter, as permitted by the Administrative Procedure Act of 1946 (5 U.S.C. § 553(e)) and the CAA. CARB continues to collaborate with other government agencies to encourage action at the federal and international level, and may also seek letters of support from other regional and local agencies that govern environmental impacts.

While these measures, if implemented, could result in compliance responses that may have an adverse effect on the environment, implementation of these measures would be overseen by the U.S. EPA and other agencies subject to federal environmental laws

and are beyond the purview of this CEQA analysis. Therefore, these measures are summarized below; however, this ~~Draft~~ Final EA neither lists nor evaluates the potential environmental effects of deployment of these measures.

a) On-Road Heavy-Duty Vehicle Low-NOx Engine Standards ~~(2016 SSS Measure)~~

i. Measure Summary

This measure was assessed in the 2016 State SIP Strategy Environmental Analysis, but is being noted again since U.S. EPA has yet to finalize action in response to California's petition.

b) On-Road Heavy-Duty Vehicle Zero-Emission Requirements

i. Measure Summary

Actions are needed at the federal level to drive the introduction of zero-emission HDVs into the on-road fleet nation-wide. CARB would petition and/or advocate to U.S. EPA for federal zero-emission on-road heavy-duty vehicle requirements, along with more stringent GHG standards for medium-duty vehicles and HDVs that would apply to new heavy-duty trucks sold nationwide. Additionally, CARB would advocate that U.S. EPA enable state leadership on zero-emission trucks by prioritizing federal grants toward zero-emission technology and their associated infrastructure.

c) More Stringent Emissions Standards ~~Off-Road Tier 5 Standard~~ for Preempted Engines

i. Measure Summary

Off-road engines used in equipment regulated at the federal level also contributes significant ozone precursor emissions in California. A potential measure would be for federal Tier 5 standards for engines used in preempted off-road equipment. CARB would petition and/or advocate to U.S. EPA to promulgate off-road engine Tier 5 standards for preempted equipment, akin to those CARB is pursuing for off-road engines used in equipment under State authority, to prevent the availability of engines and equipment being used in California from meeting less stringent standards.

d) Off-Road Equipment Zero-Emission Standards Where Feasible

i. Measure Summary

Given the availability of zero-emission equipment in certain off-road sectors, zero-emissions requirements are also feasible and needed, as discussed in various CARB measures in the Off-Road Equipment portion of the 2022 State SIP Strategy. CARB would also petition and/or advocate to U.S. EPA to require zero-emission standards for off-road equipment broadly across existing and emerging sectors in recognition of the rapid advances in enabling technologies including zero batteries and fuel cell, mobile clean energy access strategies, and architecturally improving equipment efficiency. Zero-emission technology is maturing in availability and performance while penetrating several off-road equipment categories including material handling and positioning,

landscaping, construction and demolition, and agricultural applications. Federal zero-emission standards for off-road equipment would provide a clear path for zero-emission technology to continue maturing and the steady signal needed to realize the full emissions reduction potential of this historically highly emitting category of equipment.

e) More Stringent Aviation Engine Standards

i. Measure Summary

CARB would petition and/or advocate to U.S. EPA for more stringent criteria and GHG standards for aircraft engines. With innovative research and advanced optimization of engine design, it has been demonstrated that NOx emissions can be further reduced beyond the CAEP/8 standards. For example, under the FAA's Continuous Lower Energy, Emissions, and Noise Phase II (CLEEN II) Program, FAA awarded five-year agreements to Aurora Flight Sciences, Boeing, Collins Aerospace, Delta Tech Ops/MDS Coating Technologies, General Electric, Honeywell, Pratt & Whitney, and Rolls-Royce to accelerate the development of new aircraft and engine technologies. The goal of the program is to achieve 70 percent NOx and 40 percent fuel burn reduction below the CAEP/8 standards. In 2016, GE's Twin Annular Premixing Swirler (TAPS) II combustor matured under CLEEN I and entered into service as part of CFM International's TAPS Leading Edge Aviation Propulsion (LEAP) engine, currently onboard Airbus 320neo, Boeing 737 MAX, and COMAC C919 aircraft. Under CLEEN I, GE engine emissions tests of TAPS II had results that were more than 60 percent below the 2004 ICAO CAEP NOx standards. The FAA anticipates that more of these technologies could go into service in the next several years

f) Cleaner Fuel and Visit Requirements for Aviation

i. Measure Summary

In addition to needing more stringent engine standards, there are other mechanisms by which regulatory entities could require emissions reductions from aircraft in California. CARB would petition and/or advocate to U.S. EPA to require aircraft to use cleaner fuels when travelling through California, and to require visits from cleaner aircraft.

g) Zero-Emission On-Ground Operation Requirements at Airports

i. Measure Summary

The on-ground operations at airports present additional emissions reductions for aviation. Typical aircrafts include an auxiliary power unit (APU) which is a small turbine engine that starts the aircraft main engines and powers the electrical systems on the aircraft when the main engines are off. Requirements for switching to the on-board rechargeable batteries as the power supply would reduce the usage of the gas turbine APU and hence emissions. Taxiing is another on-ground operation where emissions can be reduced through reduced power during taxiing, improved taxi-time, and the use of new technologies such as Taxi-bot. Taxi-bot is utilized during pushback operations and allows immediate taxiing with the engines stopped eliminating bottlenecks in the gate

area. CARB would petition and/or advocated to U.S. EPA to require zero-emission on-ground operation at California airports.

h) Airport Aviation Emissions Cap

i. Measure Summary

In addition to the three proposed aviation actions above, CARB would petition and/or advocate to appropriate agencies, including the U.S. EPA, for additional actions to control emissions from aviation, such as requiring an aviation emissions cap at each California airport. This emissions cap would set an emissions level for all aircraft activities related to the airports preventing emissions to increase with airport growth and reduce existing emissions by replacing airport activities with cleaner combustion and zero-emission technologies. These additional reductions could potentially also be achieved through incentivized turnover of aircraft or upgrades to cleaner engines, or other available regulatory mechanisms.

i) More Stringent National Locomotive Emission Standards ~~(2016 SSS Measure)~~

i. Measure Summary

This measure was assessed in the 2016 State SIP Strategy Environmental Analysis, but is being noted again since U.S. EPA has yet to finalize action in response to California's petition.

j) Zero-Emission Standards for ~~Switch~~ Locomotives

i. Measure Summary

Switchers move railcars and sections of trains in and around railyards (not to be confused with rubber-tired railcar movers, which are smaller off-road vehicles that move individual railcars in yards, but are not considered switchers). Switchers account for approximately 10 percent of all freight diesel used in California and could be converted to zero emission. For this measure, CARB would petition and/or advocate to U.S. EPA to promulgate national zero-emission standards for switchers to reduce criteria and toxic pollutants, fuel consumption, and GHG emissions.

k) Address Unlimited Locomotive Remanufacturing ~~Loophole~~

i. Measure Summary

Federal rules currently define remanufactured locomotives as "new" and do not set limits on how often locomotives can be remanufactured. The result is continued remanufacturing of old and polluting locomotives to the same emission tier standards as their original build date. and leads to persistent pollution from these sources. For this measure, CARB would petition and/or advocate to U.S. EPA to ~~remove~~ address the~~is~~ regulatory ~~loophole~~ provisions that allow this unlimited remanufacturing of old and polluting locomotives to the same emission tier standards~~, in addition to the state-level rules discussed above~~.

l) More Stringent NOx and PM Standards for Ocean-Going Vessels

i. Measure Summary

This action would involve CARB petitioning and/or advocating to federal and international partners to establish new Tier 4 NO_X and PM standards, plus efficiency targets for existing vessels, and new vessel categories not covered by the International Maritime Organization (IMO). CARB has and continues to advocate for a Tier 4 NOx standard for new marine engines on ocean-going vessels and vessel efficiency requirements for the existing in-use fleet.

m) Cleaner Fuel and Vessel Requirements for Ocean-Going Vessels

i. Measure Summary

CARB would petition and/or advocate to U.S. EPA to require vessels to use cleaner fuels and visits from cleaner OGVs. To the maximum extent possible all Tier 0, Tier 1, and Tier 2 vessel visits should be replaced with visits made by Tier 3 or cleaner vessels by 2031. Current Tier 3 vessel manufacturing data suggest that there may not be sufficient Tier 3 to meet the vessel visits, even if California were to receive a large majority of the worldwide Tier 3 vessels. However, these reductions may be achieved by incentivizing visits from Tier 2 vessels that have been retrofitted to reduce NOx emissions. Current retrofit technologies for marine engines include water-in-fuel emulsion, exhaust gas recirculation (EGR) and selective catalytic reduction (SCR). Both EGR and SCR have shown potential to reduce emissions by up to 80 percent. Water-in-fuel emulsion strategies have shown up to 40 percent reduction in NOx emissions and may provide significant and cost-effective reductions options (particularly at near-port and low load conditions where Tier 3 and other retrofit options may not operate at full potential). Biofuels, liquified natural gas (LNG), renewable hydrogen and other hydrogen-derived fuels such as ammonia, methanol, batteries and fuel cells are being considered as potential fuel choices for vessels. All options need to be considered to achieve the needed emissions reductions.

~~8. Additional Transition to Cleaner Technologies and Systems [may not be formal commitments]~~

~~Measure Summary~~

~~Due to the severity of the South Coast's ozone challenge, additional measures may be needed for certain mobile source sectors (on-road light-duty vehicles, on-road HDVs, off-road equipment, or primarily federally and internationally regulated sources) that would reflect the need for enhanced deployment of cleaner on- and off-road technologies in Extreme nonattainment areas such as the South Coast. These Additional Transition to Cleaner Technologies and Systems measures would be designed to target the remaining emission reductions needed for attainment and could include potential new regulatory actions, increased efficiencies, use of emerging transportation technologies, and/or incentivized turnover. In some cases, actions by local, federal, and international agencies could be necessary. In others, programmatic~~

~~approaches could be developed and funding secured to achieve the reductions outlined in potential Additional Transition to Cleaner Technologies and Systems measures.~~

~~**Potential Compliance Response**~~

~~Reasonably foreseeable compliance responses could include increased demand for the cleanest engine technology currently available for the relevant vehicles/equipment, but this would be expected to be accommodated within the footprint of existing manufacturing facilities and could be implemented through an increased rate of fleet turnover (i.e., replacement of existing models with new or potentially used models). It is expected that manufacturing needs for new vehicles would largely be met by the existing market, and no new manufacturing facilities would be anticipated to be required, though manufacturers could choose to relocate production facilities to California. Turnover may result in recycling or scrapping of old vehicles or selling vehicles to areas outside of California.~~

~~The increase in ZE vehicles and/or equipment would include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. For batteries, it is anticipated they still have a useful life at the end of vehicle life and are likely to be repurposed for a second life. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.~~

~~The measure(s) could also result in the development of new infrastructure in the form of hydrogen refueling stations and electric vehicle charging stations, which would increase as the share of ZEVs grows over time, compared to what would otherwise be anticipated under existing regulations.~~

9. Public Measure Suggestions [may not be formal <u>measure</u> commitments]

As a result of outreach and engagement efforts to date, CARB has received suggestions from the public for State measures to be included in the 2022 State SIP Strategy. Many of the items below have also been included or discussed as a part of various Community Emissions Reduction Programs developed by selected communities, together with their air district partners, under CARB's Assembly Bill 617 Community Air Protection Program. CARB is continuing to explore the ways in which these concepts could be included, <u>and some, but not all, were</u> ~~but they may or may not~~ ultimately be included as measures/commitments in the 2022 State SIP Strategy in the form described here.

a) On-Road Heavy-Duty Vehicle Useful Life Regulation

i. Measure Summary

CARB has in place numerous regulations to control emissions from on-road heavy-duty vehicles and continues to pursue additional measures as described in the 2022 State SIP Strategy. This suggestion would involve CARB developing a regulation, potentially paired with new incentives or legislative measures, to require on-road HDVs that have reached the end of their useful life as defined in Senate Bill 1 as either the earlier of 800,000 vehicles miles traveled or 18 years from the engine model year to retire, replace, retrofit, or repower the vehicle or engine. California Senate Bill 1 (2017) currently exempts retirement, replacement, retrofit, or repower requirements for on-road heavy-duty vehicle that have less than either 800,000 vehicles miles traveled or 18 years from the engine model year.

CARB staff has been investigating the feasibility and potential benefits of this suggested measure and have included in Chapter 5 of the 2022 State SIP Strategy a proposed measure to similarly target the increase in the number of heavy-duty ZEVs and cleaner engines as soon as possible, and reduce emissions from fleets not affected by the Advanced Clean Fleets measure – see the Zero-Emission Trucks measure.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the On-Road Heavy-Duty Vehicle Useful Life Regulation would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover (i.e., replacement of existing models with new models). It is expected that manufacturing needs for new vehicles would largely be met by the existing market, and no new manufacturing facilities would be anticipated to be required. Turnover may result in recycling or scrapping of old vehicles or selling vehicles to areas outside of California.

The zero-emission vehicle sales would include an increase in demand for lithium ion batteries, which could require an increase in manufacturing facilities and associated increases in lithium mining and exports from countries with raw mineral supplies (e.g., Peru, South Africa, and China). The U.S. is also a source for lithium (e.g., a mining operation currently exists in Nevada). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. For lithium-ion batteries, it is anticipated they still have a useful life at the end of vehicle life, and are likely to be repurposed for a second life. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The On-Road Heavy-Duty Vehicle Useful Life Regulation could also result in the development of new infrastructure in the form of hydrogen refueling stations and

electric vehicle charging stations, which would increase as the share of zero-emission vehicles grows over time, compared to what would otherwise be anticipated under existing regulations.

b) Additional Incentive Programs – Zero-Emission Trucks

i. Measure Summary

Additional incentive programs are needed to send clear signals to the market and support new scrap and replace regulatory programs, specifically to help ensure that smaller trucking companies have more consistent access to zero-emission truck incentives. This measure would involve CARB working to develop incentive programs which should include consideration of policies other jurisdictions have employed such as supporting local zero-emission zones and/or differentiated registration fees so that dirtier trucks pay more and zero-emission trucks have a consistent source of incentive funding.

CARB staff has been investigating the feasibility and potential benefits of this suggested measure, and have included it as one potential element of the Zero-Emission Trucks measure in Chapter 5 of the 2022 State SIP Strategy.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the Additional Incentive Programs – Zero-Emission Trucks would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover. It is expected that manufacturing needs for new vehicles would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required, though manufacturers could choose to relocation production facilities to California. Turnover may result in recycling or scrapping of old vehicles or selling vehicles to areas outside of California.

The zero-emission vehicle sales would include an increase in demand for lithium-ion batteries, which could require an increase in manufacturing facilities and associated increases in lithium mining and exports from countries with raw mineral supplies (e.g., Peru, South Africa, and China). The U.S. is also a source for lithium (e.g., a mining operation currently exists in Nevada). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The Additional Incentive Programs – Zero-Emission Trucks could also result in the development of new infrastructure in the form of hydrogen refueling stations and electric vehicle charging stations, which would increase as the share of zero-emission

vehicles grows over time, compared to what would otherwise be anticipated under existing regulations.

c) Enhanced Transportation Choices

i. Measure Summary

The bulk of emissions from the vehicle fleet come from existing vehicles, meaning that measures that can give people choices not to use their personal vehicles, and instead to walk, bike, take public transit, or adopt other transportation modes, at least some of the time, can significantly reduce emissions. This suggested measure, or measures, would have CARB work with state and local transportation planning organizations, local governments, and communities to advance VMT reductions via enhanced choice. Measures for consideration could include, but are not limited to, travel demand management programs, incentive programs that fund enhanced transportation planning, or zoning changes that encourage dense, walkable, infill development.

CARB staff is continuing to explore this suggested measure and how it can meet the Clean Air Act requirements for SIP measure approvability, but at this time it is not included in the Proposed 2022 State SIP Strategy. That said, CARB is pursuing VMT reductions via other approaches through the Enhanced Regional Emission Analysis in State Implementation Plans measure, included in Chapter 5 of the 2022 State SIP Strategy. Additionally, CARB is currently developing the 2022 Scoping Plan Update as well which will assess the progress towards achieving the 2030 target and lay out a path for achieving carbon neutrality no later than 2045. To meet these goals, the Scoping Plan will include VMT strategies that reduce petroleum use in vehicles.

ii. Potential Compliance Response

Compliance responses associated with Enhanced Transportation Choices would continue CARB's commitment to reduce NOx emissions from mobile sources. Staff will work with stakeholders to explore mechanisms such as travel demand management programs, incentive programs, and zoning changes that reduce VMT. Staff would continue to investigate any and all opportunities for emission reductions by taking advantage of emerging practices.

d) Indirect Source Rule – Suggested Control Measure or Regulation

i. Measure Summary

An indirect source is any facility, building, structure, or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions – these can include warehouses, railyards, seaports, and airports, and mobile sources attracted to those warehouses, railyards, ports, and airports. Only a few air districts in California have indirect source rules to limit emissions of this nature on a facility basis. This measure could involve CARB writing a Suggested Control Measure which acts as a model rule to assist the air districts in the rule development process. In addition, CARB staff would explore opportunities to expand existing State law to provide opportunities

for CARB and air districts to work together to develop, adopt, and implement indirect source rules.

CARB staff has been investigating the feasibility and potential benefits of this suggested measure, and have included it as one potential element of the Zero-Emission Trucks measure in Chapter 5 of the 2022 State SIP Strategy.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the Suggested Control Measure for an Indirect Source Rule could include changes in the design and manufacturing of zero-emission equipment. Such changes may result in the need to develop and operate new facilities and/or expand existing facilities to accommodate the manufacturing processes. Compliance could be implemented through an increased rate of zero-emission technology turnover for a specific piece of equipment or process for a stationary source, and/or increased rate of zero-emission technology turnover of mobile sources used at warehouses, railyards, seaports, and airports. Turnover may result in the recycling or scrapping of old mobile sources or selling mobile sources to areas outside of California. The Suggested Control Measure could also result in the development of new zero-emission fueling infrastructure including hydrogen refueling stations and electric charging stations.

e) BACT/BARCT Determination

i. Measure Summary

This measure would involve CARB developing Best Available Control Technology (BACT) and/or Best Available Retrofit Control Technology (BARCT) determinations. New stationary sources, sources that undergo significant modification, and relocated sources are subject to emissions control requirements depending on the jurisdiction in which they are located. A BACT or BARCT determination defines limits that would be enforced at the local level for a specific piece of equipment or process for a stationary source, such as commercial cooking, char broilers and deep-frying, wood burning devices, water treatment plants, autobody shops, metal recycling, storage tank leaks, and flaring. Once a BACT or BARCT determination is in place, air districts could be required under applicable State and federal laws to implement the defined levels of control through local rules and regulations, thereby reducing emissions from the relevant sources.

CARB staff is continuing to explore the BACT and BARCT Determination suggested measure and how it can meet the Clean Air Act integrity elements for SIP approvability, (permanent, surplus, quantifiable and enforceable), but at this time it is not included in the 2022 State SIP Strategy. That said, through implementation of AB 617, CARB is working closely with local air districts to identify existing BACT determinations and BACT guidelines across the State in order to better support Statewide consistency and collaboration.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the BACT/BARCT Determination would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of cleaner technology turnover for a specific piece of equipment or process for a stationary source, such as commercial cooking char broilers and deep-frying, wood burning devices, water treatment plants, autobody shops, metal recycling, storage tank leaks, and flaring. It is expected that manufacturing needs for this cleaner technology would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required. Turnover may result in recycling or scrapping of older dirtier technologies or selling dirtier technologies to areas outside of California.

f) Additional Building and Appliance Emission Standards

i. Measure Summary

CARB could propose additional emissions standards for appliance combustion sources used in buildings (for example, including stoves and furnaces), work with air districts to set further such standards, work with building and energy code agencies to ready more buildings for zero-emission appliances, or take other actions (including potentially incentive programs) to accelerate the removal of fossil fuels from the building stock in both new and existing buildings. Such measures could potentially significantly accelerate the transition away from pollution associated with combustion in these sources while creating economic opportunities for building retrofits. Any such measures would be developed with careful consideration for community needs, and housing cost concerns, with full community engagement.

CARB staff has been investigating the feasibility and potential benefits of this suggested measure and are including in Chapter 5 of the 2022 State SIP Strategy the Zero Emission Standard for Space and Water Heaters measure the potential to include other end-uses.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the Additional Building and Appliance Emission Standards would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of appliance turnover. It is expected that manufacturing needs for new heaters would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required. Turnover may result in recycling or scrapping of old appliances or selling appliances to areas outside of California.

g) Pesticides Regulation: 1, 3-Dichloropropene Health Risk Mitigation

i. Measure Summary

Pesticides are used in commercial and agricultural operations across the State, and are a source of VOC and other types of emissions. Pesticides are regulated under both federal and state law. The Department of Pesticide Regulation (DPR) is the agency

responsible for regulating the sale and use of pesticides in California. DPR can generally reduce exposures to pesticides through the development and implementation of necessary restrictions on pesticide sales and use and by encouraging integrated pest management. This measure would involve CARB working with the California Department of Pesticide Regulation (DPR) to develop new regulations to further reduce VOC emissions from commercial and agricultural pesticides used in California through reformulation, reduced usage, and innovative technologies and practices. In particular, Considered a volatile organic compound (VOC), 1,3-Dichloropropene (1,3-D) is a fumigant used to control nematodes, insects, and disease organisms in soil.

DPR is developing a regulation to address both cancer and acute risk to non-occupational bystanders from the use of 1,3-D. The regulation will be developed in consultation with the County Agricultural Commissioners (CACs), the local air districts, CARB, the Office of Environmental Health Hazard Assessment (OEHHA), and the California Department of Food and Agriculture (CDFA). Once implemented, DPR's regulation would require applicators to use totally impermeable film (TIF) tarpaulins or other mitigation measures that provide a comparable degree of protection from exposure.

CARB staff coordinated with the DPR, and a measure is included in Chapter 5 of the 2022 State SIP Strategy.

ii. Potential Compliance Response

Compliance responses associated with Pesticide Regulation would continue the State's commitment to reduce VOC emissions from pesticides. Staff will work with stakeholders to explore a new regulation to further reduce VOC emissions from commercial and agricultural pesticides used in California through reformulation, reduced usage, and innovative technologies and practices. Staff would continue to investigate any and all opportunities for emission reductions by taking advantage of emerging technologies and practices.

h) Enhanced Bureau of Automotive Repair Consumer Assistance Program

i. Measure Summary

The California Bureau of Automotive Repair (BAR) has in place a *Consumer Assistance Program* to offer eligible low-income consumers repair assistance and vehicle retirement options to help reduce emissions and improve air quality. The repair assistance program currently offers up to $1,200 for emissions-related repairs which correct problems contributing to a vehicle's failure to pass a Smog Check inspection. The vehicle retirement option currently offers income-eligible consumers $1,500 to retire their vehicle. This measure would involve CARB working with BAR to enhance the Consumer Assistance Program by expanding the eligibility threshold and/or amounts of funding offered for consumers towards repair assistance and vehicle replacement options.

CARB staff is continuing to explore this suggested measure and how it can meet the Clean Air Act requirements for SIP measure approvability, but at this time it is not included in the 2022 State SIP Strategy. That said, the Advanced Clean Cars II regulation along with existing CARB regulations and current State incentive programs such as the Clean Cars 4 All achieve a significant amount of benefits this suggested measure would accomplish. Further, the Clean Cars 4 All Program is under development for statewide expansion and will continue to focus on supporting the lowest income and disadvantaged communities.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses associated with the Enhanced Bureau of Automotive Repair Consumer Assistance Program would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover. It is expected that manufacturing needs for new vehicles would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required. Turnover may result in recycling or scrapping of old vehicles or selling vehicles to areas outside of California.

The zero-emission vehicle sales would include an increase in demand for lithium-ion batteries, which could require an increase in manufacturing facilities and associated increases in lithium mining and exports from countries with raw mineral supplies (e.g., Peru, South Africa, and China). The U.S. is also a source for lithium (e.g., a mining operation currently exists in Nevada). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

The Enhanced Bureau of Automotive Repair Consumer Assistance Program could also result in the development of new infrastructure in the form of hydrogen refueling stations and electric vehicle charging stations, which would increase as the share of zero-emission vehicles grows over time, compared to what would otherwise be anticipated under existing regulations.

i) Light-Duty Vehicle Fleet Regulation

i. Measure Summary

CARB has a suite of regulations in place to control emissions from light-duty vehicles, and continues to pursue new regulatory actions, in addition to incentives and other complementary programs that can help to accelerate emissions reductions. One such action that will be brought to CARB's Board in the coming months is the Advanced Clean Cars II program, which will set manufacturer sales requirements and continue to drive introduction of ZEVs into the light-duty fleet. Even so, additional fleet average requirements could potentially support a faster rate of transition to zero-emissions,

especially in public and private fleets which are particularly suited for electrification. This measure would involve CARB developing a regulation to implement fleet requirements for public and rental passenger vehicle fleets. This could take the form similar to the recently adopted Clean Miles Standard, which requires an increasing number of electric miles service for ride hailing platforms, or it could take the form of a more traditional fleet rule that mandates the purchase of ZEVs.

CARB staff is continuing to explore this suggested measure, but at this time it is not included in the 2022 State SIP Strategy. That said, CARB staff anticipate that the Advanced Clean Cars II regulation, along with existing CARB regulations and current State incentive programs, achieve a significant amount of benefits this suggested measure would accomplish.

ii. Potential Compliance Response

Reasonably foreseeable compliance responses would be accommodated within the footprint of existing manufacturing facilities and would be implemented through an increased rate of fleet turnover. It is expected that manufacturing needs for new vehicles would largely be met by the existing market, and no new infrastructure or manufacturing facilities would be anticipated to be required, though manufacturers could choose to relocation production facilities to California. Turnover may result in recycling or scrapping of old vehicles or selling vehicles to areas outside of California.

The zero-emission vehicle sales would include an increase in demand for batteries, which could require an increase in manufacturing facilities and associated increases in mining and exports from countries with raw mineral supplies, such as lithium (e.g., Peru, South Africa, and China). Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with, existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. For batteries, it is anticipated they still have a useful life at the end of vehicle life and are likely to be repurposed for a second life. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities.

Additionally, while it is like that the charging infrastructure that is continuing to be built out for ZEVs in California is adequate for supporting those ZEVs in public and rental passenger vehicle fleets, a Light-Duty Vehicle Fleet Regulation could potentially result in the development of new infrastructure in the form of hydrogen refueling stations, electric vehicle charging stations, and in electricity grid capacity, generation, and distribution infrastructure, which would increase as the share of zero-emissions vehicles grows over time compared to what would otherwise be anticipated under existing regulations.

D. Summary of Compliance Responses

In summary, reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

In addition, the 2022 State SIP Strategy includes petitioning and/or advocating to the U.S. EPA and other federal and international regulatory bodies for various regulatory changes, such as federal Off-Road Tier 5 Standards, federal on-road heavy-duty vehicle zero-emission requirements, and more stringent standards for aviation and ocean-going vessels. These actions involve federal (U.S. EPA) rulemaking and are not subject to CARB consideration. It would therefore be speculative for this ~~Draft~~ Final EA to attempt to analyze the impacts of potential compliance responses associated with measures that are subject to U.S. EPA development and review. Note that if U.S. EPA undertakes these federal rulemaking actions, it would complete the appropriate environmental analysis at the federal level.

Further reductions in criteria air pollutants throughout the state could result from approaches that could be included in the potential measures for Additional Transition to Cleaner Technologies and Systems, including the use of increased efficiencies, autonomous vehicles, intelligent transportation systems, and roadway modifications. However, though the 2022 State SIP Strategy could rely on these reductions to reach attainment goals it would not be driving these actions, and they would be implemented through other programs regardless of their inclusion in the 2022 State SIP Strategy. Thus, they are not considered to be reasonably foreseeable compliance responses related to implementation of the 2022 State SIP Strategy and environmental impacts related to these activities are not discussed in this ~~Draft~~ Final EA.

3.0 ENVIRONMENTAL AND REGULATORY SETTING

CEQA Guidelines require an EIR to include an environmental setting section that discusses the current environmental conditions in the vicinity of the project. This environmental setting normally constitutes the baseline physical conditions against which an impact is compared to determine whether it is significant (14 CCR Section 15125). For this ~~Draft~~ Final EA, CARB is using a 2021 baseline, as that is the year in which the environmental analysis commenced (the Notice of Preparation was posted on July 13, 2021).

As discussed in Chapter 1 of this ~~Draft~~ Final EA, CARB has a CEQA certified regulatory program and prepares an EA in lieu of an EIR. This ~~Draft~~ Final EA is a functional equivalent to an EIR under CEQA; therefore, in an effort to comply with the policy objectives of CEQA, an environmental setting and a regulatory setting with environmental laws and regulations relevant to the 2022 State SIP Strategy have been included as Attachment A to this ~~Draft~~ Final EA.

4.0 IMPACT ANALYSIS AND MITIGATION MEASURES

A. Approach to the Environmental Impacts Analysis and Significance Determination

This chapter contains an analysis of environmental impacts and mitigation measures associated with 2022 State SIP Strategy. CEQA states the baseline for determining the significance of environmental impacts would normally be the existing conditions at the time the environmental review is initiated (Title 14 California CCR Section 15125(a)). Therefore, significance determinations reflected in this ~~Draft~~ Final EA are based on a comparison of the potential environmental consequences of the 2022 State SIP Strategy with the regulatory setting and physical conditions in 2021 (see Attachment A). For the purpose of determining whether the 2022 State SIP Strategy may have a potential effect on the environment, CARB evaluated the potential physical changes to the environment resulting from the reasonably foreseeable compliance responses described in further detail in Chapter 2 of this ~~Draft~~ Final EA. A table summarizing all the potential impacts and proposed mitigation for each resource area discussed below is included in Attachment B to this document.

The reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy are analyzed in a programmatic manner for several reasons: (1) any individual action or activity would be carried out under the same authorizing regulatory authority; (2) the reasonably foreseeable compliance responses would result in generally similar environmental effects that can be mitigated in similar ways (Title 14 CCR Section 15168(a)(4)); and (3) while the types of foreseeable compliance responses can be reasonably predicted, the specific location, design, and setting of the potential actions cannot feasibly be known at this time. If a later activity would have environmental effects that are not examined within this ~~Draft~~ Final EA, the public agency with authority over the later activity may be required to conduct additional environmental review as required by CEQA or other applicable law.

The analysis is based on reasonably foreseeable compliance responses that are based on a set of reasonable assumptions. While the compliance responses described in this ~~Draft~~ Final EA are not the only conceivable ones, they provide a credible basis for impact conclusions that are consistent with available evidence. And, as discussed in this ~~Draft~~ Final EA Chapter 2, the evaluation of certain compliance responses would be speculative under CEQA. CEQA does not require evaluation of speculative impacts (Title 14 CCR Section 15145). For that reason, an evaluation of effects of these responses are not required and is not included in this analysis. The analysis also includes actions that could likely occur under a broad range of the potential scenarios. The impact discussions reflect a conservative assessment to describe the type and magnitude of effects that may occur (i.e., the conclusions tend to overstate adverse effects) because the specific location, extent, and design of potential new and/or modified facilities cannot be known at this time.

1. Adverse Environmental Impacts

The potentially significant adverse impacts on the environment discussed in this ~~Draft~~ Final EA, and significance determinations for those effects, reflect the programmatic nature of the reasonably foreseeable compliance responses of the regulated entities. These reasonably foreseeable compliance responses are described in more detail in Chapter 2 (Project Description) of this ~~Draft~~ Final EA. The ~~Draft~~ Final EA addresses broadly defined types of impacts or actions that may be taken by others in the future as a result of implementation of the 2022 State SIP Strategy.

This ~~Draft~~ Final EA takes a conservative approach and considers some environmental impacts as potentially significant because of the inherent uncertainties in the relationship between physical actions that are reasonably foreseeable under the 2022 State SIP Strategy and environmentally sensitive resources or conditions that may be affected. This conservative approach tends to overstate environmental impacts in light of these uncertainties and is intended to satisfy the good-faith, full-disclosure intention of CEQA. If and when specific projects are proposed and subjected to project-level environmental review, it is expected that many of the impacts recognized as potentially significant in this ~~Draft~~ Final EA can actually be avoided or reduced to a less than significant level.

Where applicable, consistent with CARB's certified regulatory program requirements (Title 17 CCR Section 60004.2), this ~~Draft~~ Final EA also acknowledges potential beneficial effects on the environment in each resource area that may result from implementation of the 2022 State SIP Strategy. Any beneficial impacts associated with the 2022 State SIP Strategy are included in the impact analysis for each resource area listed below.

Notably, the compliance responses evaluated herein include the potential for increased mining of various metals and other natural resources that currently are used in zero-emission battery technology. Common metals used in electric vehicle batteries include, but are not limited to, lithium, graphite, cobalt, nickel, copper, manganese, copper, chromium, zinc, and aluminum. Additionally, the production of hydrogen fuel cells commonly requires the use of platinum. CARB does not intend to limit the types of batteries that may be used to comply with zero-emission vehicle requirements under the 2022 State SIP Strategy and recognizes that future zero-emission technologies may be developed that utilize other minerals, metals, or resources. However, this ~~Draft~~ Final EA does not attempt to capture the potential effects of mining the gamut of existing and potential battery materials as it is not reasonably foreseeable how these minerals, metals, and resources will be developed for use in the coming years. Nevertheless, this ~~Draft~~ Final EA makes a good faith effort to disclose potentially adverse environmental effects of increased mining activity. Notably, of the aforementioned metals (i.e., lithium, graphite, cobalt, nickel, copper, manganese, copper, chromium, zinc, aluminum, and platinum), lithium is typically mined using brine mining, whereas the other metals are harvested using more traditional hard rock mining techniques. Where appropriate, the environmental impacts associated with brining mining are disclosed, as well as the

environmental impacts of hard rock mining, which is intended to capture impacts associated with increased mining of these metals (i.e., graphite, cobalt, nickel, copper, manganese, copper, chromium, zinc, and aluminum).

2. Mitigation Measures

The ~~Draft~~ Final EA contains a degree of uncertainty regarding implementation of feasible mitigation for potentially significant impacts. "'Feasible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." (Cal. Public Resources Code, section 21061.1) While CARB is responsible for adopting the 2022 State SIP Strategy, it does not have authority over all the potential infrastructure and development projects that could be carried out in response to the 2022 State SIP Strategy. Other agencies are responsible for the review and approval, including any required environmental analysis, of any facilities and infrastructure that are reasonably foreseeable, including any definition and adoption of feasible project-specific mitigation measures, and any monitoring of mitigation implementation. For example, local cities or counties must review and decide to approve proposals to construct new facilities; CARB does not have jurisdiction over land use permitting of any potential development associated with the compliance responses, such as new manufacturing or recycling facilities. (Cal. Const., Article XI, section 7 ["A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws."]; *California Building Industry Assn. v. City of San Jose* (2015) 61 Cal.4th 435, 455; *Big Creek Lumber Co. v. County of Santa Cruz* (2006) 38 Cal.4th 1139, 1151-1152; Health and Safety Code, sections 39000-44474 [CARB's statutory authority provides no authority to regulate local land use permitting].) Additionally, State and/or federal permits may be needed for specific environmental resource impacts, such as take of endangered species, filling of wetlands, and streambed alteration.

Because CARB cannot predict the location, design, or setting of specific projects that may result and does not have authority over implementation of development that may occur, the programmatic analysis in the ~~Draft~~ Final EA does not allow for identification of the precise details of project-specific mitigation. As a result, there is inherent uncertainty in the degree of feasible mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in the ~~Draft~~ Final EA.

Given the foregoing, and due to legal factors affecting the feasibility of CARB's proposed mitigation for several of the identified potential significant indirect impacts associated with the 2022 State SIP Strategy, CARB's implementation of the identified mitigation measures is infeasible, based on the following: 1) the lack of certainty of the scope, siting and specific design details of compliance-response development projects, which prevents CARB from being able to determine the projects' significant environmental impacts; and 2) even there was certainty with respect to compliance-response development projects and associated significant environmental impacts,

CARB lacks the legal authority and jurisdiction to permit these projects, which, inherently, prevents CARB from legally imposing any enforceable mitigation measures on the projects. Therefore, while the mitigation measures identified below in this EA are considered by CARB to be feasible to implement, CARB cannot legally enforce them.

Consequently, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusions (i.e., tending to overstate the risk that feasible mitigation may not be sufficient to mitigate an impact to less than significant) and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable, where appropriate, due to the lack of jurisdiction by the lead agency to enforce the mitigation measures. It is also possible that the amount of mitigation necessary to reduce environmental impacts to below a significant level may be far less than disclosed in this ~~Draft~~ Final EA on a case-by-case basis. It is expected that many potentially significant impacts of facility and infrastructure projects would be avoidable or mitigatable to a less than significant level as an outcome of their project-specific environmental review processes, conducted by the appropriate permitting agency with jurisdiction as the lead agency under CEQA.

B. Resource Area Impacts and Mitigation Measures

The following discussion provides a programmatic analysis of the reasonably foreseeable compliance responses that could result from implementation of the 2022 State SIP Strategy, described in Chapter 2 of this ~~Draft~~ Final EA. These impacts are discussed under each environmental resource area in accordance with the topics presented in the Environmental Checklist in Appendix G to the CEQA Guidelines (Title 14 CCR Section 15000 et. seq). These impact discussions are followed by the types of mitigation measures that could be required to reduce potentially significant environmental impacts.

1. Aesthetics

Landscape character can be defined as the visual and cultural image of a geographic area. It consists of the combination of physical, biological, and cultural attributes that make each landscape identifiable or unique. Visual character may range from predominately natural to heavily influenced by human development. Its value is related, in part, to the importance of a site to those who view it. Viewer groups typically include residents, motorists, and recreation users.

Impact 1-1: Short-Term Construction-Related and Long-Term Operational-Related Effects on Aesthetics

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste

to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Short-term construction-related activities associated with the reasonably foreseeable compliance responses would involve typical off-road construction equipment (e.g., backhoes, graders, dozers) and on-road heavy duty vehicles for transport of materials to and from construction sites. Earth moving, paving, or other activities could create temporary mounds or piles of dirt or require staging areas where materials or equipment would be temporarily stored. Depending on the hours when construction is conducted, sources of glare or lighting could be present. Although there is uncertainty regarding the locations of these activities, scenic vistas or views from a State scenic highway could be degraded by the presence of heavy duty equipment, glare, lighting, or disturbed earth.

Although it is reasonably foreseeable that activities associated with new or modified facilities could occur, there is uncertainty as to the exact location or character of any new facilities or modification of existing facilities. Some of the reasonably foreseeable compliance responses could be accomplished with minimal ground-disturbing activity or other changes to the existing visual setting. For instance, increased recycling and refurbishment of batteries could be performed within existing recycling centers that undergo internal retrofitting. The outward appearance of such facilities would not require physical modifications that could degrade the visual character or quality of the surrounding area. Thus, visual impacts would not be substantial in these cases.

Development of new facilities for the manufacture of zero- and near-zero emission vehicle-related equipment and infrastructure would be expected to occur in areas appropriately zoned; however, such facilities could conceivably introduce or increase the presence of visible artificial elements (e.g., heavy-duty equipment, new or expanded buildings, electric charging and hydrogen fueling stations) in areas of scenic importance, such as visibility from State scenic highways. The visual impact of such development would depend on several variables, including the type and size of facilities, distance and angle of view, visual prominence (including presence of visual obstructions), and placement in the landscape. In addition, facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime lighting for safety and security purposes. These types of impacts could result in significant effects on aesthetic resources.

Increased use of zero- and near-zero emission vehicles and technology could produce additional demand for batteries, such as lithium-ion batteries, resulting in increased demand for lithium and other rare earth metals. Worldwide, the majority (80 to 90 percent) of raw lithium is currently mined and exported from Australia, Chile, Argentina, and Bolivia. Lithium and other rare earth metals are typically derived from hard rock mining practices or, for lithium specifically, from brine extraction. Hard rock mining

requires the use of heavy-duty equipment (e.g., crushers, rigs, loaders, cutting equipment, cranes) and could result in harmful visual changes to the natural environment such as hillside erosion, contamination of surface waters, artificial drainage patterns, subsidence, night-time lighting, and deforestation. In contrast, brine extract, which occurs in Chile, Argentina, Bolivia, and now in the Salton Sea in California, involves vertical pumping of brine, which evaporates to form brown and white cones of salt minerals. It is reasonably foreseeable that increased demand for rare earth metals could cause these types of adverse visual effects in areas where hard rock mining and brine extraction activities (Chile, Argentina, Bolivia, and California) occur.

The reasonably foreseeable compliance responses could also result in accelerated turnover of lithium-ion and nickel-metal hydride (NiMH) batteries, locomotive, water vessel, drayage trucks, and cargo handling equipment, which could place additional demand such that existing recycling facilities would need to be expanded or modified. Modifications to existing recycling centers could occur within the confines of such facilities and, therefore, would not result in additions of off-site equipment that would degrade visual quality; however, development of new facilities, although expected to occur in areas appropriately zoned, could result in or increase the presence of visible human-made elements (e.g., heavy-duty trucks, new structures) in areas of scenic importance. There is uncertainty surrounding the specific locations of new recycling facilities; therefore, adverse effects to scenic vistas or views from a State scenic highway could occur. Further, sources of daytime glare and nighttime lighting associated with these facilities could be introduced.

Therefore, short-term construction-related and long-term operational-related effects to aesthetics associated with implementation of the 2022 State SIP Strategy would be potentially significant.

Potential scenic, glare, and lighting impacts could be reduced to a less than significant level by mitigation measures prescribed by local, State, federal, or other land use or permitting agencies (either in the U.S. or abroad) with approval authority over the development projects.

Mitigation Measure 1-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to visual resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to aesthetic resources include:

- Proponents of new development and new facilities and structures constructed will submit applications to State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents will implement all feasible mitigation to reduce or substantially lessen the potentially significant scenic or aesthetic impacts of the project.
- To the extent feasible, the sites selected for use as construction staging and laydown areas shall be areas that are already disturbed and/or are in locations of low visual sensitivity. Where feasible, construction staging and laydown areas for equipment, personal vehicles, and material storage would be sited to take advantage of natural screening opportunities provided by existing structures, topography, and/or vegetation. Temporary visual screens would be used where helpful if existing landscape features did not screen views of the areas.
- All construction and maintenance areas shall be kept clean and tidy, including the re-vegetation of disturbed soil. Storage of construction materials and equipment shall be screened from view and/or generally not visible to the public, where feasible.
- Siting projects and their associated elements next to important scenic landscape features or in a setting for observation from State scenic highways, national historic sites, national trails, and cultural resources shall be avoided to the greatest extent feasible.
- The project proponent shall contact the lead agency to discuss the documentation required in a lighting mitigation plan, submit to the lead agency a plan describing the measures that demonstrate compliance with lighting requirements, and notify the lead agency that the lighting has been completed and is ready for inspection.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 1-1, it is possible that significant impacts on aesthetics could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related and long-term operational-related scenic and nighttime lighting effects resulting from the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

2. Agricultural and Forestry Resources

Impact 2-1: Short-Term Construction-Related and Long-Term Operation-Related Effects on Agriculture and Forestry Resources

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Short-term construction-related and long-term operational impacts on agriculture and forestry resources may occur. New or expanded manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, other electricity generation facilities, and infrastructure, as well as increased mining would likely occur in areas of compatible zoning (e.g., industrial). While it is reasonable to anticipate that land use policies controlling the location of new facilities would generally avoid conversion of important agricultural land, the potential cannot be entirely dismissed. Thus, there exists the potential that Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Williamson Act conservation contracts, and forest land or timberlands could be converted to industrial uses.

Increased demand for lithium-ion and NiMH batteries could place additional demand on lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, and aluminum ore extraction internationally. Lithium ore derived from brines typically occurs within desert areas, which are generally not considered valuable land for agricultural or forestry practices; however, lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, and aluminum ore extracted from hard rock mining could result in the loss of agricultural and forest lands of importance if resources are identified on land used for agriculture or forestry. Similar to lithium-ion batteries, an increase in demand for fuel cells could result in platinum mining and exports from source countries or other states.

Increased use of alternative fuels, fuel cells, and lithium-ion and NiMH batteries, could require infrastructure that may be in areas with agriculture or forestry resources. New facilities for the production and distribution of alternative fuels would be expected to occur in areas appropriately zoned; however, such facilities could conceivably be introduced in areas with agricultural uses or in forested areas and may require either temporary or permanent conversion of these resources. These types of impacts could result in significant effects on agriculture and forestry resources.

Mitigation Measure 2-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to agriculture and forestry resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts on agriculture and forestry resources include:

- Proponents of new or modified facilities constructed because of reasonably foreseeable compliance responses would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. Because CARB has no land use authority, mitigation is not within its purview to reduce potentially significant impacts to less-than-significant levels. Any mitigation specifically required for a new or modified facility would be determined by the local lead agency and future environmental documents by local and State lead agencies should include analysis of the following:
    - Avoid lands designated as Important Farmland (State defined Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) as defined by the Farmland Mapping and Monitoring Program. Before converting Important Farmland to non-agricultural use, analyze the feasibility of using farmland that is not designated as Important Farmland (e.g., through clustering or design change to avoid Farmland) prior to deciding on the conversion of Important Farmland.
    - Avoid lands designated as forest land or timberland before converting forestland or timberland to non-forest use, analyze the feasibility of using other lands prior to deciding on the conversion of forest land or timberland.
    - Any mitigation for permanent conversion of Important Farmland caused by facility construction or modification shall be completed prior to the issuance of a grading or building permit by providing the permitting agency with written evidence of completion of the mitigation. Mitigation may include but is not limited to:

  - Restore agricultural land to productive use through removal of equipment or structures or other means, such that the land can be designated as Farmland.
  - If restoration is not feasible, permanently preserve off-site Important Farmland of equal or better agricultural quality, at a ratio of at least 1:1. Preservation may include the purchase of agricultural conservation easement(s); purchase of credits from an established agricultural farmland mitigation bank; contribution of agricultural land or equivalent funding to an organization that provides for the preservation of Important Farmland.
  - Participate in any agricultural land mitigation program, including local government maintained or administered, that provides equal or more effective mitigation than the measures listed.

- Any mitigation for permanent conversion of forest land or timberland caused by facility construction or modification shall be completed prior to the issuance of a grading or building permit by providing the permitting agency with written evidence of completion of the mitigation. Mitigation may include but is not limited to permanent preservation of forest land or timberland of equal or better quality at a ratio of 1:1 or 1.5:1 because some lost ecological value may not be replaceable. Preservation may include purchase of easements or contribution of funds to a land trust or other agency.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 2-1, it is possible that significant impacts resulting from conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Williamson Act conservation contracts, and forest land or timberlands could still occur.

Consequently, while impacts could likely be reduced to some degree (although not to a less than significant level if Important Farmland were converted) with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related and long-term operational impacts on agriculture and forestry resources associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

3. Air Quality

Impact 3-1: Short-Term Construction-Related Effects on Air Quality

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Implementation of the 2022 SIP Strategy could include construction of new zero- and near-zero emission infrastructure or modifications to existing facilities. Any proposed modifications to facilities resulting from any of the 2022 State SIP Strategy measures would require approvals from the applicable local or State land use authority prior to their implementation. Part of the development review and approval process for projects located in California requires environmental review consistent with California environmental laws (e.g., CEQA) and other applicable local requirements (e.g., local air quality district rules and regulations). The environmental review process would include an assessment of whether implementation of such projects could result in short-term construction-related air quality impacts.

At this time, the specific location, type, and number of construction activities are not known and would be dependent upon a variety of factors that are not within the control or authority of CARB and not within its purview. Thus, CARB has not quantified the potential construction-related emission impacts as these would be too speculative to provide a meaningful evaluation. Nonetheless, the analysis presented herein provides a good-faith disclosure of the general types of construction emission impacts that could occur with implementation of these reasonably foreseeable compliance responses. Further, subsequent environmental review would be conducted at such time that an individual project is proposed, and land use or construction approvals are sought.

Generally, it is expected that during the construction phase for any facilities, criteria air pollutants and toxic air contaminants (TACs) could be generated from a variety of activities and emission sources. These emissions would be temporary and occur intermittently depending on the intensity of construction on a given day. Site grading and excavation activities would generate fugitive particulate matter (PM) dust emissions, which is the primary pollutant of concern during construction. Fugitive PM dust emissions (e.g., respirable particulate matter [PM_{10}] and fine particulate matter [$PM_{2.5}$]) vary as a function of several parameters, such as soil silt content and moisture, wind speed, acreage of disturbance area, and the intensity of activity performed with construction equipment. Exhaust emissions from off-road construction equipment,

material delivery trips, and construction worker-commute trips could also contribute to short-term increases in PM emissions, but to a lesser extent. It is probable that transport of light equipment and personnel for construction activities would take place using light duty trucks, while transport of heavy equipment or bulk materials would be hauled in heavy-duty trucks. Exhaust emissions from construction-related mobile sources also include reactive organic gases (ROG) and oxides of nitrogen (NO_X). These emission types and associated levels fluctuate greatly depending on the type, number, and duration of usage for the varying equipment. CARB implements several regulations with the purpose of reducing NO_X, PM, and imposing limits on idling from in-use vehicles and equipment - the Truck and Bus Regulation, the Regulation for In-Use Off-Road Diesel Fueled Fleets, and the Portable Engine Airborne Toxic Control Measure. Much of the equipment used during the construction phase would be subject to these regulations.

The site preparation phase of construction typically generates the most substantial emission levels because of the on-site equipment and ground-disturbing activities associated with grading, compacting, and excavation. Site preparation equipment and activities typically include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Although detailed construction information is not available at this time, based on the types of activities that could be conducted, it would be expected that the primary sources of construction-related emissions include soil disturbance- and equipment related activities (e.g., use of backhoes, bulldozers, excavators, and other related equipment). Based on typical emission rates and other parameters for above mentioned equipment and activities, construction activities could result in hundreds of pounds of daily NO_X and PM emissions (amount generated from two to four pieces of heavy-duty equipment working eight hours per day), which may exceed general mass emissions limits of a local or regional air quality management district depending on the location of the emissions. Thus, implementation of new, or amended, regulations and/or incentives could generate levels that conflict with applicable air quality plans, exceed or contribute substantially to an existing or projected exceedance of State or national ambient air quality standards, or expose sensitive receptors to substantial pollutant concentrations.

Construction of projects may generate short-term odors from the use of diesel-powered construction equipment; however, the duration of these emissions would likely be short-term in nature and would produce localized impacts. The extent of the significance of these impacts would be determined by the proximity of a project to sensitive receptors and the duration of construction schedule. If future construction activities would be located near the locations of sensitive receptors, construction-related odor impacts would be potentially significant.

As a result, short-term construction-related air quality impacts associated with some of the 2022 SIP Strategy measures would be potentially significant.

Mitigation Measure 3-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to air quality. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would typically qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to air quality include the following:

- Proponents of new or modified facilities or infrastructure constructed as a result of reasonably foreseeable compliance responses would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents shall implement all feasible mitigation to reduce or substantially lessen the potentially significant air quality impacts of the project.
- Project proponents shall apply for, secure, and comply with all appropriate air quality permits for project construction from the local agencies with air quality jurisdiction and from other applicable agencies, if appropriate, prior to construction mobilization.
- Project proponents shall comply with the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA) (e.g., New Source Review and Best Available Control Technology criteria), if applicable.
- Project proponents shall comply with local plans, policies, ordinances, rules, and regulations regarding air quality-related emissions and associated exposure (e.g., construction-related fugitive PM dust regulations, indirect source review, and payment into offsite mitigation funds).
- For projects located in PM nonattainment areas, project proponents shall prepare and comply with a dust abatement plan that addresses emissions of fugitive dust during construction and operation of the project.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 3-1, it is possible that significant impacts on air quality resources could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related air quality effects resulting from compliance responses associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

Impact 3-2: Long-Term Operational-Related Effects on Air Quality

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Increased demand for lithium-ion and NiMH based batteries could increase the need for manufacturing, refurbishing, and recycling facilities domestically and abroad, which may require modifications to or construction of new facilities. Increased use of lithium and NiMH batteries could also increase lithium, graphite, nickel, cobalt, manganese, copper, chromium, zinc, and aluminum mining and exports from countries with raw mineral supplies. Some lithium demand may be met domestically; additionally, as discussed under Impact 12-1, "Short-Term Construction-Related and Long-Term Operation-Related Effects to Mineral Resources," some nickel demand could be met domestically; however, the majority of nickel production is produced outside of the United States. Additionally, the majority of cobalt is mined outside of the United States.

It is possible that compliance responses may contribute at some level to demand for fuel cells, which could result in platinum mining and exports from source countries or other states and increased recycling, refurbishment, or disposal of hydrogen fuel cells. The movement of lithium, nickel, cobalt, and platinum domestically and worldwide would generate emissions from vehicle and vessel movement that ship and distribute resources to global manufacturing facilities. Additionally, the mining of these resources would require the use of heavy equipment, which would likely be powered by diesel fuel. However, these materials would ultimately offset the combustion of gasoline, diesel, and other fossil fuels, reducing associated emissions.

The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they can be unpleasant and lead to distress among the public and generate citizen complaints to local governments and regulatory agencies. Land uses commonly considered to be potential sources of odorous emissions include wastewater treatment

plants, sanitary landfills, food processing facilities, chemical manufacturing plants, rendering plants, paint/coating operations, and agricultural feedlots and dairies.

The project could result in the development of industrial land uses that could be a source of odors. However, the actual uses that would be developed are not known at this time, as no specific development projects are currently proposed. For this reason, the degree of impact with respect to potential odors associated with future projects and their effects on adjacent receptors is uncertain. It would be expected that any future sources of odors would be governed by applicable nuisance rules by a local air district; however, CARB cannot ensure that these rules would be applied uniformly such that odor impacts would be avoided.

Despite the dramatic emission reductions and air quality improvements achieved to date, areas of California, including the South Coast Air Basin in Southern California and the San Joaquin Valley, continue to exceed the NAAQS and the California Ambient Air Quality Standards (CAAQS) for PM_{10}, $PM_{2.5}$, and ozone. The 2022 State SIP Strategy would result in the increased electrification of the state's on- and off-road fleets. The electricity needed to power ZEV and PHEVs can be provided by California's electricity grid or a compliant distributed generation power source. Air pollutant emissions associated with producing electricity for ZEV and PHEVs will vary depending on the relative shares of zero/low-emission sources (e.g., hydro, wind, solar) and higher emission sources (e.g., coal- and natural gas -fired power plants) that are used. The relative shares of fuel sources will change over time (and even vary hour-to-hour depending on electricity demand and time of a day).

California's Renewable Portfolio Standard (RPS), which was established by legislation enacted in 2002 and its most recent targets were set by Senate Bill (SB) 100, requires that California's load-serving entities to procure 60 percent of their retail electricity from eligible renewable sources by 2030. The RPS also established interim targets for utilities as shown below.

- 33 percent of retail sales by December 31, 2020;
- 44 percent of retail sales by December 31, 2024;
- 52 percent of retail sales by December 31, 2027; and
- 60 percent of retail sales by December 31, 2030.[1]

As mentioned in Section 1 of SB 100, "The 100 Percent Clean Energy Act of 2018" California aims for 100 percent of total retail sales of electricity in California to come

[1] California Energy Commission, Renewables Portfolio Standard- Verification and Compliance, last accessed March 17, 2022, https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard.

from eligible renewable energy resources and zero-carbon resources by December 31, 2045.[2]

According to the California Energy Commission, in 2020, 36 percent of all California consumed electricity was sourced from renewable power.[3] As grid power electricity becomes cleaner over time to meet the RPS targets, emission reductions from use of electricity compared to ICEs will shift accordingly. As such, a shift to ZEV and PHEVs from fossil-fuel ICEs would yield increasing operational air quality benefits over time as the State's electrical grid becomes more renewable pursuant to the RPS. Over the time the 2022 State SIP Strategy is implemented, emissions would continue to decrease, relative to existing conditions.

The main purpose of the 2022 State SIP Strategy is to reduce mobile source emissions of criteria air pollutants to improve air quality and attain the NAAQS. Statewide, implementation of the 2022 State SIP Strategy is anticipated to result in statewide emissions reductions of ~~174~~ 205 tons per day NOx and ~~38~~ 40 tons per day ROG when compared to baseline levels in 2021.

Overall, the 2022 State SIP Strategy is expected to considerably reduce emissions across the state, as set forth in detail in the Staff Report and in this EA. These emissions reductions would lead to substantial net improved health outcomes across the state, as described in the Staff Report.

Implementation of the 2022 State SIP Strategy would minimize criteria air pollution to meet the NAAQS and CAAQS both regionally and statewide. As discussed in detail in the Staff Report, emission reductions resulting from the implementation of the 2022 State SIP Strategy are expected to far outweigh any long-term operational-related emissions increases and would result in high net positive overall health benefits over the life of the 2022 State SIP Strategy.

For these reasons, long-term operational-related air quality impacts would be **beneficial.**

4. Biological Resources

Impact 4-1: Short-Term Construction-Related Effects on Biological Resources

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced

[2] Senate Bill No. 100, California Renewables Portfolio Standard Program: emissions of greenhouse gases, 2018, last accessed March 17, 2022, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100.

[3] California Energy Commission, Tracking Progress, February 2020, last accessed March 17, 2022, https://www.energy.ca.gov/sites/default/files/2019-12/renewable_ada.pdf.

extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Short-term construction-related impacts on biological resources may occur. Construction of manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, other electricity generation facilities, and infrastructure, as well as increased brine and hard rock mining would result in ground disturbance that could adversely affect biological resources, and the biological resources affected would depend on the specific location of the compliance responses. These impacts would occur from modifications to existing habitat including the removal, degradation, and fragmentation of riparian systems, wetlands, and/or other sensitive natural wildlife habitats and plant communities; interference with wildlife movement or wildlife nursery sites; loss of or disturbance to special-status species; and/or conflicts with local ordinances or the provisions of adopted habitat conservation plans, natural community conservation plans, or other conservation plans or policies to protect natural resources.

New or expanded manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, other electricity generation facilities, and infrastructure, as well as increased mining would likely occur in areas of compatible zoning (e.g., industrial). While it is reasonable to anticipate that land use policies controlling the location of new industrial facilities would generally avoid conversion of wildlife habitat, the potential cannot be entirely dismissed. Additionally, there are some plant and animal species that occur in developed or disturbed areas and impacts on these species would not be entirely avoided through siting project construction in industrial areas. Direct mortality of individual plants and animals could result from destruction of dens, burrows, or nests through ground compaction, ground disturbance, debris, or vegetation removal. Construction noise disturbance could cause nest or den abandonment and loss of reproductive or foraging potential around the site during construction, transportation, or destruction of equipment and existing structures. Short-term construction-related impacts on biological resources would be potentially significant.

Increased brine mining for lithium would include expansion of existing extraction facilities or construction of new facilities in the Salton Sea area. The Salton Sea is an important feeding grounds for more than 400 species of birds including waterfowl and shorebirds during annual migration and several bird species also use the area for breeding (USFWS 2021). Nesting native bird species are protected under the Migratory Bird Treaty Act and California bird protection statutes (Fish and Game Code, sections 3503, 3503.5, 3513). Impacts on nesting or foraging birds in the Salton Sea area would

be similar to those described above but the magnitude of these impacts may be greater due to the high concentrations of birds at the Salton Sea.

In summary, implementation and compliance with the 2022 State SIP Strategy could result in potentially significant impacts on biological resources. Depending on the regulatory status of the species (e.g., listed as endangered under the federal or state Endangered Species Acts), and the nature of the habitat disturbance, compliance with permitting requirements under the National Environmental Policy Act, the federal or state Endangered Species Act, Migratory Bird Treaty Act, Clean Water Act Section 404, California Fish and Game Code, or related state or local laws would be required. It is expected that potential impacts on special-status species and sensitive habitats would be minimized through compliance with the aforementioned protective regulations; however, the terms of permits obtained under these regulations are unknown as are the precise locations at which construction work would occur. Moreover, it is beyond the authority of CARB to enforce such compliance. Therefore, short-term construction-related biological resources impacts would be potentially significant.

Mitigation Measure 4-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to biological resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts on biological resources include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant impacts on biological resources associated with the project.
- Actions required to mitigate potentially significant biological impacts may include the following; however, any mitigation specifically required for a new or modified facilities or other activities would be determined by the local lead agency:
    - Retain a qualified biologist to prepare a biological inventory of site

resources prior to ground disturbance or construction. If protected species or their habitats are present, comply with applicable federal and State endangered species acts and regulations. Construction and operational planning will require that important fish or wildlife movement corridors or nursery sites are not impeded by project activities.

- Retain a qualified biologist to prepare a delineation of onsite state or federally protected wetlands or other sensitive habitats (e.g., riparian habitat, sensitive natural communities). This survey shall be used to establish setbacks and prohibit disturbance of riparian habitats, streams, intermittent and ephemeral drainages, and other wetlands. Wetland delineation is required by Section 404 of the Clean Water Act and is administered by the U.S. Army Corps of Engineers.
- Prohibit construction activities during the rainy season with requirements for seasonal weatherization and implementation of erosion prevention practices.
- Prohibit construction activities in the vicinity of raptor nests during nesting season or establish protective buffers and provide monitoring, as needed, to address project activities that could cause an active nest to fail.
- Prepare site design and development plans that avoid or minimize disturbance of habitat and wildlife resources, and prevent stormwater discharge that could contribute to sedimentation and degradation of local waterways. Depending on disturbance size and location, a National Pollution Discharge Elimination System (NPDES) construction permit may be required from the California State Water Resources Control Board.
- Prepare spill prevention and emergency response plans, and hazardous waste disposal plans as appropriate to protect against the inadvertent release of potentially toxic materials.
- Plant replacement trees and establish permanent protection suitable habitat at ratios considered acceptable to comply with "no net loss" requirements.
- Contractor will keep the site and materials organized and store them in a way to prevent attracting wildlife by not creating places for wildlife to hide or nest (e.g., capping pipes, covering trashcans and emptying trash receptacles consistently and promptly when full).

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant

impacts. Although unlikely after implementation of Mitigation Measure 4-1, it is possible that significant impacts on biological resources could still occur.

Consequently, while impacts could likely be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related impacts on biological resources associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

Impact 4-2: Long-Term Operation-Related Effects on Biological Resources

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Anticipated operation-related impacts on biological resources from the reasonably foreseeable compliance responses listed above would likely occur primarily from operation of new facilities and increased mining activity associated with increased demand for lithium-ion and NiMH batteries. Long-term operation of manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, and other electricity generation facilities, would often include the presence of workers; movement of automobiles, trucks, and heavy-duty equipment; and operation of stationary equipment. This environment would generally not be conducive to the presence of biological resources located on-site or nearby. For example, operation of a new facility could deter wildlife from the surrounding habitat or could impede wildlife movement through the area. As is already the case with these facilities, this impact would be substantial if there is not adequate habitat nearby. Vegetation management may be necessary to comply with fire codes and defensible space requirements, which may require tree trimming and other habitat modification that could, for example, result in species mortality or nest failure. Furthermore, operation of facilities could result in the accidental introduction of hazardous substances to the environment which could adversely affect biological resources.

While increased mining activity would include methods with relatively small environmental footprints, hard rock and continental brine mining activities would directly alter the character of a sensitive habitat that may support special-status species

or serve as a wildlife corridor. Impacts could include reduction in habitat, loss of special-status species, water contamination, and conflict with a habitat conservation plan or natural community conservation plan. Long-term operational impacts on biological resources associated with the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 4-2

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to biological resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts on biological resources include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant impacts on biological resources associated with the project. The definition of actions required to mitigate potentially significant biological impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.
    - Prohibit vegetation management activities in the vicinity of raptor nests during nesting season or establish protective buffers and provide monitoring as needed to ensure that project activity does not cause an active nest to fail.
    - Maintain site design and development plan features that avoid or minimize disturbance of habitat and wildlife resources and prevent stormwater discharge that could contribute to sedimentation and degradation of local waterways during project operation.
    - Maintain and replace, as needed, trees and permanently protected suitable habitat identified during the construction phase of the project.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the

programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 4-2, it is possible that significant impacts on biological resources could still occur.

Consequently, while impacts could likely be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational impacts on biological resources associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

5. Cultural Resources

Impact 5-1: Short-Term Construction-Related and Long-Term Operational Impacts on Cultural Resources

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

The 2022 State SIP Strategy could result in construction of manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, other electricity generation facilities, and infrastructure, as well as increased hard rock and brine mining, which would require construction and ground disturbance. In general, construction and ground disturbance activities would occur in areas of compatible zoning (e.g., industrial). Regardless, there is a possibility that these activities may occur in or adjacent to a region consisting of known significant prehistoric and/or historic-era cultural resources. Additionally, while it is reasonable to anticipate that land use policies controlling the location of new industrial facilities would generally avoid areas that have not been disturbed that are known to contain or known to likely contain significant cultural resources, these areas may not always be feasibly avoided. It is also possible that ground disturbance will damage previously unknown/undocumented cultural resources. As such, it is foreseeable that known and/or undocumented cultural or paleontological resources could be unearthed or otherwise discovered during ground-disturbing and construction activities. Unique archaeological

or historical resources might include stone tools, tool-making debris, stone milling tools, shell or bone items, and fire-affected rock or soil darkened by cultural activities. Paleontological resources include fossils. Historic materials might include metal, glass, or ceramic artifacts. Human remains could also be present outside of dedicated cemeteries. Finally, historic structures could be removed or damaged if present within or adjacent to a proposed construction site. Tribal cultural resources are addressed below in Section 18, "Tribal Cultural Resources."

Operation of facilities and infrastructure would not result in additional ground disturbance beyond that which occurred during construction and modification because operation activities would occur within the footprint of the constructed or modified facility. Therefore, most operational activities would not have the potential to affect archaeological, paleontological, or historical resources. Presence of new infrastructure may, however, change the visual setting of the surrounding area, which could adversely affect historic resources and districts with an important visual component. For example, although it is unlikely such a facility would be sited in a historic district, a new control system may not be consistent with the visual character of a historic district. As a result, operational impacts would be potentially significant.

Therefore, short-term construction-related and long-term operational-related impacts to cultural resources associated with implementation of the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 5-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to cultural resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to cultural resources include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement

all feasible mitigation to avoid, reduce or substantially lessen the potentially significant impacts on cultural resources associated with the project.

- Actions required to mitigate potentially significant cultural resources impacts may include the following; however, any mitigation specifically required for a modified facility would be determined by the local lead agency.
    - Retain the services of cultural resources specialists with training and background that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61.
    - In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find shall cease and a qualified cultural resource specialist (e.g., archaeologist, architectural historian, depending on the resource identified) meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period.
        - Seek guidance from the State and federal lead agencies, as appropriate, for coordination of Nation-to-Nation consultations with the Native American Tribes.
    - Regulated entities shall consult with lead agencies early in the planning process to identify the potential presence of cultural properties. The agencies shall provide the project developers with specific instruction on policies for compliance with the various laws and regulations governing cultural resources management, including coordination with regulatory agencies and Native American Tribes.
    - If a resource determined to be significant by the qualified archaeologist or architectural historian (i.e., because the find is determined to constitute either an historical resource, cultural resource, or a unique archaeological resource), the archaeologist shall work with the project proponent to avoid disturbance to the resource, and if complete avoidance is not possible, follow accepted professional standards in recording any find. Preservation in place is the preferred manner of mitigating impacts to archaeological sites. For historically significant structures, if avoidance is infeasible, an appropriate documentation plan (e.g., recordation consistent with Historic American Buildings Survey [HABS] Guidelines) shall be required.
    - Regulated entities shall define the area of potential effect (APE) for each project, which is the area where project construction and operation may directly or indirectly cause alterations in the character or use of historic properties. The APE shall include a reasonable construction buffer zone and laydown areas, access roads, and borrow areas, as well as a reasonable assessment of

areas subject to effects from visual, auditory, or atmospheric impacts, or impacts from increased access.

- Regulated entities shall retain the services of a paleontological resources specialist with training and background that conforms with the minimum qualifications for a vertebrate paleontologist as described in Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures, Society of Vertebrate Paleontology.[4]
- Regulated entities shall conduct initial scoping assessments to determine whether proposed construction activities, if any, could disturb formations that may contain important paleontological resources. Whenever possible, potential impacts to paleontological resources should be avoided by moving the site of construction or removing or reducing the need for surface disturbance. The scoping assessment shall be conducted by the qualified paleontological resources specialist in accordance with applicable agency requirements.
- If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity and within a reasonable buffer zone, shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code section 7050.5 and that code enforced for the duration of the project.
- The regulated entity's qualified paleontological resources specialist shall determine whether paleontological resources would likely be disturbed in a project area on the basis of the sedimentary context of the area and a records search for past paleontological finds in the area. The assessment may suggest areas of high known potential for containing resources. If the assessment is inconclusive a surface survey is recommended to determine the fossiliferous potential and extent of the pertinent sedimentary units within the project site. If the site contains areas of high potential for significant paleontological resources and avoidance is not possible, prepare a paleontological resources management and mitigation plan that addresses the following steps:
  - A preliminary survey (if not conducted earlier) and surface salvage prior to construction.
  - Physical and administrative protective measures and protocols such as halting work, to be implemented in the event of fossil discoveries.
  - Monitoring and salvage during excavation.

[4] Society of Vertebrate Paleontology, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, 2010, last accessed March 17, 2022, https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf.

- Specimen preparation.
- Identification, cataloging, curation, and storage.
- A final report of the findings and their significance.
- Choose sites that avoid areas of special scientific value.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 5-1, it is possible that significant impacts on cultural resources could still occur.

Consequently, while impacts could likely be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related and long-term operational impacts to cultural resources associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

6. Energy

Impact 6-1: Short-Term Construction-Related Impacts to Energy Resources

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Temporary increases in energy demand associated with new facilities would include fuels used during construction, and gas and electric demands. Typical earth-moving equipment that may be necessary for construction includes: graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. While energy would be required to complete construction for any new or modified facilities or infrastructure projects, it would be temporary and limited in magnitude such that a reasonable amount of energy would be expended.

While all aforementioned compliance responses would require the consumption of energy resources, these actions would enable the transition to zero-emission technologies to comply with the provisions of the 2022 State SIP Strategy and would not involve the wasteful or inefficient use of energy. A major objective of the 2022 State SIP Strategy is to reduce air pollution, toxic air contaminants, and GHG emissions in the long-term and would require some energy to construct the necessary infrastructure and technical components to support this objective. Therefore, while energy demand would increase during the construction of future projects in response to implementation of the 2022 State SIP Strategy, these energy expenditures would be necessary to facilitate the actions that would result in environmental benefits such as reduced air pollution and GHG emissions. Therefore, short-term energy consumption would not be considered unnecessary. Moreover, energy needed to power necessary equipment would not be anticipated to generate high electrical demand beyond baseline energy load, as construction contractors and managers typically manage fuel and energy costs and therefore do not typically allow for substantial fuel and other energy waste. Short-term construction-related energy impacts associated with the 2022 State SIP Strategy would be **less than significant**.

Impact 6-2: Long-Term Operational-Related Impacts to Energy Resources

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Utility service providers would provide the electricity to meet the demand generated from various measures covered under the 2022 State SIP Strategy, including those that directly result in the displacement of energy derived from the combustion of fossil fuels to electricity. The electrification of the various sectors affected by the 2022 State SIP Strategy could increase local and regional energy use. The level of energy demand generated from these actions, and the potential for a change in energy demand would be site-specific and dependent on the location and scale that the electrification of these sectors would occur. Where there are situations with substantial electrical loads, distributed generation resources, or lithium-ion storage batteries could be relied on during periods when total demand is high, and the energy grid is experiencing peak levels of demand.

The State's energy capacity is expected to increase as a result of a menu of GHG reducing regulations and policies. To meet the statewide targets of 1990 levels of GHG emissions by 2020 (i.e., AB 32) and 40 percent below 1990 levels of GHG emissions by

2030 (i.e., SB 32), reductions will need to be made from several sectors including the energy and mobile source sectors. Statewide regulations such as the ZEV Mandate, Advanced Clean Fleet Regulation, Advanced Clean Transit Regulation, and the Innovative Clean Transit (ICT) Regulation aim to achieve GHG reductions from the mobile source sector through the deployment of electric and zero and near-zero emission vehicles, which would replace vehicles powered by internal combustion engines. Utilities are working in coordination with the CPUC to fund infrastructure expansion projects to meet this future demand. CPUC is also responsible for regulating Electric Power Procurement and Generation and evaluates the necessity for additional power generation by California utilities in both the short and long term.

Additional energy capacity in the State would be achieved through improved energy efficiency, energy storage, demand response, and generation of renewable resources. The efficiency of new homes is continually improving through triennial updates to the Parts 6 and 11 of the Title 24 Building Standards Code (California Energy Code and California Green Building Standards Code), which achieve energy reductions through use of mandatory and prescriptive energy efficiency design features and green building practices. The California Energy Code is anticipated to trend towards decarbonization, or the elimination of on-site natural gas combustion to power stoves and water heaters consistent with the findings of the 2018 Integrated Energy Policy Report, which identifies carbonization of the building sector as a major policy shift that will assist the State in meeting its long-term GHG reduction goals (i.e., reducing GHG emissions by 80 percent of 1990 levels by 2050).

Moreover, as mandated by SB 100, the State's electrical utilities are legislatively required to procure 60 percent and 100 percent of their total energy supply from eligible renewable energy sources (i.e., solar, wind, geothermal, small-scale hydroelectric, and biomass) by 2030 and 2045, respectively. The abovementioned factors combine to expand the State's energy capacity as compared to previous years. For example, in-state energy capacity rose from 55,530 megawatts (MW) in 2001 to 82,323 MW in 2020, an increase of 48 percent. Additionally, as mentioned above, the California Energy Code is expected to increase the energy efficiency of buildings within the state, which would reduce energy demand generated by the building sector.

Operation of new or expanded facilities could result in an increase in vehicle mileage of workers and result in an increase in gasoline and diesel fuel consumption associated with worker commute trips. However, this increase in vehicle miles traveled (VMT) would facilitate meeting the goals and objectives of the 2022 State SIP Strategy, and would, therefore, not be considered unnecessary or wasteful.

Implementation of the 2022 State SIP Strategy could result in the increased use of alternative fuels such as LNG, which would displace diesel fuel currently used to power generators, engines, and other equipment. Appendix F of the CEQA Guidelines identifies the use of alternative fuels as a measure to reduce energy demand. Moreover, Appendix F also lists increased use of renewable energy as an appropriate strategy to mitigate energy impacts. Use of zero and near-zero emission technologies, as discussed

above, would divert energy from fossil fuel-powered systems and engines to electrical systems, which, as mandated by the renewable portfolio standard, will become increasingly more renewable in the coming years. Arguably, through the use of alternative fuels and an increasingly more renewable energy grid, implementation of the 2022 State SIP Strategy would improve the efficiency of energy usage across the State.

As such, implementation of the 2022 State SIP Strategy would not result in the wasteful, unnecessary, or inefficient use of energy. Thus, long-term operation-related energy impacts would be **less than significant.**

7. Geology and Soils

Impact 7-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts to Geology and Soils

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Although it is reasonably foreseeable that construction and operational activities could occur, there is uncertainty as to the exact location of any new facilities or modification of existing facilities. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Additional disturbance could result from the increased mineral ore extraction activities which would provide raw materials to these manufacturing facilities and energy projects. These activities would have the potential to result in adverse physical effects related to geology and soils, including rupture of a known earthquake fault, strong seismic ground shaking, liquefication, landslides, and erosion. (Note that paleontological resources are addressed above under Section 5 "Cultural Resources.")

New facilities could be in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that would be susceptible to soil compaction, soil erosion, and loss of topsoil during construction. The level of susceptibility varies by location. However, the specific design details, siting locations, and soil compaction and erosion hazards for manufacturing facilities are not known at this time and would be analyzed on a site-specific basis at the project level.

New facilities constructed as a result of implementation of the 2022 State SIP Strategy would be likely be located in industrial areas that would be serviced by a water utility and would have access to a sewer system and would therefore not be dependent on septic systems. Therefore, the potential for new facilities to be sited on soils incapable of supporting the use of septic systems or alternative wastewater disposal systems would be less than significant.

Short-term construction-related and long-term operational-related effects to geology and soils associated with the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 7-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to geology and soils. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize impacts to geology and soils include:

- Proponents of new or modified facilities constructed because of reasonably foreseeable compliance responses to new regulations would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents shall implement all mitigation measures identified in the environmental document to reduce or substantially lessen the environmental impacts related to seismic instability, fault rupture, soil erosion, landslides, loss of topsoil. The definition of actions required to mitigate potentially significant geology and soil impacts may include the following; however, any mitigation specifically required for a new or modified facility will be determined by the local lead agency.
    - Prior to the issuance of any development permits, proponents of new or modified facilities or infrastructure shall prepare a geotechnical investigation/study, which would include an evaluation of the depth to the water table, liquefaction potential, physical properties of subsurface soils including shrink-swell potential (expansion), soil resistivity, slope stability, mineral resources, and the presence of hazardous materials.
    - Proponents of new or modified facilities or infrastructure shall

provide a complete site grading plan, and drainage, erosion, and sediment control plan with applications to applicable lead agencies. Proponents will avoid locating facilities on steep slopes, in alluvial fans and other areas prone to landslides or flash floods, or with gullies or washes, as much as possible.

- Disturbed areas outside of the permanent construction footprint shall be stabilized or restored using techniques such as soil loosening, topsoil replacement, revegetation, and surface protection (i.e., mulching).

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 7-1, it is possible that significant impacts on geology and soils could still occur.

Consequently, while impacts could likely be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational impacts on geology and soils associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

8. Greenhouse Gas Emissions

Impact 8-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts to Greenhouse Gas Emissions

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Construction of facilities would require use of vehicles and equipment that would consume fuel and emit GHGs for construction activities, materials transport, and worker commutes. Construction-related GHG emissions would be temporary and last only for

the duration of construction. Local agencies, such as air pollution control districts, are generally charged with determining acceptable thresholds of GHG emissions, measured in metric tons of carbon dioxide equivalent per year ($MTCO_2e$/year). Quantification of short-term construction-related GHG emissions is generally based on a combination of methods, including the use of exhaust emission rates from emissions models, such as OFFROAD 2007 and EMFAC 2021. These models require consideration of assumptions, including construction timelines and energy demands (e.g., fuel and electricity).

Air districts differ in their treatment of construction emissions. For instance, the Sacramento Metropolitan Air Quality Management District recommends that construction emissions be compared to a bright-line threshold of significance of 1,100 $MTCO_2e$ per year.[5] Other air districts, such as the Bay Area Air Quality Management District, does not have a numerical threshold for assessing the significance of construction-generated GHG emissions.[6] Additionally, other air districts, such as the South Coast Air Quality Management District, recommend amortizing construction emissions over a 30-year period and adding these emissions to total operational emissions.[7]

The comparatively small level of GHG emissions related to construction and operation of facilities associated with the compliance responses, as described above, would be offset by the reductions in GHG emissions from the implementation of the 2022 State SIP Strategy. As a result, implementation of the proposed strategy would result in a **beneficial** impact to GHG emissions.

9. Hazards and Hazardous Materials

Impact 9-1: Short-Term Construction-Related Impacts Related to Hazards and Hazardous Materials

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and

[5] Sacramento Metropolitan Air Quality Management District. 2021. CEQA Guide. http://www.airquality.org/LandUseTransportation/Documents/Ch6GHG2-26-2021.pdf.
[6] Bay Area Air Quality Management District. 2017. CEQA Air Quality Guidelines. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.
[7] South Coast Air Quality Management District. 2008. Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf.

other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

The 2022 State SIP Strategy could require the construction of manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, other electricity generation facilities, and infrastructure, as well as increased brine and hard rock mining. Construction activities associated with these facilities and new infrastructure as well as increased mining activities may require the transport, use, and disposal of hazardous materials. Construction activities generally use heavy-duty equipment requiring periodic refueling and lubricating fluids. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site as they are not designed for use on public roadways. Thus, such maintenance uses a service vehicle that mobilizes to the location of the construction equipment. It is during the transfer of fuel that the potential for an accidental release is most likely. Although precautions would be taken to ensure that any spilled fuel is properly contained and disposed, and such spills are typically minor and localized to the immediate area of the fueling (or maintenance), the potential remains for a substantial release of hazardous materials into the environment. Therefore, short-term construction-related impacts to hazards and hazardous materials associated with the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 9-1

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, regulations, and policies related to hazards and hazardous materials. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with discretionary local land use and/or permitting authority. New or modified facilities in California could qualify as a "project" under CEQA. The jurisdiction with primary permitting authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation may be identified during the environmental review by agencies with discretionary project approval authority. Recognized practices that are routinely required to avoid upset and accident-related impacts include:

- Proponents of new or modified facilities constructed as a compliance response to the 2022 State SIP Strategy would coordinate with local land use agencies to seek entitlements for development, including the completion of all necessary environmental review requirements (e.g., CEQA). The local land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions

required to mitigate potentially significant upset and accident-related hazard impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

- Handling of potentially hazardous materials/wastes shall be performed by or under the direction of a licensed professional with the necessary experience and knowledge to oversee the proper identification, characterization, handling and disposal or recycling of the materials generated as a result of the project. As wastes are generated, they shall be placed, at the direction of the licensed professional, in designated areas that offer secure, secondary containment and/or protection from storm water runoff. Other forms of containment may include placing waste on plastic sheeting (and/or covering with same) or in steel bins or other suitable containers pending profiling and disposal or recycling.
- The temporary storage and handling of potentially hazardous materials/wastes shall be in areas away from sensitive receptors such as schools or residential areas. These areas shall be secured with chain-link fencing or similar barrier with controlled access to restrict casual contact from non-Project personnel. All project personnel that may encounter potentially hazardous materials/wastes shall have the appropriate health and safety training commensurate with the anticipated level of exposure.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 9-1, it is possible that significant impacts related to hazards and hazardous materials could still occur.

Consequently, while impacts could likely be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential short-term construction-related impacts regarding hazards and hazardous materials associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

Impact 9-2: Long-Term Operational Impacts Related to Hazards and Hazardous Materials

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in

mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

There could be an increase in use of facilities that manufacture, recycle, and refurbish batteries and fuel cells due to increased demand. While it is reasonable to anticipate that land use policies controlling the location of new industrial facilities would generally avoid locations near existing or proposed schools or airports, the potential cannot be entirely dismissed. Hazardous materials are used during and created by operations of such facilities. For example, smelting is used to recycle batteries and creates hazardous emissions, although those are generally treated. Chemical leaching processes uses chemicals such as hydrochloric acid and sulfuric acid.[8] These activities would be more likely to occur indoors in a contained area and with proper equipment, limiting the potential effects of spills and accidents as activities involving the use of hazardous materials would occur within the confines of facilities. Risk of outdoor release of hazardous materials would be highest during the movement of raw goods to manufacturing facilities or the export of finished goods containing hazardous materials following the manufacturing process. The transport, use, and disposal of hazardous materials would be required to comply with all applicable federal, State, and local laws that would reduce the potential for accidents and require certain actions should a spill or release occur; however, the potential remains for the release of hazardous materials into the environment.

Implementation of the 2022 State SIP Strategy could result in an increase in demand for lithium graphite, cobalt, nickel, copper, manganese, chromium, zinc, platinum, and aluminum mining. Mining of these metals is currently sourced from hard rock mining. Lithium ore from rock sources is primarily produced from spodumene, a lithium/aluminum/silicate mineral. Cobalt is generally obtained from the minerals cobaltite and smaltite (cobalt arsenide); other cobalt-bearing minerals include erythrite, glaucodot, and linnaeite (cobalt sulfide). Nickel is obtained from two main types of deposits from the mineral garnierite. Most of the world's copper comes from the minerals chalcopyrite and chalcocite. Manganese is present in many minerals, though generally obtained from the mineral pyrolusite and romanechite. Similar to manganese, chromium is found is several minerals, but most significantly in chromite. Zinc sulphide or sphalerite is the most common mineral containing zinc. Platinum is most commonly found in cooperite. The most common aluminum ore is found in bauxite. These minerals are typically harvested through the hard rock mining process, which can be hazardous

[8] Jacoby, It's Time to Get Serious About Recycling Lithium-Ion Batteries, July 14, 2019, last accessed March 17, 2022, https://cen.acs.org/materials/energy-storage/time-serious-recycling-lithium/97/i28.

to workers through the release of harmful constituents in additional to desired materials, such as asbestos, radioactive gases, arsenic, and mercury.

Lithium is also increasingly extracted through brine mining. Salt brine sources include salt lakes, which are currently the main source of lithium, and geothermal brines and salt brines associated with oil deposits. Lithium is the lightest solid metal. It can be absorbed into the body by inhalation of its aerosol and by ingestion and is corrosive to the eyes, the skin, and the respiratory tract. Lithium reacts violently with strong oxidants, acids, and many compounds (hydrocarbons, halogens, halons, concrete, sand and asbestos) causing a fire and explosion hazard. In addition, lithium reacts with water, forming highly flammable hydrogen gas and corrosive fumes of lithium hydroxide. Lithium hydroxide represents a potentially substantial environmental hazard, particularly to water organisms. Implementation of the 2022 State SIP Strategy may also increase demand for platinum mining. Platinum mining can expose workers to excessive dust that can result in respiratory ailments.[9]

Lithium metal batteries contain potentially toxic metals, such as copper and nickel, and organic chemicals, like toxic and flammable electrolytes.[10] Improper management of lithium-ion batteries could pose an environmental hazard and be of concern to public safety. There have been some cases with consumer products containing lithium-ion batteries catching fire after or during transportation to disposal facilities. Once ignited, the resulting fires can be especially difficult to extinguish as temperatures can rapidly increase to up to 500 degrees Celsius (932 degrees Fahrenheit) as a result of interactions between a battery's cathodes and anodes, and water is an ineffective extinguisher.[11] The likelihood to overheat or ignite is increased if the batteries are poorly packaged, damaged or exposed to a fire or a heat source. However, when packaged and handled properly, lithium-ion batteries pose no environmental hazard (79 Fed. Reg. 46011, 46032). In addition, internal combustion engines do sometimes result in fires and other hazards; therefore, switching to battery power would not likely result in increased fire risk.

There are inherent risks associated with the installation and use of hydrogen fuel cells including fire and explosion, electric shock, and exposure to toxic materials. Hydrogen possesses several hazardous properties such as a very wide flammability range, very low ignition energy, low viscosity, high diffusivity, and is chemically lighter than air.[12] However, fuel cell manufacturers developed and extensively safety-tested carbon-fiber hydrogen tanks, which can withstand environmental and man-made damage, including crash testing

[9] Sepadi et al., Platinum Mine Workers' Exposure to Dust Particles Emitted at Mine Waste Rock Crusher Plants in Limpopo, South Africa, 2020, last accessed March 17, 2022, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7014327/.

[10] Zeng et al., Solving Spent Lithium-Ion Battery Problems in China: Opportunities and Challenges, 2015, last accessed March 17, 2022, https://www.sciencedirect.com/science/article/abs/pii/S136403211500859X.

[11] Battery University, BU-304a: Safety Concerns with Li-Ion, April 23, 2019, last accessed March 17, 2022, https://batteryuniversity.com/article/bu-304a-safety-concerns-with-li-ion.

[12] Health and Safety Executive, Fuel Cells: Understand the Hazards, Control the Risks, 2004.

and ballistics. Hydrogen tanks are designed with multiple safety enhancements to prevent leaks in both routine use and extreme circumstances. Should a leak and subsequent ignition happen, the low radiant heat of a hydrogen fire and high diffusivity of hydrogen would reduce any potential damage, especially when compared to a gasoline fire.

The design of lithium-ion batteries and hydrogen fuel cells and the compliance with regulations are sufficient to reduce adverse impacts associated with hazards and hazardous materials. An increase in demand for lithium-ion batteries and fuel cells could result in increased recycling, refurbishment, or disposal of lithium-ion batteries and hydrogen fuel cells. However, any increased rates of disposal of lithium-ion batteries and hydrogen fuel cells would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. Compliance with the appropriate federal and state laws governing the handling of potentially hazardous materials would be sufficient to minimize the risks from lithium-ion batteries and fuel cells because they ensure adequate handling and disposal safeguards to address these risks.

Although some increased risk associated with hazardous materials could result, the risk is not such that a major accidental release or fire would be likely at a scale that could deplete emergency responders or obstruct emergency response. Therefore, increased demand on public services related to emergency responders is not anticipated and there would be no impact on an adopted emergency response or evacuation plan.

However, for the reasons described above, overall long-term operational impacts related to hazards and hazardous materials associated with the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 9-2: Implement Mitigation Measure 9-1

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 9-2, it is possible that significant impacts related to hazards and hazardous materials could still occur.

Consequently, while impacts could be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential long-term operation-related impacts regarding hazards and hazardous materials associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

10. Hydrology and Water Quality

Impact 10-1: Short-Term Construction-Related Impacts to Hydrology and Water Quality

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Specific construction projects would be required to comply with applicable erosion, water quality standards, and waste discharge requirements (e.g., NPDES, Stormwater Pollution Prevention Plan).

Short-term construction-related effects to hydrologic resources associated with the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 10-1

The Regulatory Setting in Attachment A includes applicable laws and regulations regarding hydrology and water quality. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation measures would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or mitigate hydrology and water quality-related impacts include the following:

- Proponents of new or modified facilities constructed because of reasonably foreseeable compliance responses to new regulations would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body would certify that the

environmental document was prepared in compliance with applicable regulations and would approve the project for development.

- Based on the results of the environmental review, proponents shall implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the potentially significant impacts of a project. The definition of actions required to mitigate potentially significant hydrology and water quality impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency. Project proponents shall implement the following measures as applicable:
    - Implement Best Management Practices to reduce sedimentation and pollution of surface waters, such as installation of silt fencing around the perimeter of active construction areas, sediment traps, revegetation, and rock and gravel cover.
    - Train construction workers for proper response to hazardous materials spills as well as responsibilities for maintaining BMPs on site.
    - Drainage plans for runoff shall be designed to contain adequate capacity for projected flows on site.
    - Avoid filling of waters of the United States and waters of the State to the extent feasible. If activities require a waste discharge requirement or Section 401 Water Quality Certification, comply with all avoidance, reduction, and compensatory measures.
- Under the oversight of the local lead agency, prior to issuance of any construction permits, the proponents for the proposed project shall prepare a stormwater drainage and flood control analysis and management plan. The plans will be prepared by a qualified professional and will summarize existing conditions and the effects of project improvements, and will include all appropriate calculations, a watershed map, changes in downstream flows and flood elevations, proposed on- and off-site improvements, features to protection downstream uses, and property and drainage easements to accommodate downstream flows from the site. Project drainage features will be designed to protect existing downstream flow conditions that will result in new or increased severity of offsite flooding.
- Project proponents shall establish drainage performance criteria for off-site drainage, in consultation with county engineering staff, such that project-related drainage is consistent with applicable facility designs, discharge rates, erosion protection, and routing to drainage channels, which could be accomplished by, but is not limited to: (a) minimizing directly connected impervious areas; (b) maximizing permeability of the site; and, (c) stormwater quality controls such as infiltration, detention/retention, and/or biofilters; and basins, swales, and pipes in the system design.
- The project proponent shall design and construct new facilities to provide appropriate flood protection such that operations are not adversely affected by flooding and inundation. These designs will be approved by the local or State land use agency. The project proponent will also consult with the appropriate flood control authority on the design of offsite stream crossings such that the

minimum elevations are above the predicted surface-water elevation at the agency's designated design peak flows. Drainage and flood prevention features shall be inspected and maintained on a routine schedule specified in the facility plans, and as specified by the county authority.

- As part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid offsite groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 10-1, it is possible that significant impacts on hydrology and water quality could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related effects to hydrology and water quality associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

Impact 10-2: Long-Term Operational-Related Effects to Hydrology and Water Quality

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Implementation of the 2022 State SIP Strategy would result in increased demand for lithium-ion and NiMH batteries, which would accelerate the market for mined resources, lithium, cobalt, and nickel for example. Mining of hard rock would require the use of

conventional mining practices including the creation of underground mines and open pits, which would result in the removal of organic material (e.g., bedrock, vegetation). Additionally, lithium can be collected from continental brines found in various basins. Salty groundwater is pumped into lagoons where it undergoes evaporation producing salts containing lithium compounds. This process could result in overdrafting of groundwater as well as groundwater contamination from metals such as antimony and arsenic.

Mineral extraction and mining activities within the U.S. would be required to comply with the provisions of the Clean Water Act and the natural resource protection and land reclamation requirements of the appropriate State and federal land managers. For instance, the U.S. Bureau of Land Management and U.S. Forest Service mining permit conditions contain protections for hydrologic resources and require mining reclamation standards. However, the metals necessary for battery technology are commonly obtained from areas outside of the U.S., where State and U.S. laws and regulation are not enforced. Thus, water quality impacts related to mining could occur because of implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy.

Under the 2022 State SIP Strategy, the demand for oil and gas extraction activities could decrease. Oil and gas extraction can produce substantial adverse effects to hydrology. For instance, fracking requires the use of millions of liters of water and consequently millions of liters of wastewater, which can contaminate groundwater with toxic chemical compounds.[13] As of June 2015, U.S. EPA had identified 1,173 known chemicals used in the fracking industry. Additionally, accidental release of oil or gas and related wastewater (e.g., spills from pipelines or trucks, leakage from wastewater ponds or tanks) can introduce toxicants, radionuclides, and dissolved metals, and affect the salinity of local drinking water supplies.[14] Through implementation of the 2022 State SIP Strategy, the aforementioned effects to hydrologic resources would be reduced as zero-emission technologies displace internal combustion engines. As a result, adverse hydrologic effects associated with oil and gas extraction could be decreased through implementation of the 2022 State SIP Strategy.

New facilities constructed as a result of implementation of the 2022 State SIP Strategy could have long-term effects on hydrologic conditions and characteristics. Depending on the location of these facilities, the physical alterations caused by these facilities could produce long-term effects to runoff patterns and natural drainage, impede or reroute natural flood patterns. As such, operation of new facilities could have long-term effects

[13] European Parliament, Impact of Shale Gas and Shale Oil Extraction on the Environment and on Human Health, 2012, last accessed March 17, 2022, https://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf.

[14] Environmental Health Perspectives, Salting the Earth: The Environmental Impact of Oil and Gas Wastewater Spills, December 2016, last accessed March 17, 2022, https://www.researchgate.net/publication/311243994_Salting_the_Earth_The_Environmental_Impact_of_Oil_and_Gas_Wastewater_Spills.

related to the permanent introduction of new surfaces that could alters the existing drainage pattern of a project site or area. These impacts would be potentially significant.

As such, long-term operational-related effects to hydrology and water quality would be potentially significant.

Mitigation Measure 10-2: Implement Mitigation Measure 10-1

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 10-2, it is possible that significant impacts on hydrology and water quality could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational-related impacts to hydrology and water quality under the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

11. Land Use

Impact 11-1: Short-Term Construction-Related and Long-Term Operation-Related Effects to Land Use

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Short-term construction-related effects on land use and planning associated with implementation of the 2022 State SIP Strategy may not be consistent with existing and planned land uses. The environmental consequences of land use changes are considered in their respective sections of the EA.

Construction and operation of new manufacturing, disposal, and recycling facilities may require the conversion of non-industrial land uses to industrial land uses. Potential environmental effects associated with land use change on agriculture and forestry,

biological resources, geology and soils, and hydrology and their related mitigation measures are discussed in further detail in their respective section of this ~~Draft~~ Final EA.

New or expanded battery manufacturing facilities would be subject to local zoning ordinances and would generally be located on sites planned for those types of facilities, which are typically placed apart from residential communities and would not typically divide an established community. Also, projects that are more likely to divide an established community tend to be linear (e.g., new highway, railroad, etc.). New transmission lines to support EV charging and other electrification would also not typically divide an established community because they are generally either undergrounded or strung on lines and therefore do not obstruct travel or lines of site between areas of the community. Therefore, the 2022 State SIP Strategy would not have the potential to divide a community and would have a less-than-significant effect to this particular impact.

Nevertheless, as discussed in Chapter 4, Sections 2, "Agricultural and Forestry Resources," 4, "Biological Resources," 7, "Geology and Soils," and 10, "Hydrology and Water Quality," potential environmental effects associated with land use change would be potentially significant. As such, land use impacts would be potentially significant.

Mitigation Measure 11-1: Implement Mitigation Measures 2-1, 4-1, 7-1, and 9-1

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 11-1, it is possible that significant impacts related to land use conversions could still result in significant effects on various resource areas.

Consequently, while impacts could be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential short-term construction-related and long-term operation-related impacts related to land use conversions associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

12. Mineral Resources

Impact 12-1: Short-Term Construction-Related and Long-Term Operation-Related Effects to Mineral Resources

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging

stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Increased use of zero and near-zero emission technology may require the use of batteries sourced by various precious metals (e.g., lithium) or fuel cells to provide electricity to each sector covered by the 2022 State SIP Strategy. An increase in demand for batteries and fuel cells could result in the mining of rare earth metals critical to battery technology, among other resources, and exports from source countries or other states. While CARB recognizes that existing battery technology may contain a menu of various semi-precious metals, minerals, and other mined resources, lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, platinum, and aluminum will comprise the focus of this analysis, as many electric vehicle batteries and fuel cells contain these notable metals. However, the reduced used of conventional internal combustion engine vehicles will result in a reduction in auto-industry demand for platinum for catalytic converters.

Implementation of the 2022 State SIP Strategy could have an effect on the availability of known materials because it would involve mining lithium. Owing to continued exploration, identified lithium resources have increased substantially worldwide and total about 86 million tons. In 2021, the total amount of lithium ore available in the United States was 7.9 million tons in the form of continental brines, geothermal brines, hectorite, oilfield brines, and pegmatites. Lithium consumption for batteries has increased substantially in recent years due to increased demand for rechargeable lithium-ion batteries, which use approximately 74 percent of the world's lithium resources.[15] As of March 2022, a domestic lithium mine is in operation in Nevada and the developer, Controlled Thermal Resources has begun extracting lithium in the Salton Sea. Two companies produced a large array of downstream lithium compounds in the United States from domestic or South American lithium carbonate, lithium chloride, and lithium hydroxide. From 2016 through 2019, the United States imported lithium from Argentina (55 percent), Chile (36 percent), China (5 percent), Russia (2 percent), and others (2 percent).[16] However, there are current initiatives at the State and federal level that are likely to influence lithium mining domestically, which includes efforts in California. Table 3 details lithium mine production and reserves by country.

[15] U.S. Geological Survey, Lithium Mineral Commodity Summaries. January 2022, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-lithium.pdf.
[16] Ibid.

Table 3: Lithium Mine Production and Reserves by Country[17]

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (estimated)	Reserve Amount (Tons)
United States	Withheld[1]	Withheld[1]	750,000
Argentina	6,3005,900	6,200	2,200,0001,900,000
Australia	45,00039,700	55,00040,000	54,700,000
Brazil	2,4001,420	1,500900	95,000
Chile	200	—	530,000
China	19,30021,500	26,00018,000	9,200,000
Portugal	10,80013,300	14,000	1,500,000
Zimbabwe	900348	900	60,000
Other Countries	1,200417	1,200	220,000
Worldwide Total (rounded and excluding U.S. production)	—	—	2,7100,000

[1] Domestic production data were withheld to avoid disclosing company proprietary data.

The magnitude of reserves, shown above, is necessarily limited by many considerations, including cost of drilling, taxes, price of the mineral commodity being mined and the associated demand. In addition to the reserves described above, deposits of mineral resources are also important to consider in assessing future supplies. Furthermore, owing to continuing exploration, identified lithium resources have increased substantially worldwide. Worldwide in 2021, lithium resources are currently estimated to be approximately 100 million tons, including 7.9 million tons in the United States, 21 million tons in Bolivia, 19.3 million tons in Argentina, 9.6 million tons in Chile, 6.4 million tons in Australia, 5.1 million tons in China, 3 million tons in the Congo, 1.7 million tons in Mexico, 1.3 million tons in Czechia, and 1.2 million tons in Serbia. In addition, Peru, Mali, Zimbabwe, Brazil, Spain, Portugal, Ghana, Austria, Finland, Kazakhstan, and Namibia have resources of less than one million tons each. Further, due to steadily increasing demand for lithium, domestic recycling of lithium has also increased.[18]

As mentioned, there are efforts to increase domestic supply of lithium. Efforts to address supply chains of mineral commodities has gained substantial interest from the State and federal government, both of which have sought to address mineral independence and security. Examples of efforts include California Assembly Bill 1657 (Garcia), Chapter 271, 2020 (AB 1657), which requires the California Energy Commission (CEC) to convene a Blue-Ribbon Commission on Lithium Extraction in California (Lithium Valley Commission). The Lithium Valley Commission is charged with reviewing, investigating,

[17] Ibid.

[18] Ibid.

and analyzing issues and potential incentives regarding lithium extraction and use in California. At the federal level, EO 14017 directed federal agencies to perform a 100-day review of "supply chain risks" for four classes of products, including semiconductors, high-capacity batteries (including for electric vehicles), critical and strategic minerals (including rare earths), and pharmaceuticals.[19] The EO additionally directs agencies to perform year-long reviews of supply chains in six critical sectors, which includes transportation and energy. The reviews will seek to identify supply chain risks that leave the United States vulnerable to reductions in the availability and integrity of critical goods, products, and services, and will include policy recommendations for addressing such risks. The EO indicates that, among other approaches, the current administration will explore how trade policies and agreements can be used to strengthen the resilience of U.S. supply chains.

In summary, while substantial research has been done and there is a clear commitment to increasing domestic supply of lithium, exact actions that will be taken in response to this goal of increasing domestic supply of lithium are yet to be identified with certainty. However, the increase in demand that could be associated with the 2022 State SIP Strategy suggests existing extraction facilities would be used rather than requiring development of new extraction facilities.

The 2022 State SIP Strategy could also increase the mining of graphite ore worldwide. In 2021, natural graphite was not produced in the United States; however, approximately 95 U.S. companies, primarily in the Great Lakes and Northeastern regions and Alabama and Tennessee, consumed 45,000 tons valued at an estimated $41 million. The major uses of natural graphite were batteries, brake linings, lubricants, powdered metals, refractory applications, and steelmaking. During 2021, U.S. natural graphite imports were an estimated 53,000 tons, which were about 57 percent flake and high-purity, 42 percent amorphous, and 1 percent lump and chip graphite. Table 4 summarizes mine production of graphite by country in 2020 and 2021.

Table 4: Graphite Mine Production and Reserves by Country[20]

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (estimated)	Reserve Amount (Tons)
United States	--	--	(included in world total)
Austria	500	500	(included in world total)
Brazil	63,600	68,000	70,000,000

[19] 86 FR 11849, EO 14017, America's Supply Chains, February 24, 2021, last accessed March 17, 2022, https://www.govinfo.gov/content/pkg/FR-2021-03-01/pdf/2021-04280.pdf.

[20] U.S. Geological Survey, Graphite Mineral Commodity Summaries. January 2022, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-graphite.pdf.

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (estimated)	Reserve Amount (Tons)
Canada	8,000	8,600	(included in world total)
China	762,000	820,000	73,000,000
Germany	300	300	(included in world total)
India	6,000	6,500	8,000,000
North Korea	8,100	8,700	2,000,000
Madagascar	20,900	22,000	26,000,000
Mexico	3,300	3,500	3,100,000
Mozambique	28,000	30,000	25,000,000
Norway	12,000	13,000	600,000
Russia	25,000	27,000	(included in world total)
Sri Lanka	4,000	4,300	1,500,000
Tanzania	--	150	18,000,000
Turkey	2,500	2,700	90,000,000
Ukraine	16,000	17,000	(included in world total)
Uzbekistan	100	110	7,600,000
Vietnam	5,000	5,400	(included in world total)
World Total	966,000	1,000,000	320,000,000

Cobalt mining may also increase as a result of implementation of the 2022 State SIP Strategy as battery production, which requires the use of cobalt, increases to support the electrification of the on-road mobile source sector. Identified cobalt resources of the United States are estimated to be about 1 million tons. Most of these resources are in Minnesota, but other important occurrences are in Alaska, California, Idaho, Michigan, Missouri, Montana, Oregon, and Pennsylvania. With the exception of resources in Idaho and Missouri, any future cobalt production from these deposits would be as a byproduct of another metal. Identified world terrestrial cobalt resources are about 25 million tons. The vast majority of these resources are in sediment-hosted stratiform copper deposits in the Democratic Republic of the Congo and Zambia; nickel-bearing laterite deposits in Australia and nearby island countries and Cuba; and magmatic nickel-copper sulfide deposits hosted in mafic and ultramafic rocks in Australia, Canada, Russia, and the United States. More than 120 million tons of cobalt resources have been identified in

polymetallic nodules and crusts on the floor of the Atlantic, Indian, and Pacific Oceans. Table 5 summarizes cobalt extraction by country.[21]

Table 5: Cobalt Mine Production and Reserves by Country[22]

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (estimated)	Reserve Amount (Tons)
United States	600	700	69,000
Australia	5,630	5,600	1,400,000
Canada	3,690	4,300	220,000
China	2,200	2,200	80,000
Democratic Republic of the Congo	98,000	120,000	3,500,000
Cuba	3,800	3,900	500,000
Indonesia	1,100	2,100	600,000
Madagascar	850	2,500	100,000
Morocco	2,300	2,300	13,000
Papua New Guinea	2,940	3,000	47,000
Philippines	4,500	4,500	260,000
Russia	9,000	7,600	250,000
Other Countries	7,640	6,600	610,000
Worldwide Total (rounded and excluding U.S. production)	142,000	170,000	7,600,000

The 2022 State SIP Strategy could also result in an increase in nickel mining to manufacture NiMH batteries. In 2021, the underground Eagle Mine in Michigan produced approximately 18,000 tons of nickel in concentrate, which was exported to smelters in Canada and overseas. A company in Missouri recovered metals, including nickel, from mine tailings as part of the Superfund Redevelopment Initiative. Nickel in crystalline sulfate was produced as a byproduct of smelting and refining platinum-group-metal ores mined in Montana.[23] Table 6 below summarizes mine production of nickel by country in 2020 and 2021.

[21] U.S. Geological Survey, Cobalt Mineral Commodity Survey, January 2022, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-cobalt.pdf.
[22] Ibid.
[23] U.S. Geological Survey, Nickel Mineral Commodity Survey, January 2022, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nickel.pdf.

Table 6: Nickel Mine Production and Reserves by Country[24]

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (estimated)	Reserve Amount (Tons)
United States	16,700	18,000	340,000
Australia	169,000	160,000	21,000,000
Brazil	77,100	100,000	16,000,000
Canada	167,000	130,000	2,000,000
China	120,000	120,000	2,800,000
Indonesia	771,000	1,000,000	21,000,000
New Caledonia	200,000	190,000	NA
Philippines	334,000	370,000	4,800,000
Russian	283,000	250,000	7,500,000
Other Countries	373,000	410,000	20,000,000
Worldwide Total (rounded and excluding U.S. production)	2,510,000	2,700,000	>95,000,000

Increase in the manufacture of battery technology from implementation of the 2022 State SIP Strategy could also increase mining of copper. In 2021, the recoverable copper content of U.S. mine production was an estimated 1.2 million tons, unchanged from that in 2020, and was valued at an estimated $12 billion, 58 percent greater than $7.61 billion in 2020. Arizona was the leading copper-producing State and accounted for an estimated 71 percent of domestic output; copper was also mined in Michigan, Missouri, Montana, Nevada, New Mexico, and Utah. Copper was recovered or processed at 25 mines (19 of which accounted for 99% of mine production), 2 smelters, 2 electrolytic refineries, and 14 electrowinning facilities. Copper and copper alloy products were used in building construction, 46 percent; electrical and electronic products, 21 percent; transportation equipment, 16 percent; consumer and general products, 10 percent; and industrial machinery and equipment, 7 percent. Table 7 summarizes copper production by country in 2020 and 2021.

[24] Ibid.

Table 7: Copper Mine Production and Reserves by Country[25]

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (estimated)	Reserve Amount (Tons)
United States	1,200	1,200	48,000
Australia	885	900	93,000
Canada	585	590	9,800
Chile	5,730	5,600	200,000
China	1,720	1,800	26,000
Democratic Republic of the Congo	1,600	1,800	31,000
Germany	--	--	--
Indonesia	505	810	24,000
Japan	--	--	--
Kazakhstan	552	520	20,000
South Korea	--	--	--
Mexico	733	720	53,000
Peru	2,150	2,200	77,000
Poland	393	390	31,000
Russia	810	820	62,000
Zambia	853	830	21,000
Other Countries	2,840	2,800	180,000
World Total	20,600	21,000	880,000

The 2022 State SIP Strategy could also result in additional mining of manganese, chromium, zinc, and aluminum. In 2021, worldwide mine production of manganese totaled 20,000 thousand metric tons.[26] Worldwide chromium mine production totaled 41,000 thousand metric tons in 2021.[27] As the 23rd most common element, worldwide zinc resources are estimated to be about 1.9 billions tons.[28]

An increased demand for hydrogen fuel cell-powered vehicles and a related increase in demand for mining of platinum-group metals (PGMs) could occur. The leading domestic use for PGMs is in catalytic converters to decrease harmful emissions from automobiles.

[25] U.S. Geological Survey, Copper Mineral Commodity Survey, January 2022, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-copper.pdf
[26] U.S. Geological Survey, Manganese Mineral Commodity Survey, January 2022, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-manganese.pdf
[27] U.S. Geological Survey, Chromium Mineral Commodity Survey, January 2022, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf
[28] U.S. Geological Survey, Zinc Mineral Commodity Survey, January 2022, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-zinc.pdf

Platinum-group metals are also used in catalysts for bulk-chemical production and petroleum refining; dental and medical devices; electronic applications, such as in computer hard disks, hybridized integrated circuits, and multilayer ceramic capacitors; glass manufacturing; investment; jewelry; and laboratory equipment.[29] Table 8 summarizes world platinum and palladium production and reserves. The United States has some platinum production and reserves, and internationally South Africa has the highest volume of platinum production and reserves.[30]

Table 8: Platinum and Palladium Mine Production and Reserves[31]

Country	2019 (metric tons Platinum)	2020 (metric tons Platinum) (estimated)	2019 (metric tons Palladium)	2019 (metric tons Palladium) (estimated)	Reserves (metric tons)
U.S.	4,150	4,000	14,300	14,000	900,000
Canada	7,800	7,800	20,000	20,000	310,000
Russia	24,000	21,000	98,000	91,000	3,900,000
South Africa	133,000	120,000	80,700	70,000	63,000,000
Zimbabwe	13,500	14,000	11,400	12,000	1,200,000
Other Countries	3,730	3,800	2,600	2,600	Not Available
World total (rounded)	186,000	170,000	227,000	210,000	69,000,000

Reserves data are dynamic. They may be considered a working inventory of mining companies' supply of an economically extractable mineral commodity. Inventory is limited by many considerations, including cost of drilling, taxes, price of the mineral commodity being mined, and the demand for it.

Palladium has been substituted for platinum in most gasoline-engine catalytic converters because of the historically lower price for palladium relative to that of platinum. About 25 percent of palladium can routinely be substituted for platinum in diesel catalytic converters; the proportion can be as much as 50 percent in some applications. For some industrial end uses, one PGM can substitute for another, but with losses in efficiency. From 2016 through 2019, the United States imported platinum from South Africa (43 percent), Germany (21 percent), Italy (7 percent), Switzerland (6 percent), and other countries (23 percent). During the same period, the United States imported palladium from Russia (38 percent), South Africa (33 percent), Germany (8 percent), the United Kingdom (5 percent), and other countries (16 percent).[32]

Appendix G of the CEQA Guidelines considers an impact on mineral resources to be the loss of availability of a known mineral resource that would be of value to a local entity, a region, or the State. Local jurisdictions are responsible for identifying appropriate areas to protect and/or allow mining of mineral resources. Facilities

[29] U.S. Geological Survey, Platinum-Group Metals Mineral Commodity Survey, January 2021, last accessed March 16, 2022, https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-platinum.pdf

[30] Ibid.

[31] Ibid.

[32] Ibid.

developed in response to implementation of the 2022 State SIP Strategy would be located in areas within existing footprints or in areas with consistent zoning where original permitting and analyses considered these issues and would not preclude access to a known mineral resources. Mining-related impacts associated with the reasonable foreseeable compliance responses of the 2022 State SIP Strategy are discussed throughout this EA (e.g., see Aesthetics, Agriculture and Forestry Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, and Transportation).

Short-term construction-related and long-term operational-related effects to mineral resource availability associated with the 2022 State SIP Strategy would be **less than significant.**

13. Noise and Vibration

Impact 13-1: Short-Term Construction-Related Impacts to Noise and Vibration

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Construction noise levels that could result from the implementation of new manufacturing facilities and zero and near-zero emissions-related infrastructure would fluctuate depending on the type, number, size, and duration of usage for the varying equipment. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise sensitive receptors, and the existing ambient noise environment in the receptor's vicinity. Construction generally occurs in several discrete stages, each phase requiring a specific complement of equipment with varying equipment type, quantity, and intensity. These variations in the operational characteristics of the equipment change the effect they have on the noise environment of the project site and in the surrounding community for the duration of the construction process.

To assess noise levels associated with the various equipment types and operations, construction equipment can be considered to operate in two modes, mobile and stationary. Mobile equipment sources move around a construction site performing tasks in a recurring manner (e.g., loaders, graders, dozers). Stationary equipment operates in a given location for an extended period to perform continuous or periodic operations. Operational characteristics of heavy construction equipment are additionally typified by

short periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions.

Additionally, when construction-related noise levels are being evaluated, activities that occur during the more noise-sensitive evening and nighttime hours are of increased concern. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as traffic volumes and commercial activities decrease, construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of nearby residential uses.

The site preparation phase typically generates the most substantial noise levels because of the on-site equipment associated with grading, compacting, and excavation, which uses the noisiest types of construction equipment. Site preparation equipment and activities include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Construction of large structural elements and mechanical systems could require the use of a crane for placement and assembly tasks, which may also generate noise levels. Although a detailed construction equipment list is not currently available, based on this project type it is expected that the primary sources of noise would include backhoes, bulldozers, and excavators. Noise emission levels from typical types of construction equipment can range from approximately 74 to 94 A-weighted decibels (dBA) at 50 feet.

Based on this information and accounting for typical usage factors of individual pieces of equipment and activity types, on-site construction could result in hourly average noise levels of 87 dBA equivalent level measurements (L_{eq}) at 50 feet and maximum noise levels of 90 dBA maximum sound level (L_{max}) at 50 feet from the simultaneous operation of heavy-duty equipment and blasting activities, if deemed necessary. Based on these and general attenuation rates, exterior noise levels at noise-sensitive receptors located within thousands of feet from project sites could exceed typical standards (e.g., 50/60 dBA L_{eq}/L_{max} during the daytime hours and 40/50 dBA L_{eq}/L_{max} during the nighttime hours).

Additionally, construction activities may result in varying degrees of temporary groundborne noise and vibration, depending on the specific construction equipment used and activities involved. Groundborne noise and vibration levels caused by various types of construction equipment and activities (e.g., bulldozers, blasting) range from 58 – 109 vibration decibels (VdB) and from 0.003 – 0.089 inch per second (in/sec) peak particle velocity (PPV) at 25 feet. Like the above discussion, although a detailed construction equipment list is not currently available, based on this project type it is expected that the primary sources of groundborne vibration and noise would include bulldozers and trucks. According to the Federal Transit Administration (FTA), levels associated with the use of a large bulldozer and trucks are 0.089 and 0.076 in/sec PPV (87 and 86 VdB) at 25 feet, respectively. With respect to the prevention of structural damage, construction-related activities would not exceed recommended levels (e.g., 0.2 in/sec PPV). However, based on FTA's recommended procedure for applying a

propagation adjustment to these reference levels, bulldozing and truck activities could exceed recommended levels with respect to the prevention of human disturbance (e.g., 80 VdB) within 275 feet.

Thus, implementation of reasonably foreseeable compliance responses could result in the generation of short-term construction noise in excess of applicable standards or that result in a substantial increase in ambient levels at nearby sensitive receptors, and exposure to excessive vibration levels.

Short-term construction-related effects on noise and vibration associated with the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 13-1

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws and regulations that pertain to noise. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that could be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation measures would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize noise include:

- Proponents of new or modified facilities constructed under the reasonably foreseeable compliance responses would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions required to mitigate potentially significant noise impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.
    - Ensure noise-generating construction activities (including truck deliveries, pile driving, and blasting) are limited to the least noise-sensitive times of day (e.g., weekdays during the daytime hours) for projects near sensitive receptors.
    - Use noise barriers, such as berms, as needed (where feasible) to limit ambient noise at property lines, especially where sensitive receptors may be present.

- Ensure all project equipment has sound-control devices no less effective than those provided on the original equipment.
- All construction equipment used would be adequately muffled and maintained.
- Use battery-powered forklifts and other facility vehicles, as needed to remain within acceptable noise levels.
- Ensure all stationary construction equipment (i.e., compressors and generators) is located as far as practicable from nearby sensitive receptors or shielded.
- Properly maintain mufflers, brakes, and all loose items on construction- and operation-related-related vehicles to minimize noise and address operational safety issues. Keep truck operations to the quietest operating speeds. Advise about downshifting and vehicle operations in sensitive communities to keep truck noise to a minimum.
- Use noise controls on standard construction equipment; shield impact tools.
- Use flashing lights instead of audible back-up alarms on mobile equipment, if necessary to maintain acceptable noise levels.
- Install mufflers on air coolers and exhaust stacks of all diesel and gas-driven engines.
- Equip all emergency pressure relief valves and steam blow-down lines with silencers to limit noise levels.
- Contain facilities within buildings or other types of effective noise enclosures.
- Employ engineering controls, including sound-insulated equipment and control rooms, to reduce the average noise level in normal work areas.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 13-1, it is possible that significant impacts on noise and vibration could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the short-term construction-related effect regarding noise and vibration resulting from the construction of new facilities or reconstruction of existing facilities associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

Impact 13-2*: *Long-Term Operational-Related Effects to Noise and Vibration

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Operational-related activities associated with mining could produce substantial stationary sources of noise. Mechanical equipment (e.g., dozers) required to excavate bedrock and vegetation would generate noise that could be considered adverse to sensitive receptors; however, it would be expected that expansion of existing mines would not involve sensitive receptors given that mines typically are in areas zoned industrial. Also, it would be anticipated that new hard rock and brine mines constructed as a compliance response to the 2022 State SIP Strategy would be in areas of consistent zoning and therefore not in close proximity to sensitive receptors.

New sources of noise associated with implementation of 2022 State SIP Strategy could include operation of manufacturing plants. Manufacturing activity could include on-site noise sources, including fuel-delivery and other hauling-related activities (e.g., truck unloading), fuel-handling and processing activities (e.g., conveyor system, wheeled loader, dozer), and mechanical equipment (e.g., boiler, turbine, fans, pumps). Depending on the proximity to existing noise-sensitive receptors, stationary source noise levels could exceed applicable noise standards and result in a substantial increase in ambient noise levels.

Long-term operational noise and vibration effects associated with the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 13-2: Implement Mitigation Measure 13-1

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 13-2, it is possible that significant impacts on noise and vibration could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this EA takes the conservative

approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational noise effects associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

14. Population and Housing

Impact 14-1: Short-Term Construction-Related and Long-Term Operation-Related Effects to Population and Housing

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Construction and maintenance activities associated with new manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, other electricity generation facilities, and infrastructure, as well as increased hard rock and brine mining activities could result in additional employment; however, there is uncertainty as to the exact location or character of any new facilities. Construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary (e.g., 6 to 12 months per project). Therefore, it is anticipated that there would not be a need for substantial numbers of construction workers to relocate and that a sufficient construction employment base would likely be available.

Operation of new or modified facilities would generate varying levels of employment opportunities. The number of jobs produced would be directly related to the maintenance needs of these facilities. There is inherent uncertainty surrounding the exact locations of the new facilities. For mines, the numbers of jobs produced would be directly related to the size, capacity, and, in some cases, commodity manufactured. This range could be between twenty (e.g., small feedstock processing facility) to several thousand (e.g., Tesla Gigafactory); however, it would be expected that locations of these facilities would be selected such that an appropriate employment base existed to support operation or where local jurisdictions have planned for increased population and employment growth. As such, no additional housing would be required to implement the reasonably foreseeable compliance response to the 2022 State SIP Strategy.

Additionally, it is unlikely that any new facilities would be constructed in areas with existing housing because of the nature of the facilities. That is, industrial facilities would

be sited in areas zoned for them. Therefore, it is unlikely the 2022 State SIP Strategy would displace existing housing.

Any additional employment needed to support the compliance response to the 2022 State SIP Strategy, including a rise in employment opportunities, would not be substantial enough to substantially increase a community's population, require the construction of housing, or displace housing. As a result, short-term construction-related and long-term operational-related effects, associated with the 2022 State SIP Strategy on population and housing would be **less than significant**.

15. Public Services

Impact 15-1: Short-Term Construction-Related and Long-Term Operation-Related Effects to Public Services

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

An increased need for public services is generally associated with growth in population. As discussed under Impact 14-1, the 2022 State SIP Strategy is not expected to result in a rise in employment opportunities that is great enough to substantially increase a community's population. As a result, short-term construction-related and long-term operational-related effects, associated with the 2022 State SIP Strategy on response time for fire protection, police protection, schools, parks, and other facilities would be **less than significant**.

16. Recreation

Impact 16-1: Short-Term Construction-Related and Long-Term Operation-Related Effects to Recreation

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and

other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Construction and operation activities as well as new or modified facilities would likely occur within footprints of existing facilities, or in areas with appropriate zoning that permit such uses and activities. Therefore, compliance responses would not displace any recreational facilities. An increased need for recreational facilities and the accelerated degradation of existing recreational facilities is associated with growth in population. As discussed under Impact 14-1, the 2022 State SIP Strategy is not expected to result in a rise in employment opportunities that is great enough to substantially increase a community's population. Therefore, new or expanded recreational facilities would not be needed, and existing facilities would not experience accelerated degradation. As a result, short-term construction-related and long-term operational-related effects, associated with the 2022 State SIP Strategy on recreational facilities would be **less than significant**.

17. Transportation and Traffic

Impact 17-1: Short-Term Construction-Related Effects to Transportation and Traffic

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

State CEQA Guidelines Section 15064.3(b) identifies criteria for analyzing the transportation impacts of a project, including land use projects (Section 15064.3[b][1]) and transportation projects (Section 15064.3[b][2]). As discussed under Impact 14-1, construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary (e.g., 6 to 12 months per project) and would not result in construction worker migration. Therefore, while implementation of the 2022 State SIP Strategy includes development and operation of new facilities, short-term construction would not drive development of urban areas, residential development, major employment generation, or transportation projects. As discussed throughout this EA, including in Impact 3-1 above, predicting the precise location, timing, duration and intensity of individual projects undertaken as compliance responses to the 2022 State SIP Strategy is not possible, given the performance standard-based nature of the requirements and given that the responses depend on individual business decisions. Therefore, modeling changes to VMT during construction of the various

projects undertaken in response to the 2022 State SIP Strategy is not possible at this high-level planning stage.

Although detailed information about potential specific construction activities is not currently available, it would be anticipated to result in short-term construction traffic (primarily motorized) from worker commute- and material delivery-related trips. Construction would induce some increase in localized VMT, however, this level would not be substantial and would be short-term in nature. The amount of construction activity would vary depending on the type, number, and duration of usage for the varying equipment, and the phase of construction. These variations would affect the amount of project-generated traffic for both worker commute trips and material deliveries. Depending on the amount of trip generation and the location of new facilities, implementation could conflict with applicable programs, plans, ordinances, or policies (e.g., performance standards, congestion management); and/or result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially due to project-generated heavy-duty truck trips. This effect would be potentially significant.

Mitigation Measure 17-1

The Regulatory Setting in Attachment A includes applicable laws and regulations regarding transportation. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation measures would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize construction traffic impacts include:

- Proponents of new or modified facilities constructed will coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body will certify that the environmental document was prepared in compliance with applicable regulations and will approve the project for development.
- Based on the results of the environmental review, proponents will implement all mitigation identified in the environmental document to reduce or substantially lessen potentially significant impacts on traffic and transportation. The definition of actions required to mitigate potentially significant traffic impacts may include the following; however, any mitigation specifically required for a new or modified facility will be determined by the local lead agency.
    - Minimize the number and length of access, internal, service, and maintenance roads and use existing roads when feasible.

- Provide for safe ingress and egress to/from a proposed project site. Identify road design requirements for any proposed roads, and related road improvements.
- If new roads are necessary, prepare a road siting plan and consult standards contained in federal, State, or local requirements. The plans should include design and construction protocols to meet the appropriate roadway standards and be no larger than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Access roads should be located to avoid or minimize impacts to washes and stream crossings, follow natural contours and minimize side-hill cuts. Roads internal to a project site should be designed to minimize ground disturbance. Excessive grades on roads, road embankments, ditches, and drainages should be avoided, especially in areas with erodible soils.
- Prepare a Construction Traffic Control Plan and a Traffic Management Plan.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 17-1, it is possible that significant impacts on transportation and traffic resources could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related effects to transportation and traffic associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

Impact 17-2: Long-Term Operational-Related Effects to Transportation and Traffic

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Implementation of the 2022 State SIP Strategy could require the operation of new infrastructure to distribute alternate fuels (such as electricity and hydrogen). Additionally, increased demand for lithium-ion storage batteries and fuel cells could result in an increase in lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, platinum, and aluminum mining. As discussed in Impact 14-1, it is not anticipated that substantial amount of new personnel would be needed to operate new facilities because a sufficient employment base would be available, indicating that VMT associated with employees may not substantially increase depending on their location. Pursuant to SB 375, CARB established GHG reduction targets for metropolitan planning organizations that range from 13 to 19 percent by 2035. These are based on land use patterns and transportation systems specified in Regional Transportation Plans and Sustainable Community Strategies. Locations of facilities with newly installed infrastructure to distribute and dispense alternative fuels cannot currently be known; therefore, the total change in VMT cannot be assessed. Many activities, such as lithium-ion and NiMH battery manufacturing, recycling, and refurbishing, would take place at existing facilities; however, long-term operational-related activities associated with deliveries and distribution of goods (e.g., alternative fuels) could result in the addition of new trips, which could increase regional VMT to a potentially significant level.

As such, long-term operational-related effects to transportation and traffic would be potentially significant.

Mitigation Measure 17-2

The Regulatory Setting in Attachment A includes applicable laws and regulations regarding transportation. CARB does not have the authority to require implementation of mitigation related to increases in VMT; these must be addressed by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Recognized practices that are routinely required to avoid and/or minimize transportation impacts include:

Identify and implement road and intersection design requirements or improvements for any project that would significantly impact the safety of roads and intersections.
Consult with and implement recommendations from local fire protection services regarding emergency access requirements.
Prepare transportation demand management (TDM) plans that prioritize and promote use of non-automobile forms of transportation to minimize significant increases in VMT.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant

impacts. Although unlikely after implementation of Mitigation Measure 17-2, it is possible that significant impacts on transportation and traffic resources could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational-related effects to transportation and traffic associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

18. Tribal Cultural Resources

Impact 18-1: Short-Term Construction-Related and Long-Term Operational Impacts on Tribal Cultural Resources

Consistent with the requirements of AB 52, on July 28, 2021, CARB issued letters to tribes that requested formal notice. Specifically, CARB issued letters to the Colusa Indian Community Council, the Ohlone Costanoan-Esselen Nation, the San Gabriel Band of Mission Indians, the Viejas Band of Kumeyaay Indians, and the San Manuel Band of Mission Indians. No requests for consultation were received.

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. The 2022 State SIP Strategy could result in construction of manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, other electricity generation facilities, and infrastructure, as well as increased mining, which would require ground disturbance. In general, construction and ground disturbance activities would occur in areas of compatible zoning (e.g., industrial). Regardless, there is a possibility that these activities may occur in or adjacent to a region consisting of known significant tribal cultural resources. As such, it is foreseeable that known or undocumented tribal cultural resources could be unearthed or otherwise discovered during ground-disturbing and construction activities.

Operation of facilities and infrastructure would not result in additional ground disturbance beyond that which occurred during construction and modification because

operation activities would occur within the footprint of the constructed or modified facility. Therefore, most operational activities would not have the potential to affect tribal cultural resources. Presence of new facilities and infrastructure may, however, change the visual setting of the surrounding area, which could adversely affect trial cultural resources, as determined by a California Native American Tribe. As a result, operation impacts would be potentially significant.

Therefore, short-term construction-related and long-term operational-related impacts on tribal cultural resources associated with implementation of the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 18-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to tribal cultural resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to tribal cultural resources include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant impacts on tribal cultural resources associated with the project.
- Actions required to mitigate potentially significant tribal cultural resources impacts may include the following; however, any mitigation specifically required for a modified facility would be determined by the local lead agency.
- Retain the services of tribal cultural resources specialists with training and background that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61.
- Seek guidance from the State and federal lead agencies, as appropriate, for coordination of Nation-to-Nation consultations with the Native American Tribes.
- Follow notification procedures and conduct consultation as required with

California Native American Tribes under Assembly Bill (AB) 52 (including Public Resources Code § 21080.3.1 and 21080.3.2.). Provide notice to Native American Tribes of project details to identify potential tribal cultural resources (TCRs). In the case that a TCR is identified, consistent with Public Resources Code § 21084.3(b), prepare mitigation measures that:

- Avoid and preserve the resource in place.
- Treat the resource with culturally appropriate dignity.
- Employ permanent conservation easements.
- Protect the resource.

- Regulated entities shall consult with lead agencies early in the planning process to identify the potential presence of cultural properties. The agencies shall provide the project developers with specific instruction on policies for compliance with the various laws and regulations governing cultural resources management, including coordination with regulatory agencies and Native American Tribes.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of mitigation measure 18-1, it is possible that significant impacts on tribal cultural resources could still occur.

Consequently, while impacts could likely be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related and long-term operational impacts to tribal cultural resources associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

19. Utilities and Service Systems

Impact 19-1: Long-Term Operational-Related Impacts to Utilities and Service Systems

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and

other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Reasonably foreseeable compliance responses to the 2022 State SIP Strategy could result in increased demand for lead acid and lithium-ion and NiMH batteries for zero- and near-zero emission technologies. This may result in reuse and/or disposal of vehicles outside of California. Lithium-ion and NiMH batteries may be recycled, and due to increasing demand for zero- and near-zero emission vehicles and technologies, rates of lithium-ion and NiMH battery recycling have increased. In the U.S. overall, there are limited regulations for the disposal of lithium-ion and NiMH batteries; however, due to value of recovered metals (e.g., cobalt, nickel, lithium), there is incentive to collect and recycle batteries. According to current practice, typical recycling procedures (i.e., hydrometallurgical recovery, high-temperature or pyrometallurgical, and direct recycling) recover an average of approximately 97 percent of the materials, redirecting about 3 percent of waste to landfills.

Currently, lead acid batteries comprise approximately 20 million of the registered vehicles in use within the state. While deployment of the 2022 State SIP Strategy may result in increased zero and near-zero emission lead acid battery production, use, and disposal, such levels would not generate notable strain on existing manufacturing, disposal, and recycling facilities such that additional adverse effects to utilities would occur.

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could result in new demand for water, wastewater, electricity, and gas services for new or modified facilities. Generally, facilities would be cited in areas with existing utility infrastructure—or areas where existing utility infrastructure is easily assessable. New or modified utility installation, connections, and expansion would be subject to the requirements of the applicable utility providers.

Any new or modified facilities, no matter their size and location would be required to seek local or State land use approvals prior to their development. In addition, part of the land use entitlement process for facilities proposed in California requires that each of these projects undergo environmental review consistent with the requirements of CEQA and the CEQA Guidelines. It is assumed that facilities proposed in other states would be subject to comparable federal, State, and/or local environmental review requirements (e.g., CEQA) and that the environmental review process would assess whether adequate utilities and services (i.e., wastewater services, water supply services, solid waste facilities) would be available and whether the project would result in the need to expand or construct new facilities to serve the project. Through the environmental review process, utility and service demands would be calculated; agencies would provide input on available service capacity and the potential need for service-related infrastructure including expansions to waste water treatment plants, new water supply entitlements and infrastructure, storm water infrastructure, and solid waste handling capacity (e.g., landfills). Resulting environmental impacts would also be determined through this process.

At this time, the specific location and type of construction needed is not known and would be dependent upon a variety of market factors that are not within the control of CARB including: economic costs, product demands, environmental constraints, and other market constraints. Thus, the specific impacts from construction on utility and service systems cannot be identified with any certainty, and individual compliance responses could potentially result in significant environmental impacts for which it is unknown whether mitigation would be available to reduce the impacts.

Thus, long-term operational-related effects to utilities and services systems, associated with the 2022 State SIP Strategy would be potentially significant.

Mitigation Measure 19-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to utilities and service systems. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation measures would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize utility and service-related impacts include:

- Proponents of new or modified facilities constructed because of reasonably foreseeable compliance responses would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to reduce or substantially lessen potentially significant impacts on utilities and service systems. The definition of actions required to mitigate potentially significant utility or service-related impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.
    - Comply with local plans and policies regarding the provision of water supply, wastewater treatment, and storm water drainage utilities, and solid waste services.
    - Where an on-site wastewater system is proposed, submit a permit application to the appropriate local jurisdiction.

- Where appropriate, prepare a Water Supply Assessment (WSA) consistent with the requirements of Section 21151.9 of the Public Resources Code and Section 10910 et seq. of the Water Code. The WSA would be approved by the local water agency/purveyor prior to construction of the project.
- Comply with local plans and policies regarding the provision of wastewater treatment services.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this ~~Draft~~ Final EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 19-1, it is possible that significant impacts on utilities and service systems could still occur.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this ~~Draft~~ Final EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, long-term operational-related effect to utilities and service systems associated with the 2022 State SIP Strategy would remain **potentially significant and unavoidable**.

20. Wildfire

Impact 20-1: Short-Term Construction-Related and Long-Term Operational-Related Effects on Wildfire

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

In the event of an emergency, such as a wildfire, evacuation coordination is dealt with at various levels of government through State, federal, or local agencies as appropriate. The California Department of Forestry and Fire Protection (CAL FIRE) is responsible for coordinating wildfire response and protection within State Responsibility Areas. CAL FIRE does not have responsibility for fire response in Local Responsibility Areas or Federal Responsibility Areas, which are defined based on land ownership, population density, and land use. These areas include densely populated areas, such as cities and

towns; agricultural lands; and lands administered by the federal government. In densely populated areas, local fire departments respond to fires and emergencies. Fire response on federal lands is coordinated by the appropriate federal agency. For example, on National Forest System lands, the U.S. Forest Service coordinates fire response; on lands administered by the federal BLM, the BLM coordinates fire response.

Facilities and associated infrastructure, such as facilities for the use of alternative and hydrogen fuels, would be constructed and operated within response areas for various jurisdictions and would be dealt with in the same manner as existing infrastructure. Construction and operation activities as well as new or modified facilities would likely occur within footprints of existing manufacturing facilities, or in areas with appropriate zoning that permit such uses and activities; therefore, changes or modifications to existing fire response and evacuation plans would not be necessary. Likewise, the small increase in use at battery or fuel cell manufacturing, refurbishing, and recycling facilities would occur at existing facilities that are already under an assigned jurisdiction for fire safety. As discussed under Impact 14-1, compliance responses implemented under the 2022 State SIP Strategy would not create growth substantial enough to impede emergency response or affect evacuation route capacity.

Overhead powerlines associated with new infrastructure, including those lines built to support increased energy demand to accommodate increased reliance on the electrical grid, could increase the risk of wildfire ignition; however, new safety initiatives, development standards, and regulatory oversight for electric utilities have been implemented in response to numerous devastating wildfires in California in recent years. These efforts aim to reduce the risk of wildfire ignition associated with such facilities and include implementation of wildfire mitigation plans, collaboration between utilities and CAL FIRE, and retention by CPUC of independent evaluators that can assess the safety of electrical infrastructure. Additionally, new facilities would be subject to the applicable chapters of the California Fire Code and any additional local provisions identified in local fire safety codes. These factors—adherence to local plans, policies, codes, and ordinances; adherence to the California Fire Code and the provisions of wildfire prevention plans; and oversight by CPUC—would substantially reduce the risk of wildfire ignitions caused by infrastructure development.

As discussed above in Impact 9-2, lithium-ion batteries can rarely cause fires due to vehicular accidents. These explosions could be a source of ignition for wildland fires. The likelihood to overheat or ignite is increased if the batteries are poorly packaged, damaged or exposed to a fire or a heat source. However, when packaged and handled properly, lithium-ion batteries pose no environmental hazard (79 Fed. Reg. 46011, 46032). Additionally, the risk of explosion from gasoline-powered vehicles is much greater than that of ZEVs. As the 2022 State SIP Strategy would transition the mobile-source sectors to ZEVs and PHEVs, wildfire risk from ICE-related explosion would be reduced. Thus, the increased use of lithium-based batteries in vehicles would not substantially increase the risk of wildland fire.

Therefore, implementation of the 2022 State SIP Strategy would have a **less than significant** short-term construction-related and long-term operational impact on wildfire.

5.0 CUMULATIVE AND GROWTH-INDUCING IMPACTS

A. Approach to Cumulative Analysis

This section satisfies requirements of CEQA to discuss how the project being analyzed would contribute to cumulative impacts. CARB's certified regulatory program (Title 17 CCR Sections 60000–60008) does not provide specific direction on a cumulative impacts analysis, and while CARB is exempt from Chapters 3 and 4 of CEQA and corresponding sections of the CEQA Guidelines by virtue of its certified program, the Guidelines nevertheless contain useful guidance for preparation of a thorough and meaningful cumulative analysis. The CEQA Guidelines require a lead agency to discuss a cumulative impact if the project's incremental effect combined with the effects of other projects is "cumulatively considerable" (CEQA Guidelines Section 15130(a)). The discussion of cumulative impacts need not provide as much detail as the discussion of effects attributable to the project alone (CEQA Guidelines Section 15130). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant but must briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

In considering cumulative impacts, an agency may choose from two approaches: it can prepare a list of past, present, and probable future projects that will produce related or cumulative impacts; or, it can rely on a summary of projections contained in an adopted planning document or an adopted or certified environmental document for the planning document (CEQA Guidelines Section 15130(b)). Further, the CEQA Guidelines state that the pertinent discussion of cumulative impacts contained in one or more previously certified EIRs may be incorporated by reference pursuant to provisions for tiering and program EIRs, and that no future cumulative analysis is required when the lead agency determines the regional and area wide impacts have already been addressed in the prior certified EIR for that plan (CEQA Guidelines Section 15130).

The CEQA Guidelines state that a previously approved plan for the reduction of criteria and other air pollutant emissions may be used in cumulative impacts analysis; that the pertinent discussion of cumulative impacts contained in one or more previously certified EIRs may be incorporated by reference (Title 14 CCR Section 15130(d)). Furthermore, no further cumulative impacts analysis is required when a project is consistent with a general, specific, master or comparable programmatic plan where the lead agency determines that the regional or area wide cumulative impacts of a proposed project have already been adequately addressed, as defined in section 15152(f), in a certified EIR for that plan (14 CCR Section 15130(d)). CEQA further directs that a tiered EIR focus on significant environmental effects that were not already analyzed in the previous environmental analysis. (PRC Sections 21068.5; 21093; see also 21094(c).)

Because of the statewide reach of 2022 State SIP Strategy and the longer-term future horizon for achievement of emission reductions, the impact analyses for the resource topics in Chapter 4 are programmatic, rather than site or project specific, to address the

statewide context. The document contains a description and analysis of a series of actions that are part of one large program. Recommended mitigation measures in Chapter 4 provide a series of generally recognized methods to reduce potentially significant impacts, but cannot offer details related to specific project locations. As a result, the impact conclusions and mitigation measures in the resource-oriented sections of Chapter 4 are cumulative by nature, because they describe the potential impacts associated collectively with the full range of reasonably foreseeable compliance responses.

Additional community-level strategies to reduce emissions and exposure, beyond the existing efforts, focuses on amending current State measures and implementing new State measures. For purposes of disclosure and broad consideration of the potential actions that address air quality, the California Air Resources Board (CARB or Board) has identified relevant projects that would result in related impacts. Related projects consist of the 2030 California Climate Change Scoping Plan (2030 Scoping Plan), which contains measures that reduce air pollutant and greenhouse gas (GHG) emissions and exposure within communities across the State.

Like the analysis presented in Chapter 4 of this ~~Draft~~ Final EA, the cumulative impacts analysis is described at a necessarily general level of detail, because information related to specific actions is not known at this time. This approach to a cumulative impacts analysis is "guided by the standards of practicality and reasonableness" (14 California Code of Regulations (CCR) Section 15130 (b)) and serves the purpose of providing "a context for considering whether the incremental effects of the project at issue are considerable" when judged "against the backdrop of the environmental effects of other projects." (*Communities for a Better Environment (CBE) v. the California Resources Agency* (2002) 103 Cal.App.4th 98, 119.)

B. Significance Determinations and Mitigation

Implementation of the 2022 State SIP Strategy would potentially result in cumulatively considerable contributions to significant cumulative impacts related to certain resource areas, as discussed below. While recommended mitigation is provided for each potential cumulatively considerable contribution to a significant impact, other agencies would be responsible for implementing the mitigation measures. Consequently, it is uncertain whether those other agencies would implement the mitigation measures, which precludes assurance that significant impacts would be avoided or reduced to a less than significant level. Where impacts cannot feasibly be mitigated or where there is uncertainty about implementation of mitigation, the ~~Draft~~ Final EA recognizes the impact as significant and unavoidable. The Board will need to adopt Findings and a Statement of Overriding Considerations for any significant and unavoidable environmental effects of the 2022 State SIP Strategy as part of the approval process.

C. Projects Resulting in Related Effects

CEQA Guidelines (14 CCR Section 15000 et. seq.) state that a previously approved plan may be used in cumulative impacts analysis; the pertinent discussion of cumulative impacts contained in one or more previously certified EIR(s) may be incorporated by reference; and in certain circumstances, no further cumulative impact analysis is required for a project that is consistent with a plan that has a certified EIR (14 CCR Section 15130 (d)). The related plan considered for cumulative impacts of the 2022 State SIP Strategy include the 2030 Scoping Plan.

CEQA Guidelines allow for incorporating by reference all or portions of other documents. Incorporation by reference is useful for including long, descriptive, or technical materials that provide general background but do not contribute directly to the pertinent analysis (14 CCR Section 15150). Therefore, the following documents are incorporated by reference.

- Final EA for the 2030 Target Scoping Plan Update[33]

The portions of the document relevant to this discussion are summarized below and within the respective resource area analyses. The document is available upon request from CARB and online here: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appf_finalea.pdf.

1. 2030 Target Scoping Plan Update

In April 2015, Governor Brown issued Executive Order B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. In doing so, the Governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. To develop a clear plan of action to achieve the State's goals, the Executive Order called on CARB to update the AB 32 Climate Change Scoping Plan to incorporate the 2030 target. In the summer of 2016, the Legislature affirmed the importance of addressing climate change through passage of Senate Bill (SB) 32 (Pavley, Chapter 249, Statutes of 2016), which codified into statute the 2030 reduction target of 40 percent below 1990 levels by 2030 contained in the Governor's Executive Order. The update to the AB 32 Climate Change Scoping Plan to reflect the 2030 target serves as the framework to define the State's climate change priorities to 2030 and beyond. California's 2017 Climate Change Scoping Plan, reflecting the 2030 target, was adopted in December 2017.

[33] California Air Resources Board. 2017. Final Environmental Analysis for the Strategy for Achieving California's 2030 Greenhouse Gas Target, last accessed March 17, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appf_finalea.pdf.

Implementation of the measures to achieve the 2030 target in the Scoping Plan would result in two main types of reasonably foreseeable compliance responses: 1) construction of, or modifications to buildings, infrastructure, and industrial facilities; and, 2) new operations or changes to existing operational processes. These compliance responses are discussed in more detail below.

2. Construction of, or Modifications to, Buildings, Infrastructure, and Industrial Facilities

Implementation of the 2030 Scoping Plan would result in various construction projects. These projects would include infrastructure projects, such as natural gas and hydrogen refueling stations; collection, processing, and distribution of biomethane; wind, solar thermal, solar photovoltaic, geothermal, solid-fuel biomass, biogas, and small hydroelectric to generate electricity (i.e., renewable energy projects); collection of natural gas from landfills, dairies, and wastewater treatment plants; modifications to crude production facilities (onsite solar, wind, heat, and/or steam generation electricity); organic material composting and/or digesting facilities that would convert organic wastes diverted from landfills (e.g., yard waste, green wastes, food); vehicle fueling (e.g. renewable natural gas); vehicle charging stations; and upgraded and new transmission lines. Modifications may also be necessary at: industrial sources in compliance with the Cap-and-Trade Program; roadways and urban areas to reduce overall vehicle miles traveled (VMT); and oil and gas facilities (which may include modifications to existing facilities, pipeline replacement or reconstruction activities, inspection and monitoring, and disposal of methane vapors). In addition, manufacturing facilities may be necessary to produce lithium-ion batteries. Large-scale energy storage systems would also be installed throughout California, which would reduce energy production demands.

Construction activities could require disturbance of undeveloped area, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Demolition of existing structures may also occur before the construction of new buildings and structures. Construction activities can be short-term and long-term. That is, after construction of a building is completed, it will stay on a project site until demolished or otherwise removed.

a) New Operations and Changes to Existing Operational Processes

Under the 2030 Scoping Plan there would be various methods to reduce GHG emissions that would result in new operations or changes to existing operational processes. New operations could include increased mining for lithium and increased recycling or refurbishment of batteries for on-road light-duty vehicles and HDVs. New operations would also include changes to methods of manure management at dairies, alterations to crop cultivation to meet feedstock demands related to fuels regulations, and improvements to transportation systems to reduce reliance on personal vehicles. In

addition, offset protocols related to the Cap-and Trade Program would alter activities at mines, agricultural operations, landfills, and U.S. forests. Linkage to Ontario and extension of the Cap-and-Trade Program could increase demand for offsets and increased compliance response activities for covered entities in Canada and the U.S. New operations and changes to existing operational processes are considered to occur over a long period of time (i.e., for the foreseeable future).

Potential environmental impacts associated with the 2030 Scoping Plan are summarized below in Table 9.

Table 9: Summary of Environmental Impacts for the 2030 Scoping Plan

Resource Areas and Impact Categories	Significance Determination
Aesthetics	
Impact 1-1: Short-Term Construction-Related Impacts	PSU
Impact 1-2: Long-Term Operational-Related Impacts	PSU
Agriculture and Forest Resources	
Impact 2-1: Short-Term Construction-Related Impacts	PSU
Impact 2-1: Long-Term Operational-Related Impacts	PSU
Air Quality	
Impact 3-1: Short-Term Construction-Related Impacts	PSU
Impact 3-2: Long-Term Operational-Related Impacts	LTS
Impact 3-3: Short-Term, Construction-Related and Long-Term Operational-Related Odors Impacts	PSU
Biological Resources	
Impact 4-1: Short-Term Construction-Related Impacts	PSU
Impact 4-2: Long-Term Operational-Related Impacts	PSU
Cultural Resources	
Impact 5-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Energy Demand	
Impact 6-1: Short-Term Construction-Related Impacts	LTS
Impact 6-2: Long-Term Operational-Related Impacts	B
Geology and Soils	
Impact 7-1: Short-Term Construction-Related Impacts	PSU
Impact 7-2: Long-Term Operational-Related Impacts	PSU

Resource Areas and Impact Categories	Significance Determination
Greenhouse Gas	
Impact 8-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	B
Hazards and Hazardous Materials	
Impact 9-1: Short-Term Construction-Related Impacts	PSU
Impact 9-2: Long-Term Operational-Related Impacts	PSU
Hydrology and Water Quality	
Impact 10-1: Short-Term Construction-Related Impacts	PSU
Impact 10-2: Long-Term Operational-Related Impacts	PSU
Land Use Planning	
Impact 11-1: Short-Term Construction-Related Impacts	LTS
Impact 11-2: Long-Term Operational-Related Impacts	PSU
Mineral Resources	
Impact 12-1: Short-Term Construction-Related Impacts	LTS
Impact 12-2: Long-Term Operational-Related Impacts	LTS
Noise	
Impact 13-1: Short-Term Construction-Related Impacts	PSU
Impact 13-2: Long-Term Operational-Related Impacts	PSU
Population and Housing	
Impact 14-1: Short-Term Construction-Related Impacts	LTS
Impact 14-2: Long-Term Operational-Related Impacts	LTS
Public Services	
Impact 15-1: Short-Term Construction-Related Impacts	LTS
Impact 15-2: Long-Term Operational-Related Impacts	LTS
Recreation	
Impact 16-1: Short-Term Construction-Related Impacts	LTS
Impact 16-2: Long-Term Operational-Related Impacts	PSU
Transportation/Traffic	
Impact 17-1: Short-Term Construction-Related Impacts	PSU
Impact 17-2: Long-Term Operational-Related Impacts	PSU
Utilities and Service Systems	
Impact 18-1: Long-Term Operational-Related Impacts	PSU

B = Beneficial; LTS = Less Than Significant; NA = Not Applicable; PSU = Potentially Significant and Unavoidable

Source: CARB 2017b.

D. Cumulative Impacts by Resource Area

1. Aesthetics

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could result in a significant impact to aesthetics from development of new facilities for the manufacture of zero- and near-zero emission vehicle-related equipment, development of infrastructure, and increased lithium mining. The exact location or character of these new facilities or modification of existing facilities is uncertain. However, new facilities could degrade scenic vistas or views from a State scenic highway due to the presence of heavy-duty equipment, glare, lighting, or disturbed earth. In addition, facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime lighting for safety and security purposes. Increased lithium mining could result in harmful visual changes to the natural environment such as hillside erosion, contamination of surface waters, artificial drainage patterns, subsidence, night-time lighting, and deforestation.

These compliance responses could result in significant and unavoidable aesthetics impacts. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts on aesthetics due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

The 2022 State SIP Strategy's impacts to aesthetics would be significant and unavoidable on their own, as concluded in Chapter 4. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 would likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** on aesthetics.

2. Agriculture and Forestry Resources

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could result in a significant impact to agriculture and forestry resources from construction and operational activities associated with new or modified

facilities or infrastructure and increased lithium mining. The exact location or character of these new facilities or modification of existing facilities is uncertain. However, new facilities could be located on Important Farmland, forest land, or timberland. Land use policies could generally avoid conversion of agricultural and forest lands, but the potential remains for conversion. Lithium extraction from brines occurs in desert areas that are generally not valuable for agriculture or forestry, but hard rock mining could result in the loss of agricultural or forest lands. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts on agriculture and forestry resources due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

The 2022 State SIP Strategy's impacts to agriculture and forestry resources would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of the potential for land conversion to non-agricultural and non-forest uses. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because this impact would combine with other impacts to these resources across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 would likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level (in instances where Important Farmland is not converted), but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** on agriculture and forestry resources.

3. Air Quality

Implementation of the reasonably foreseeable compliance responses for the various measures under the 2022 State SIP Strategy could require construction activities that would generate emissions of criteria air pollutants and toxic air contaminants (TACs). Emissions from construction activities could occur from grading and site preparation, use of heavy-duty equipment, and construction worker commute trips. The exact location and state of ambient air quality where construction activities may take place is uncertain. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts on air quality due to construction and of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

The 2022 State SIP Strategy's contribution to adverse air quality effects would be significant and unavoidable on their own, as concluded in Chapter 4. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because this impact would combine with other impacts to these resources across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, CARB's implementation and enforcement of project-level mitigation is legally infeasible. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** on air quality during construction.

However, these emissions would be greatly offset by the beneficial air quality impacts that would be realized under the 2022 State SIP Strategy.

The 2022 State SIP Strategy's long-term operational impacts to air quality would be beneficial on their own, as discussed in Chapter 4 of this EA. These impacts would be beneficial through the electrification of the on-road transportation sector resulting in a decrease in gasoline and diesel fuel combustion, which contributes greatly to the degradation of air quality in the state. Unlike other resource area, CARB can directly influence the composition of vehicles and emissions standards for the on-road mobile source sector; therefore, the beneficial long-term air quality effects would likely be realized. The 2022 State SIP Strategy would assist the state in meeting the NAAQS and CAAQS. This indicates that the 2022 State SIP Strategy **would not present a cumulatively considerable contribution to a significant cumulative impact** on long-term operational-related air quality effects.

4. Biological Resources

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location of these new facilities or the modification of existing facilities is uncertain. Construction could require disturbance of undeveloped area, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. These activities would have the potential to adversely affect biological resources (e.g., species, habitat) that may reside or be present in those areas. Because there are biological species that occur, or even thrive, in developed settings, resources could also be adversely affected by construction and operations within disturbed areas at existing manufacturing facilities or at other sites in areas with zoning that would permit the development of manufacturing or industrial uses. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above

under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts on biological resources due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

The 2022 State SIP Strategy's impacts to biological resources would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of effects on habitat, special-status species, wildlife movement, and other aspects. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and the project's impact would combine with impacts on these resources across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** on biological resources.

5. Cultural Resources

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location of these new facilities or the modification of existing facilities is uncertain. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Demolition of existing structures may also occur before the construction of new buildings and structures. The cultural resources that could potentially be affected by ground disturbance activities could include, but are not limited to, prehistoric and historical archaeological sites, paleontological resources, historic buildings or other structures, and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, also may exist. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and

unavoidable impacts on cultural resources due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

The 2022 State SIP Strategy's impacts to cultural resources would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of the potential to damage and destroy cultural, prehistoric, historic, tribal cultural, and paleontological resources. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because the project's impact would combine with other impacts to these resources across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the project to a less-than-considerable level in most cases, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** on cultural resources.

6. Energy

Implementation of the 2022 State SIP Strategy could require construction and operation of new or modified facilities or infrastructure as well as increased lithium mining. While these compliance responses would require the consumption of energy resources, these actions would enable the transition to zero-emission technologies to comply with provisions of the 2022 State SIP Strategy and would not involve the wasteful or inefficient use of energy. While energy demand would increase during construction of future projects in response to implementation of the 2022 State SIP Strategy, these energy expenditures would be necessary to facilitate the actions that would result in environmental benefits such as reduced air pollution and GHG emissions. Therefore, short-term energy consumption would not be considered unnecessary. Use of zero and near-zero emission technologies would divert energy from fossil fuel-powered systems and engines to electrical systems, which, as mandated by the renewable portfolio standard, will become increasingly more renewable in the coming years. Arguably, through the use of alternative fuels and an increasingly more renewable energy grid, implementation of the 2022 State SIP Strategy would improve the efficiency of energy usage across the State.

Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified less than significant impacts related to energy due to construction and operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

Therefore, implementation of the 2022 State SIP Strategy **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to energy.

7. Geology and Soils

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location of these new facilities or the modification of existing facilities is uncertain. Construction could require disturbance of undeveloped area, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Additional disturbance could result from the increased mineral ore extraction activities which would provide raw materials to these manufacturing facilities and energy projects. These activities would have the potential to adversely affect the geology and soils in construction or mineral ore extraction areas such that a rupture of a known earthquake fault, strong seismic ground shaking, liquefication, landslides, erosion, or the destruction of a unique paleontological resource or geographic feature could occur. Soil compaction, soil erosion, and loss of topsoil could occur during construction activities. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts on geology and soils due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

The 2022 State SIP Strategy's impacts to geology and soils would be significant and unavoidable on their own, as concluded in Chapter 4. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because the project would combine with impacts across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the

incremental contribution from the project to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** related to geology and soils.

8. Greenhouse Gases

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require the construction and operation of new or modified facilities or infrastructure and mining activities. When these short-term construction GHG emissions associated with construction activities are considered in relation to the overall long-term operational GHG benefits, they are not considered substantial. Therefore, the 2022 State SIP Strategy would not have a cumulatively significant impact on GHG emissions. Compliance responses implemented in response to the 2022 State SIP Strategy were found to have a beneficial impact related to GHG emissions.

Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified beneficial impacts related to GHG emissions due to construction and operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

Therefore, implementation of the 2022 State SIP Strategy **would not result in a cumulatively considerable contribution to a significant cumulative impact** on GHG emissions.

9. Hazards and Hazardous Materials

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Construction activities generally use heavy-duty equipment requiring periodic refueling and lubricating. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site. There would be a potential risk of accidental release during fuel transfer activities. Although precautions would be taken to ensure that any spilled fuel is properly contained and disposed, and such spills are typically minor and localized to the immediate area of the fueling (or maintenance), the potential still remains for a substantial release of hazardous materials into the environment. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of

this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts related to hazards and hazardous materials due to construction and operation (i.e., Scoping Plan) of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

The 2022 State SIP Strategy's impacts related to hazards and hazardous materials would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of effects of disposal of hazardous materials, the potential for hazardous materials spills, and exposure and environmental effects from lithium. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because the project's impacts would combine with other impacts across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** related to hazards and hazardous materials.

10. Hydrology and Water Quality

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Construction could require disturbance of undeveloped area, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways, which could result in short-term adverse effects on water quality from potential erosion or waste discharge. Increased lithium mining could result in impacts on water quality from ground disturbance (i.e., hard rock mining) or groundwater overdrafting (i.e., continental brine mining). Most of these activities would be subject to state and federal regulations (e.g., Clean Water Act); however, lithium is obtained from areas outside of the United States, where these regulations are not enforced. CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts on hydrology and water quality due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

The 2022 State SIP Strategy's impacts related to hydrology and water quality would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of potential adverse effects on water quality from construction activities and increased mining. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because this impact would combine with other water quality impacts across the state, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** related to hydrology and water quality.

11. Land Use and Planning

Impacts related to land use and planning focus on potential conflicts with plans, policies, and regulations intended to minimize environmental impacts, as well as potential division of established communities. These impacts do not typically interact or combine with other impacts within the cumulative context such that a significant cumulative impact could occur with respect to land use and planning. Nevertheless, significant project-related impacts associated with land use and planning were not identified in Chapter 4, and mitigation developed for various resource areas (i.e., agricultural and forestry resources, biological resources, geology and soils, and hydrology and water quality) was included. CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified less than significant impacts related to land use and planning due to construction of individual projects and potentially significant and unavoidable impacts due to operation of individual projects. Thus, implementation of this plan could result in a significant cumulative impact.

Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because this impact would combine with other land use impacts across the state, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** related to land use.

Therefore, the 2022 State SIP Strategy **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to land use and planning.

12. Mineral Resources

Implementation of the 2022 State SIP Strategy could require construction and operation of new or modified facilities or infrastructure and increased lithium mining. While an increase in mining of lithium could occur, this increase would be generally small when viewed in the context of global lithium markets. Implementation of the 2022 State SIP Strategy would not affect the economic potential related to known mineral resources or substantially affect supply.

Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified less than significant impacts on mineral resources due to construction and operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

Therefore, the Implementation of the 2022 State SIP Strategy **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to mineral resources.

13. Noise and Vibration

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Noise and vibration associated with construction and operation of these facilities and mining operations would fluctuate depending on type, number, size, and duration of usage for the varying equipment. The effects of noise and vibration would depend on the type of construction activities occurring on any given day, noise levels

generated by those activities, distances to noise sensitive receptors, and the existing ambient noise environment in the receptor's vicinity. Operational-related activities associated with mining or operation of manufacturing plants could produce new or ongoing sources of noise that could exceed applicable noise standards and result in a substantial increase in ambient noise levels Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts related to noise and vibration due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

The 2022 State SIP Strategy's impacts related to noise and vibration would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of potential increase in noise and vibration that could exceed applicable noise standards and result in a substantial increase in ambient noise levels. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because these impacts would combine with other significant noise and vibration impacts across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** related to noise and vibration.

14. Population and Housing

Implementation of the 2022 State SIP Strategy could require construction and operation of new or modified facilities or infrastructure. Activities related to the construction of these facilities would require relatively small crews, and demand for these crews would be temporary (e.g., 6 to 12 months per project). Therefore, a substantial amount of construction worker migration would not be likely to occur, and a sufficient construction employment base would likely be available. Construction activities would not require new additional housing or generate changes in land use. It would be expected that the aforementioned facilities would be located within areas of consistent zoning and have sufficient employees and housing to support their operation.

Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified less than significant impacts related to population and housing due to construction and operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

Therefore, the implementation of the 2022 State SIP Strategy **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to population and housing.

15. Public Services

Implementation of the 2022 State SIP Strategy could include construction and operation of new or modified facilities or infrastructure. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. These would likely occur within footprints of existing facilities, or in areas with zoning that would permit the development of these facilities. Construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary (e.g., 6 to 12 months per project). Therefore, it would be anticipated that the need for a substantial amount of construction worker migration would not occur and that a sufficient construction employment base would likely be available. Construction activities would not require new additional housing to accommodate or generate changes in land use and, therefore, would not affect the provision of public services. In addition, increased employment associated with expanded industrial facilities and mining operations for battery production would not likely result in focused increase in employment such that local housing would expand in a way that would increase demand for public services such that new or expanded physical facilities would be necessary or service ratios would be substantially affected. It would be expected that the aforementioned facilities would be located within areas of consistent zoning and have sufficient public services to support their operation.

Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified less than significant impacts related to public services due to construction and operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

Therefore, activities related to the Implementation of the 2022 State SIP Strategy **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to public services.

16. Recreation

Implementation of the 2022 State SIP Strategy could require construction and operation of new or modified facilities or infrastructure. There is uncertainty as to the exact locations of potential new or modified facilities. These activities would likely occur within footprints of existing facilities, or in areas with zoning that would permit their development. In addition, demand for construction of these crews would be temporary (e.g., 6 – 12 months per project). Therefore, it would be anticipated that the need for a substantial amount of construction worker migration would not occur. Thus, construction activities associated with reasonably foreseeable compliance responses would not be anticipated to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would be likely to occur. In addition, the demand for new (or expansion of existing) recreational-related facilities would not occur as a result of construction activities. In addition, increased employment associated with expanded industrial facilities and mining operations for battery production would not likely result in focused increase in employment such that housing would expand in a way that would increase demand for new recreational facilities or increase use of existing recreational facilities in such a manner that substantial physical deterioration would occur. It would be expected that the aforementioned facilities would be located within areas of consistent zoning and have sufficient recreational facilities to support their operation.

Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts due to operation of individual projects. Thus, implementation of this plan could result in a significant cumulative impact.

Therefore, activities related to the Implementation of the 2022 State SIP Strategy **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to recreation.

17. Transportation

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Although detailed information about potential specific construction activities is not currently available, these activities could result in short-term construction traffic (primarily motorized) from worker commute- and material delivery-related trips. Depending on the amount of trip generation and the location of new facilities, implementation could conflict with applicable programs, plans, ordinances, or policies (e.g., performance standards, congestion management); and/or result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially due to project-generated

heavy-duty truck trips. Locations of facilities with newly installed infrastructure to distribute and dispense alternative fuels cannot currently be known; therefore, the total change in VMT resulting from operation of these facilities cannot be assessed. Many activities, such as lithium battery manufacturing, recycling, and refurbishing, would take place at existing facilities; however, long-term operational-related activities associated with deliveries and distribution of goods (e.g., alternative fuels) could result in the addition of new trips, which could increase regional VMT. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts related to transportation and traffic due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

The 2022 State SIP Strategy's impacts related to transportation would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of potential increase in VMT that could exceed applicable local and regional standards and potential issues related to traffic safety, including bicycle and pedestrian safety. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because this impact would combine with other transportation-related impacts across the state, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** related to transportation.

18. Tribal Cultural Resources

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location of these new facilities or the modification of existing facilities is uncertain. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and

roadways. Demolition of existing structures may also occur before the construction of new buildings and structures. known or undocumented tribal cultural resources could be unearthed or otherwise discovered during ground-disturbing and construction activities.

CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

The 2022 State SIP Strategy's impacts to cultural resources would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of the potential to damage and destroy tribal cultural resources. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because the project's impact would combine with other impacts to these resources across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the project to a less-than-considerable level in most cases, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** on tribal cultural resources.

19. Utilities and Service Systems

Implementation of the reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. As a result, there could be new demand for water, wastewater, electricity, and gas services for new or modified facilities. Generally, facilities would be cited in areas with existing utility infrastructure—or areas where existing utility infrastructure is easily assessable. At this time, the specific location and type of construction needed is not known and would be dependent upon a variety of market factors that are not within the control of CARB including: economic costs, product demands, environmental constraints, and other market constraints. Thus, the specific impacts from construction on utility and service systems cannot be identified with any certainty, and individual compliance responses could potentially result in significant environmental impacts for which it is unknown whether mitigation would be available to reduce the impacts. Implementation of the 2030 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this ~~Draft~~ Final EA. As summarized in Table 9, the 2030 Scoping Plan environmental document identified potentially significant and unavoidable impacts related to utilities due to construction

and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

The 2022 State SIP Strategy's impacts related to utilities and service systems would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of potential impacts resulting from new demand for water, wastewater, electricity, and gas services. Because the 2022 State SIP Strategy on its own would result in a significant and unavoidable impact, and because the project impact would combine with other statewide impacts to utilities, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could likely effectively reduce the incremental contribution from the 2022 State SIP Strategy to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the 2022 State SIP Strategy **could result in a cumulatively considerable contribution to a significant cumulative impact** related to utilities and service systems.

20. Wildfire

Implementation of the 2022 State SIP Strategy could require construction and operation of new or modified facilities or infrastructure. There is uncertainty as to the exact locations of potential new or modified facilities. However, construction and operation activities as well as new or modified facilities would likely occur within footprints of existing manufacturing facilities, or in areas with appropriate zoning that permit such uses and activities; therefore, changes or modifications to existing fire response and evacuation plans would not be necessary. Additionally, new facilities would be subject to the applicable chapters of the California Fire Code and any additional local provisions identified in local fire safety codes, which would substantially reduce the risk of wildfire ignitions caused by infrastructure development. Finally, when packaged and handled properly, lithium-ion batteries pose no environmental hazard (79 Fed. Reg. 46011, 46032) and increased use of lithium-based batteries in vehicles would not substantially increase the risk of wildland fire. Therefore, activities related to the Implementation of the 2022 State SIP Strategy **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to wildfire.

E. Growth Inducing Impacts

A project would be considered growth-inducing if it removes an obstacle to growth, includes construction of new housing, or establishes major new employment opportunities. The reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy would not directly result in any growth in population or housing, as the 2022 State SIP Strategy is meant to spur emissions-reducing changes in the existing mobile and stationary sources of air pollution operating in California, which would not require substantial relocation of employees.

6.0 MANDATORY FINDINGS OF SIGNIFICANCE

Consistent with the requirements of the California Environmental Quality Act (CEQA) Guidelines Section 15065 and Section 18 of the Environmental Checklist, this ~~Draft~~ Final Environmental Analysis (~~Draft~~ Final EA) addresses the mandatory findings of significance for the 2022 State SIP Strategy.

A. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat for a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

A finding of significance is required if a project "has the potential to substantially degrade the quality of the environment (14 CCR Section 15065(a))." In practice, this is the same standard as a significant effect on the environment, which is defined as "a substantial or potentially substantial adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (14 CCR Section 15382.)." As with all of the environmental effects and issue areas, the precise nature and magnitude of impacts would depend on the types of projects authorized, their locations, their aerial extent, and a variety of site-specific factors that are not known at this time but that would be addressed by environmental reviews at the project-specific level. For projects within California, all of these issues would be addressed through project-specific environmental reviews that would be conducted by local land use agencies or other regulatory bodies at such time the projects are proposed for implementation. Outside of California, other state and local agencies would consider the proposed projects in accordance with their laws and regulations. CARB would not be the agency responsible for conducting the project-specific environmental or approval reviews because it is not the agency with authority for making land use or project implementation decisions.

This ~~Draft~~ Final EA addresses and discloses potential environmental effects associated with implementation of the 2022 State SIP Strategy, including direct, indirect, and cumulative impacts. As described in Chapter 4, this ~~Draft~~ Final EA discloses potential environmental impacts, the level of significance prior to mitigation, mitigation measures, and the level of significance after the incorporation of mitigation measures.

B. Does the project have impacts that are individually limited, but cumulatively considerable?

A lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has potential environmental effects that are individually limited, but cumulatively considerable (14 CCR Section 15065). Cumulatively considerable means "that the incremental effects of an individual project

are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (14 CCR Section 15065(a)(3)).” Cumulative impacts are discussed in Chapter 5 in the ~~Draft~~ Final EA.

C. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

A lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has the potential to cause substantial adverse effects on human beings, either directly or indirectly (14 CCR Section 15065(a)(4)). Under this standard, a change to the physical environment that might otherwise be minor must be treated as significant if people would be significantly affected. This factor relates to adverse changes to the environment of human beings generally, and not to effects on particular individuals. While changes to the environment that could indirectly affect human beings would be represented by all of the designated CEQA issue areas, those that could directly affect human beings include air quality, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, transportation/traffic, and utilities, which are all addressed in Chapter 4, “Impact Analysis” of this ~~Draft~~ Final EA.

7.0 ALTERNATIVES ANALYSIS

This chapter of the ~~Draft~~ Final EA provides an overview of the regulatory requirements and guidance for alternatives analyses under CEQA; a description of each of the alternatives to the 2022 State SIP Strategy; a discussion of whether and how each alternative meets the objectives of the 2022 State SIP Strategy; and an analysis of each alternative's environmental impacts.

A. Approach to Alternatives Analysis

CARB's certified regulatory program (Title 17 CCR Sections 60000 – 60008) requires that, where a contemplated action may have a significant effect on the environment, a staff report shall be prepared in a manner consistent with the environmental protection purposes of CARB's regulatory program and with the goals and policies of CEQA. Among other things, the staff report must address feasible alternatives to the proposed action that would substantially reduce any significant adverse impact identified.

The certified regulatory program provides general guidance that any action or proposal for which significant adverse environmental impacts have been identified during the review process shall not be approved or adopted as proposed if there are feasible mitigation measures or feasible alternatives available which would substantially reduce such an adverse impact. For purposes of this section, "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors, and consistent with the Board's legislatively mandated responsibilities and duties (Title 14 CCR Section 15364).

While CARB, by virtue of its certified program, is exempt from Chapters 3 and 4 of CEQA and corresponding sections of the CEQA Guidelines, the CEQA Guidelines nevertheless contain useful information for preparation of a thorough and meaningful alternatives analysis. CEQA Guidelines section 15126.6(a) speaks to evaluation of "a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects, and evaluate the comparative merits of the alternatives." The purpose of the alternatives analysis is to determine whether different approaches to, or variations of, the project would reduce or eliminate significant project impacts, within the basic framework of the objectives, a principle that is consistent with CARB's regulatory requirements.

Alternatives considered in an environmental document should be potentially feasible and should attain most of the basic project objectives. It is critical that the alternatives analysis define the project's objectives. The project objectives are listed below in section III of this chapter.

The range of alternatives is governed by the "rule of reason," which requires evaluation of only those alternatives "necessary to permit a reasoned choice" (Title 14 CCR Section

15126.6(f)). Further, an agency "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Title 14 CCR Section 15126.6(f)(3)). The analysis should focus on alternatives that are feasible and that take economic, environmental, social, and technological factors into account. Alternatives that are remote or speculative need not be discussed. Furthermore, the alternatives analyzed for a project should focus on reducing or avoiding significant environmental impacts associated with the project as proposed.

B. Selection of Range of Alternatives

This chapter evaluates a range of alternatives to the 2022 State SIP Strategy that could reduce or eliminate significant effects on the environment, while still meeting basic project objectives (14 CCR Section 15126.6(a)). Pursuant to CARB's certified regulatory program, this chapter also contains an analysis of each alternative's feasibility and the likelihood that it would substantially reduce any significant adverse environmental impacts identified in the impact analysis contained in Chapter 4 of this ~~Draft~~ Final EA (17 CCR section 60004.2(a)(5)).

CARB has identified three alternatives that allow the public and Board to consider different approaches. CARB has made a good faith effort to identify potentially feasible project alternatives.

For the purposes of this analysis, three alternatives are considered:

Alternative 1: No Project Alternative

Alternative 2: No Zero-Emission In-Use Requirements

Alternative 3: No In-Use Locomotive Regulation Measure

C. Project Objectives

The objectives of the 2022 State SIP Strategy are to:

1. Provide the necessary emission reductions from State-regulated Sources for all of California's nonattainment areas to meet federal ambient air quality standards by the attainment dates specified by the U.S. Environmental Protection Agency (U.S. EPA), including the 70 parts per billion (ppb) ground level ozone standard;

2. Support the development and submittal of approvable SIPs to U.S. EPA. To meet U.S. EPA requirements for approvable SIPs, the measures must include commitments to achieve emission reductions that are real, permanent, quantifiable, verifiable, and enforceable;

3. Complement existing programs and plans – to ensure, to the extent feasible, that activities undertaken pursuant to the measures complement, and do not interfere with, existing planning efforts to reduce emissions and exposure in disadvantaged

communities, to reduce greenhouse gas (GHG) emissions, and toxic air contaminant (TAC) emissions, and to transition California's mobile fleet to zero-emission across the sectors where feasible;

4. Establish emissions standards and other requirements for cleaner technologies (both zero- and near-zero emission technologies), coupled with cleaner renewable fuels to achieve CARB's SIP goals;

5. Introduce zero-emission technology in targeted applications to achieve CARB's SIP goals;

6. Establish manufacturer and fleet zero-emission technology requirements to accelerate the penetration of ZEV fleets to achieve CARB's SIP goals;

7. Ensure the in-use vehicle and engine fleets remain durable, and that in use vehicles continue to operate at their cleanest possible level to achieve CARB's SIP goals; and

8. Incentivize and support the early introduction of advanced clean technologies to achieve CARB's SIP goals.

D. Alternatives Analysis

Detailed descriptions and analyses of each alternative are presented below. The analysis of each alternative includes a discussion of the degree to which the alternative meets the basic project objectives, the degree to which the alternative avoids a potentially significant impact identified in Chapter 4, and any environmental impacts that may result from the alternative.

1. Alternative 1: No Project

a) Alternative 1 Description

Alternative 1, the "No-Project Alternative," is included to disclose environmental information that is important for considering the 2022 State SIP Strategy. It is useful to include a "No-Project Alternative" in this analysis for the same reasons that this type of alternative is called for in the CEQA Guidelines. As noted in the CEQA Guidelines, "the purpose of describing and analyzing a no-project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Title 14 CCR Section 15126.6(e)(1)). The No-Project Alternative also provides an important point of comparison to understand the potential environmental benefits and impacts of the other alternatives.

Under the No-Project Alternative, the 2022 State SIP Strategy would not be adopted. CARB's existing control program, which is comprised of regulations and programs the Board has already adopted, would continue to be implemented. For a list of these programs, please refer to Attachment A of this ~~Draft~~ Final EA.

As the No-Project Alternative precludes the State from submitting to U.S. EPA an approvable SIP, adoption of this alternative would result in a failure to meet statutory requirements under the Clean Air Act and State law. If it is found that a SIP has failed to meet certain requirements under the Act (Section 179(b); 42 U.S.C. Section 7509(a)), consequences could include:

- Offset sanctions (the Act Section 179(b), 42 U.S.C. Section 7509(b))
- Highway funding sanctions (the Act Section 179(b); 42 U.S.C. Section 7509(b))
- Issuance and enforcement of a Federal Implementation Plan (FIP), prepared by U.S. EPA (the Act Section 110(c); 42 U.S.C Section 7410(c)).

If a state fails to adopt and implement an adequate plan, U.S. EPA may issue and enforce a FIP, pursuant to Section 110(c) of the Act, which is designed to correct any deficiencies in the SIP. Requirements under a FIP would be prepared under the discretion of U.S. EPA. Similarly to a SIP, a FIP would be developed considering competing, and interrelated economic, political, and environmental factors that could result in widely varying elements. Moreover, in the past, U.S. EPA has primarily worked with states to develop their own implementation plans, rather than imposing sanctions and federal plans. As a result, beyond the basic limitation that a FIP only corrects the inadequacies in a SIP, it is not possible to determine the content of a hypothetical FIP or its potential environmental impacts.

b) Alternative 1 Discussion

i. Objectives

The No-Project Alternative would fail to meet many of the project objectives listed in Chapter 2 and reiterated above. The No-Project Alternative fails to provide the necessary emissions reductions from State-regulated sources for all of California's nonattainment areas to meet federal 70 ppb 8-hour ozone air quality standard and would thus not allow for submittal of an approvable SIP to EPA (Objectives 1 and 2). Furthermore, the No-Project Alternative is also inconsistent with Objectives 4 through 8, which encourage an increased rate of market penetration of cleaner combustion and zero-emission technology. Thus, this alternative would not feasibly meet most of the objectives of the 2022 State SIP Strategy.

ii. Environmental Impacts

There would be no new environmental impacts under the No-Project Alternative compared to the baseline because compliance responses would be the same as under the existing regulatory environment. It is anticipated that the No-Project Alternative would not result in the development of new manufacturing plants that specialize in the production of propulsion batteries or fuel cells, or the modification or expansion of existing production facilities. The proportion of ZEVs in the statewide vehicle fleet would likely not increase beyond the existing regulatory baseline, therefore, no new zero-emission technology infrastructure would not be developed under the existing regulation. Additional battery metal mining activities also would not occur. Thus, no impacts related to new or expanded facilities for precious metal mining, fueling,

electricity distribution, or battery disposal would occur under the No-Project Alternative.

Without implementation of the 2022 State SIP Strategy, the beneficial impacts resulting from the 2022 State SIP Strategy would not occur. This would include no reduction of criteria pollutant and GHG emissions beyond what is required under existing regulations. There would be no further reductions in criteria air pollutants that would provide public health benefits, achieve NAAQS, and meet the goals of the SIP. Additionally, the No-Project Alternative would not further decrease GHG emissions in support of CARB's climate targets. Therefore, as described above, this alternative would fail to meet most of the basic project objectives.

In addition, as described above for a FIP, past practice gives little guidance to make it possible to determine the likely scope, timing, and content of the provision of a FIP for California. As the specific control programs and requirements of the FIP would be prepared at the discretion of U.S. EPA, it is not possible to determine the scope and content of actions that could result from a FIP under the No-Project Alternative. Thus, an evaluation of the environmental effects from a FIP under No-Project Alternative is not feasible.

2. Alternative 2: No Zero-Emission In-Use Requirements

a) Alternative 2 Description

Alternative 2 is a less stringent alternative compared to the 2022 State SIP Strategy and considers removing the zero-emission in-use requirements from within the applicable measures. This alternative would remove the zero-emission in-use requirements in the 2022 State SIP Strategy measures such as the Advanced Clean Fleet Regulation, Zero-Emissions Trucks Measure, Transport Refrigeration Unit Regulation Part II, Commercial Harbor Craft Amendments, Off-Road Zero-Emission Targeted Manufacturer Rule and In-Use Locomotive Regulation. Without zero-emission in-use requirements, the 2022 State SIP Strategy would rely on emissions reductions from cleaner combustion requirements and zero-emission standards.

b) Alternative 2 Discussion

i. Objectives

Alternative 2 meets most of the basic project objectives, though it fails to maximize emissions reductions in the timelines needed for all of California's nonattainment areas to meet federal ambient air quality standards by the attainment dates specified by U.S. EPA because it does not encourage an increased rate of market penetration of zero-emission technology, but rather would rely on natural turnover. Emissions generated by sources under CARB's authority would decrease because the measures in Alternative 2 would be more stringent than CARB's current program and include cleaner combustion requirements and zero-emissions standards. However, the emissions reductions achieved under this alternative would not be as great as the reductions that would be achieved under the 2022 State SIP Strategy. Emission reductions from Alternative 2 do

not meet the maximum feasible due to the lack of increased market penetration from the zero-emission in-use requirements. Without the maximum reductions, the State may not be able to achieve the necessary emissions reductions to attain federal air quality standards in all nonattainment areas, indicating that this alternative is not consistent with Objectives 1 and 2. Alternative 2 would achieve Objectives 3 - 8, but not to the same maximal degree as the 2022 State SIP Strategy.

ii. Environmental Impacts

The type of impacts under the less stringent Alternative 2 would be the same as the 2022 State SIP Strategy, which include potentially significant adverse impacts related to aesthetics, biological resources, cultural resources, geology and soils, hazards and hazardous materials, noise, transportation/traffic, and utilities and service systems. However, because many of the adverse environmental affects would be associated with manufacturing and new infrastructure, the degree of these impacts under Alternative 2 may occur later in time than under the 2022 State SIP Strategy. This is largely because Alternative 2 would result in slower penetration of zero-emission technology into California and associated lower zero-emission technology production by manufacturers in the earlier years. Decreased environmental impacts in the earlier years would be related to fewer zero-emission technology infrastructure installations to support a smaller zero-emission vehicle population, reducing construction related activities and therefore lessening short-term construction-related impacts. Also, impacts associated with battery production such as those resulting from mining and manufacturing may be reduced due to the decreased demand from the slower penetration of zero-emission technology. These include reduced impacts to biological resources, geology and soil, cultural resources impact, and hydrology and water quality.

While Alternative 2 may reduce the impacts from battery technology in the earlier years as compared to the 2022 State SIP Strategy, it would be expected that potentially significant and unavoidable impacts would still occur because the compliance responses to implement zero-emission standards would still require similar infrastructure and facility development to meet the battery technology.

Beneficial air quality and GHG energy effects would be anticipated to be significantly less than those that would occur with implementation of the 2022 State SIP Strategy. Alternative 2 would result in fewer zero-emission technology being introduced in the near term as compared to the 2022 State SIP Strategy. This alternative would not avoid the impacts associated with the 2022 State SIP Strategy nor achieve the same level of environmental benefit.

3. Alternative 3: No In-Use Locomotive Regulation Measure

a) Alternative 3 Description

Alternative 3 is a less stringent alternative compared to the 2022 State SIP Strategy and considers removing the In-Use Locomotive Regulation measure. This alternative would include all of the other 2022 State SIP Strategy measures described in Chapter 2 for on-road medium- and heavy-duty vehicles, on-road light-duty vehicles, off-road equipment,

consumer products, residential and commercial buildings, and primarily-federally and internationally regulated sources, but remove the In-Use Locomotive Regulation from the measures included in the 2022 State SIP Strategy. Without In-Use Locomotive Regulation, the 2022 State SIP Strategy would rely on the remaining measures and associated emissions reductions including Federal Actions Needed such as More Stringent National Locomotive Emission Standards, Zero-Emission Standards for Switch Locomotives, and Address Locomotives Remanufacturing Loophole to achieve reductions in emissions from locomotives.

b) Alternative 3 Discussion

i. Objectives

Alternative 3 meets most of the basic project objectives, though it fails to maximize emissions reductions in the timelines needed for all of California's nonattainment areas to meet federal ambient air quality standards by the attainment dates specified by U.S. EPA because it does not encourage an increased rate of market penetration of cleaner combustion and zero-emission technology for locomotives, but rather would rely on natural turnover. Emissions generated by sources under CARB's authority would decrease because the measures in Alternative 3 would include those for on-road medium- and heavy-duty vehicles, on-road light-duty vehicles, off-road equipment, consumer products, residential and commercial buildings, and be more stringent than CARB's current program. However, even with potential federal actions on locomotives identified in the Federal Actions Needed, since Alternative 3 assumes no In-Use Locomotive Regulation, criteria pollutant emissions reductions achieved under this alternative would not be as great as the reductions that would be achieved under the 2022 State SIP Strategy. Alternative 3 emissions reductions are not the maximum feasible due to the lack of increased adoption of cleaner technologies from the cleaner combustion and zero-emission requirements for locomotives. Without the maximum reductions, the State may not be able to achieve the necessary emissions reductions to attain federal air quality standards in all nonattainment areas, indicating that this alternative is not consistent with Objectives 1 and 2. Alternative 3 would achieve Objectives 3 - 8, but not to the same maximal degree as the 2022 State SIP Strategy.

ii. Environmental Impacts

The type of impacts under less stringent Alternative 3 would be the same as the 2022 State SIP Strategy, which include potentially significant adverse impacts related to aesthetics, biological resources, cultural resources, geology and soils, hazards and hazardous materials, noise, transportation/traffic, and utilities and service systems. However, because many of the adverse environmental affects would be associated with manufacturing and new infrastructure, some of these impacts under Alternative 3 may occur later in time than under the 2022 State SIP Strategy. This is largely because Alternative 3 would result in slower or no penetration of zero-emission technology for locomotives into California and associated lower zero-emission technology production by manufacturers. Decreased environmental impacts would be related to fewer or no zero-emission technology infrastructure installations to support a smaller zero-emission locomotive population, reducing construction related activities and therefore lessening

short-term construction-related impacts. Also, impacts associated with battery production such as those resulting from mining and manufacturing may be reduced due to the decreased demand from the slower or no penetration of zero-emission technology for locomotives. These reduced impacts include to biological resources, geology and soil, cultural resources impact, and hydrology and water quality.

While Alternative 3 may reduce the impacts from battery technology as compared to the 2022 State SIP Strategy, it would be expected that potentially significant and unavoidable impacts would still occur because the compliance responses to the rest of the measures that would remain in Alternative 3 would still require similar infrastructure and facility development to meet the battery technology.

Beneficial air quality and GHG energy effects would be anticipated to be less than those that would occur with implementation of the 2022 State SIP Strategy. Alternative 3 would result in fewer cleaner combustion and zero-emission locomotives being introduced in the near term as compared to the 2022 State SIP Strategy. This alternative would not avoid the impacts associated with the 2022 State SIP Strategy nor achieve the same level of environmental benefit.

E. Alternatives Considered but Rejected

Additional alternatives were considered during development of the alternatives to the 2022 State SIP Strategy. The CEQA Guidelines Section 15126.6(c) includes three factors that may be used to eliminate alternatives from detailed consideration in an EIR: "i. failure to meet most of the basic project objectives; ii. Infeasibility, or iii. Inability to avoid significant environmental impact."

1. No Zero-Emission Requirements

A "no zero-emission requirements" alternative would eliminate all zero-emission requirements and measures included in the 2022 State SIP Strategy. Under this alternative, CARB staff considered only the cleaner combustion requirements and measures included in the 2022 State SIP Strategy. This approach, however, is infeasible given that half of the measures included in the 2022 State SIP Strategy have a zero-emission requirement, and the remaining cleaner combustion measures do not provide the level of emissions reductions needed for all of California's nonattainment areas to meet federal ambient air quality standards by the attainment dates specified by U.S. EPA.

Furthermore, while the impacts from battery technology may be reduced from removing the zero-emission requirements, this approach fails to meet most of the basic project objectives, including Objectives 1-3, 5, and 6. First, no zero-emission requirements fail to reduce criteria emissions needed for all of California's nonattainment areas to meet the federal 70 ppb 8-hour ozone air quality standard. The zero emission requirements transition away from emitting criteria emissions and dependence on petroleum energy as an energy resource. Internal combustion vehicles produce more criteria pollutant

emissions than zero-emission vehicles. Criteria pollutants must be drastically reduced to attain the 70 ppb 8-hour ozone standard and SIP goals. Lastly, this alternative does not accelerate the deployment of vehicles that achieve the maximum emissions reductions possible and fails to lead the transition to zero-emission technology. Considering the infeasibility of this approach and its failure to meet the project objectives, CARB staff did not pursue further evaluation of this alternative.

2. Emission-Reducing Liquid/Gaseous-Fueled Combustion Technology

An "emission-reducing liquid/gaseous-fueled combustion technology" alternative would allow for the use of liquid/gaseous fuels for use by heavy-duty trucks in the near term, and would extend the timeline for the implementation of ZEV technology compared to the proposed 2022 State SIP Strategy. This approach, however, would not achieve the same level of emissions reductions of criteria air pollutants compared to the 2022 State SIP Strategy and would not avoid the environmental impacts of the construction and operation of new infrastructure to support ZEV technologies, but rather would extend the schedule for when such impacts would be realized. This alternative would fail to meet the Objectives 1-3, 5, and 6 for the following reasons. The inclusion of liquid/gaseous fuels would not reduce criteria emissions to the degree needed for all of California's nonattainment areas to meet the federal 70 ppb 8-hour ozone air quality standard. Implementing the ZEV emission requirements as proposed in the 2022 State SIP Strategy would facilitate the transition away from emitting criteria emissions and dependence on petroleum energy as an energy resource. Internal combustion vehicles produce more criteria pollutant emissions than ZEVs. Criteria pollutants must be drastically reduced to attain the 70 ppb 8-hour ozone standard and SIP goals. Lastly, this alternative does not accelerate the deployment of vehicles that achieve the maximum emissions reductions possible in the long-term and fails to lead the transition to zero-emission technology. Lastly, the inclusion of this alternative would eliminate CARB's ability to use the 2022 State SIP Strategy to complement and not interfere with existing planning efforts to reduce greenhouse gas (GHG) emissions in the state (e.g., the 2022 Scoping Plan) (Objective 3). Considering that this alternative would fail to meet most of the 2022 State SIP Strategy objectives, CARB staff did not pursue further evaluation of this alternative.

F. Environmentally Superior Alternative

If the no project alternative is the environmentally superior alternative, CEQA requires that the EIR "…shall also identify an environmentally superior alternative among the other alternatives." (CCR Section 15126[e][2]). The No Project Alternative (Alternative 1) would be environmentally superior for all environmental resource areas other than greenhouse gases and air quality. Because an environmental objective of the 2022 State SIP Strategy is to ultimately reduce air pollution and because the No Project Alternative does not deliver that substantial environmental benefit, it is not considered the environmentally superior alternative.

Alternative 2 would remove the zero-emission in-use requirements from the Advanced Clean Fleet Regulation, Zero-Emissions Trucks Measure, Transport Refrigeration Unit

Regulation Part II, Commercial Harbor Craft Amendments, Off-Road Zero-Emission Targeted Manufacturer Rule and In-Use Locomotive Regulation. Alternative 2 would meet most of the objectives of the 2022 State SIP Strategy; however, the adverse environmental impacts associated with manufacturing and new infrastructure would occur at a late date due to decreased rate of penetration of zero-emission technology.

This change in schedule would ultimately result in similar adverse operational and construction impacts, but these impacts would occur at a later date. Alternatively, the environmental benefits to GHG emissions and air quality would also not be accomplished as quickly as compared to the 2022 State SIP Strategy.

Alternative 3 would eliminate the In-Use Locomotive Regulation measure. Alternative 3 would result in similar construction and operational impacts; however, because the In-Use Locomotive Regulation would not be included, fewer infrastructure improvements and new manufacturing, recycling, or processing facilities would be needed to support the transition to zero-emission locomotives. However, under Alternative 3, fewer environmental benefits to GHG emissions and air quality would occur. Additionally, Alternative 3 would not achieve the objectives of the 2022 State SIP Strategy including goals at attaining the CAAQS and NAAQS for areas of the State that are in nonattainment.

Given that the key environmental goals of the 2022 State SIP Strategy are related to achieving emissions reductions of GHG to meet the State's long-term GHG reduction goals as well as reduction in criteria pollutant emissions to promote health ambient air quality and attainment of the CAAQS and NAAQS, Alternative 3 is considered the environmentally superior alternative. Although Alternative 3 would not achieve as many benefits as the 2022 State SIP Strategy, it meets more of the environmental-related benefits than Alternatives 2. With additional weighting of the environmental benefits, which are a cornerstone of the 2022 State SIP Strategy, Alternative 3 is the environmentally superior alternative of the alternatives considered.

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