

APPENDIX D

Draft Environmental Analysis

For the Proposed Advanced Clean Fleets Regulation

**California Air Resources Board
1001 I Street
Sacramento, California, 95814**

Notice of Release: August 30, 2022

Notice of Hearing: October 27, 2022

This page intentionally blank.

TABLE OF CONTENTS

1.0	INTRODUCTION AND BACKGROUND	1
A.	Introduction	1
B.	Background Information on the Proposed Advanced Clean Fleets Regulation	1
C.	Environmental Review Process	8
1.	Requirements under the California Air Resources Board Certified Regulatory Program	8
2.	Scope of Analysis and Assumptions	10
D.	Organization of the Draft EA.....	11
E.	Public Review Process for the Environmental Analysis.....	12
2.0	PROJECT DESCRIPTION	15
A.	Objectives.....	15
B.	Description of Proposed Project and Reasonably Foreseeable Compliance Responses.....	17
C.	Reasonably Foreseeable Compliance Responses.....	19
3.0	ENVIRONMENTAL SETTING	23
4.0	IMPACT ANALYSIS AND MITIGATION MEASURES	25
A.	Basis for Environmental Impact Analysis and Significance Determinations	25
1.	Adverse Environmental Impact.....	25
2.	Mitigation Measures	26
B.	Impact Analysis and Mitigation Measures	26
1.	Aesthetics	27
2.	Agriculture and Forestry Resources	33
3.	Air Quality	36
4.	Biological Resources.....	47
5.	Cultural Resources.....	52
6.	Energy	56
7.	Geology and Soils.....	60
8.	Greenhouse Gases	63
9.	Hazards and Hazardous Materials	67
10.	Hydrology and Water Quality.....	74
11.	Land Use Planning	78

12. Mineral Resources	78
13. Noise	89
14. Population and Housing	95
15. Public Services	96
16. Recreation	97
17. Transportation/Traffic	98
18. Tribal Cultural Resources	102
19. Utilities and Service Systems	105
20. Wildfire	108
5.0 CUMULATIVE AND GROWTH-INDUCING IMPACTS	111
A. Introduction and Approach to Cumulative Analysis	111
1. 2030 Target Scoping Plan Update	112
2. Community Air Protection Blueprint	115
B. Significance Determinations and Mitigation	123
C. Cumulative Impacts by Resource Area	124
1. Aesthetics	124
2. Agriculture and Forestry Resources	125
3. Air Quality	126
4. Biological Resources	127
5. Cultural Resources	128
6. Energy	129
7. Geology and Soils	130
8. Greenhouse Gases	131
9. Hazards and Hazardous Materials	131
10. Hydrology and Water Quality	132
11. Land Use and Planning	133
12. Mineral Resources	133
13. Noise	134
14. Population and Housing	135
15. Public Services	135
16. Recreation	136
17. Transportation	136
18. Tribal Cultural Resources	137
19. Utilities and Service Systems	138
20. Wildfire	139
D. Growth Inducing Impacts	139
6.0 MANDATORY FINDINGS OF SIGNIFICANCE	141
A. Mandatory Findings of Significance	141

1.	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?	141
2.	Does the project have impacts that are individually limited, but cumulatively considerable?	143
3.	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	143
7.0	ALTERNATIVES ANALYSIS	145
A.	Approach to Alternatives Analysis.....	145
B.	Selection of Range of Alternatives	146
C.	Project Objectives	146
D.	Description of Alternatives	148
1.	Alternative 1: No Project Alternative	148
2.	Alternative 2: Less Stringent ZEV Purchase Requirement	150
3.	Alternative 3: Best Available Control Technology (BACT) Concept.....	152
E.	Alternatives Considered but Rejected.....	155
1.	Alternative 4: Focus ZEV Requirements on Return to Base Concept.....	155
2.	Alternative 5: Match ACT and ACF ZEV Deployments Exactly	156
3.	Alternative 6: Exempt Small Fleets and Interstate Truckers.....	156
4.	Alternative 7: Extend the Timeline for Group 1 Vehicles and Exclude All Other Vehicles	157
5.	Alternative 8: Credit for ZEV or Natural Gas Vehicle	158
6.	Alternative 9: Exempt Refuse Fleets Subject to SB 1383	159
8.0	REFERENCES.....	8-163

Tables

Table 1: High Priority And Federal Fleet Zev Phase-In Schedule	19
Table 2: Nox Emission Benefits From The Proposed Project	44
Table 3: Pm _{2.5} Emission Benefits From The Proposed Project.....	44
Table 4: Pm _{2.5} Emission Benefits From The Proposed Project.....	65
Table 5: Lithium Mine Production And Reserves By Country	81
Table 6: Platinum And Palladium Mine Production And Reserves ¹	83
Table 7: Graphite Mine Production And Reserves By Country.....	85
Table 8: Cobalt Mine Production And Reserves By Country	86
Table 9: Nickel Mine Production And Reserves By Country.....	87
Table 10: Copper Mine Production And Reserves By Country.....	88
Table 11: Summary Of Environmental Impacts For The Scoping Plan	114
Table 12: Summary Of The Community Air Protection Blueprint Environmental Analysis By Resource.....	122

Figures

Figure 1: Projected Statewide NOx Tank-to-Wheel Emissions, BAU scenario and Proposed Regulation	45
Figure 2: Projected Statewide PM _{2.5} Tank-to-Wheel Emissions, BAU scenario and Proposed Regulation	46
Figure 3: Projected Statewide Tank-to-Wheel Greenhouse Gas Emissions of the Proposed Regulation	66
Figure 4: Stacked area chart depicting heavy-duty vehicle stocks for compressed natural gas, diesel, and zero emission vehicles projected out from 2025 to 2045 as predicted by alternative 3.	162

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ACC	Advanced Clean Cars
ACF	Advanced Clean Fleets
ACT	Advanced Clean Truck
APE	area of potential effect
ASB	Airport Shuttle Bus
BEV	battery electric vehicle
BLM	Bureau of Land Management
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CARB or Board	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CNG	compressed natural gas
CPUC	California Public Utilities Commission
dBA	A-weighted decibels
Draft EA	Draft Environmental Analysis
EA	Environmental Analysis
EIR	Environmental Impact Report
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EV	electric vehicle
FCEV	fuel-cell electric vehicles
FTA	Federal Transit Administration
GHG	greenhouse gas
GVWR	gross vehicle weight rating
HD I/M	Heavy-Duty Inspection and Maintenance

ICE	internal combustion engine
ICT	Innovative Clean Transit
in/sec	inches per second
ISOR	Initial Statement of Reasons
lbs	pounds
LCFS	Low Carbon Fuel Standard program
L _{eq}	equivalent level measurements
L _{max}	maximum sound level
MT CO ₂ e/year	metric tons of carbon dioxide equivalent per year
MY	model year
NAAQS	National Ambient Air Quality Standards
NO _x	oxides of nitrogen
NPDES	National Pollution Discharge Elimination System
NZEV	near-zero-emission vehicles
PGM	platinum-group metals
PHEV	plug-in hybrid electric vehicles
PM	particulate matter
PM _{2.5}	particulate matter of a diameter less than 2.5 microns
PM ₁₀	respirable particulate matter (particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers)
PPV	peak particle velocity
PRC	Public Resources Code
Program	Community Air Protection Program
Proposed Project	Proposed Advanced Clean Fleets Regulation
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SWPPP	Stormwater Pollution Prevention Plan

TAC	Toxic Air Contaminant
TCR	Tribal cultural resources
tpd	tons per day
U.S. EPA	United States Environmental Protection Agency
USFS	U.S. Forest Service
VdB	vibration decibels
VOC	volatile organic compound
WSA	Water Supply Assessment
ZEB	zero-emission buses
ZEP	Zero-Emission Powertrain
ZEV	Zero Emission Vehicle

This page intentionally left blank.

1.0 INTRODUCTION AND BACKGROUND

A. Introduction

This Draft Environmental Analysis (Draft EA) is a program environmental document prepared for the Proposed Advanced Clean Fleets (ACF) Regulation (Proposed Project). This Draft EA is Appendix D in the Staff Report: Initial Statement of Reasons (ISOR) that will be presented to the California Air Resources Board (CARB or Board) for consideration. The Project Description section of this Draft EA presents a summary of the Proposed Project, as defined under the California Environmental Quality Act (CEQA). A detailed description of the Proposed Project is included in the “Staff Report: Initial Statement of Reasons for the Proposed Advanced Clean Fleets Regulation” released on September 2, 2022, which is hereby incorporated by reference and available at <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets>.

This Draft EA is intended to disclose potential adverse impacts of the Proposed Project and identify potential mitigation measures if significant environmental impacts are identified. The Proposed Project is intended to create environmental benefits related to greenhouse gas (GHG) reductions and air quality improvements and are described herein, where appropriate. However, in some cases, as described in Chapter 4 of this Draft EA, potentially significant effects to environmental resources may occur due to implementation of compliance responses associated with the Proposed Project. 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. To ensure full disclosure to the public and decision makers of potential significant environmental impacts, the Draft 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. Background Information on the Proposed Advanced Clean Fleets Regulation

To date, California has made substantial progress towards meeting federal air quality attainment standards and has met the Assembly Bill (AB) 32 goals of reducing GHG emissions to 1990 levels by 2020; however, California must continue making progress beyond 2020 to meet goals established by Senate Bill (SB) 32, State Implementation Plans (SIP), and other established State goals. Key State goals are:

- Federal health-based ambient air quality standards (i.e., national ambient air quality standards [NAAQS]) (with key milestones in 2023 and 2031),

- 40 percent reduction in GHG emissions from the 1990 levels by 2030,
- 80 percent reduction in GHG emissions below the 1990 levels by 2050,
- 50 percent petroleum reduction target by 2030,
- 100 percent carbon neutral energy resources statewide by 2045, and

Continued reductions in criteria air pollutants and toxic air contaminants (TACs) to protect public health.

To meet these goals, modifications to behaviors, equipment, and facilities are required in all sectors, including industrial, residential, electricity, and transportation.

Mobile sources are the greatest contributor to criteria air pollutant and GHG emissions in California, and account for about 80 percent of ozone precursor emissions and approximately 50 percent of statewide GHG emissions when upstream emissions are included. Zero-emission vehicles (ZEVs) have no tailpipe emissions and will be critical to meet California's goals to protect public health, reduce petroleum use and GHG emissions, and meet sustainability objectives.

The Proposed Project complements the recently adopted Advanced Clean Truck (ACT) regulation by requiring certain fleets to purchase ZEVs. ACT requires manufacturers to sell ZEVs as a percent of California sales and aims to accelerate adoption of medium- and heavy-duty ZEVs with a gross vehicle weight rating (GVWR) greater than 8,500 pounds (lbs) (i.e., Class 2b through Class 8 commercial trucks) as part of California's strategy to reduce emissions from transportation. The Proposed Project has four main elements:

- State and local government agency fleets would be required to buy ZEVs starting with 50 percent of new vehicle purchases in 2024 and ramping up to 100 percent in 2027.
- Legacy drayage trucks that visit seaports or intermodal railyards would be phased out of the CARB Online System at the end of their useful life.¹ All new additions would need to be ZEVs. By 2035, all drayage trucks must be ZEVs.
- For federal and high-priority fleets, all medium- and heavy-duty vehicles and light-duty package delivery vehicles added to the fleet must be ZEVs, or near-zero-emission vehicles (NZEVs).² Legacy vehicles must be removed from the California fleet at the end of their useful life unless the fleet

¹ As defined in SB 1 (2017), the useful life of a vehicle shall be 800,000 vehicle miles traveled or 18 years from the model year the engine and emission control system are first certified for use in self-propelled commercial motor vehicles by the state board or other applicable state and federal agencies.

² Per CCR Section 1963, Title 13, an NZEV is a hybrid electric vehicle that is capable of a minimum all-electric range of equal to or exceeding criteria specified in 17 CCR Section 95663(d) (through the 2029 model year) and 75 miles (starting with the 2030 model year) electric energy stored on-board the vehicle.

owner opts to meet ZEV milestones as a percent of the total fleet. The milestones schedule would be phased-in by vehicle body type in recognition that some vehicle types are more suitable for electrification. The milestone would achieve 100 percent ZEV targets by 2035 for certain truck types and by 2042 for others.

- Starting in 2040, all medium and heavy-duty truck sales in California would be zero emissions with limited exceptions.

The proposed ZEV fleet purchase objectives and requirements are included in the Sustainable Freight Action Plan, Mobile Source Strategy, and ZEV Action Plan^{3 4 5}. The Proposed Project would also complement the recently approved ZEV sales requirement in the ACT regulation, as well as the federally and California-adopted Phase 2 GHG (CA Phase 2 GHG) regulation, because ZEVs can be used to meet these existing requirements. Finally, the Proposed Project supports meeting ZEV deployment goals for medium- and heavy-duty vehicles established in executive orders, plans, and directives issued by the Governor.

The SIP strategy, California's roadmap toward achieving federal health-based standards, identified zero-emission technology measures for the medium- and heavy-duty vehicle sectors. In March 2017, CARB adopted the Revised Proposed 2016 State Strategies document as part of the SIP, which identified several sectors that are key to launching heavy-duty zero-emission technology in the on-road heavy-duty sector: transit buses, delivery trucks, and airport shuttles. The Proposed Project would continue implementation of these strategies to increase the first wave of heavy-duty ZEV deployments.

The Proposed Project would also continue to support the 2020 Mobile Source Control Strategy policy and build upon the 2016 Mobile Source Strategy's plan for increasing zero-emission medium- and heavy-duty vehicles. The Proposed Project would support the goals of the State SIP Strategy and reduces pollutants linked to multiple adverse health effects identified by the California Ambient Air Quality Standards (CAAQS). These pollutants are nitrogen oxides (NOx), key ingredients in the formation of several airborne toxic substances, and particulate matter of a diameter less than 2.5 microns (PM_{2.5}), which may deposit deep inside the lungs. Long-term exposure to PM_{2.5} has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function and growth in children. The Proposed Project

³ California Air Resources Board, [Sustainable Freight Action Plan](https://www2.arb.ca.gov/sites/default/files/2019-10/CSFAP_FINAL_07272016.pdf), 2016 (web link: https://www2.arb.ca.gov/sites/default/files/2019-10/CSFAP_FINAL_07272016.pdf, last accessed August 2022).

⁴ California Air Resources Board, [Mobile Source Strategy](https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf), 2016. (web link: <https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf>, last accessed August 2022).

⁵ California Air Resources Board, [ZEV Action Plan Update](https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf), 2018 (web link: <https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf>, last accessed August 2022).

would also reduce GHG emissions and petroleum use, and provides the certainty needed to establish a long-term medium- and heavy-duty ZEV market.

The Sustainable Freight Action Plan established the strategy of using zero-emission technology and “near-zero” emission technology with renewable fuels everywhere else, to meet California’s long-term air quality goals. The Proposed Project would require ZEV purchases and deployment and has provisions to allow for the use NZEV that are capable of zero-emission mile operation, and closely aligns with the Sustainable Freight strategy.

Several California executive policies provide additional background for the Proposed Project. In March 2012, Executive Order B-16-2012, also referred to as the ZEV mandate, directed California agencies to establish benchmarks for key milestones to help support and facilitate the ZEV market in California. One of those milestones includes deploying over 1.5 million ZEVs and plug-in hybrid electric vehicles (PHEVs) on the road by 2025.

In October 2015, California adopted SB 350 which among other major goals established GHG reduction targets and ordered the California Public Utilities Commission (CPUC) to direct the six investor-owned utilities in the state to “accelerate widespread transportation electrification.” The resulting programs developed by the electric utilities promote the adoption of medium- and heavy-duty ZEVs through incentivizing infrastructure upgrade projects that offset most or all the costs for electrical service upgrades to enable fleet ZEV deployments.

In January 2018, Executive Order B-48-18 was signed, building upon past efforts to increase ZEVs by increasing California’s goal to 5 million ZEVs on the road by 2030 and setting a target of 250,000 public chargers by 2025. Also in 2018, the governor issued Executive Order B-55-18, which sets a target to achieve carbon neutrality in California no later than 2045 and achieve and maintain net negative emissions thereafter. The Proposed Project directly supports achieving these goals through the required purchase and deployment of ZEVs into California fleets.

In August 2018, the governor sent a letter to Chair Nichols of CARB directing CARB to pursue conversion of public and private fleets to ZEVs in categories including large employers, delivery vehicles, and transportation service fleets⁶. In response, the ACT regulation included a reporting requirement, to collect additional information from large employers, retailers, brokers, and fleets. The information will inform the Proposed Project and other policies that would further expand the ZEV market, and to complement the proposed manufacturer ZEV sales requirements, and other policies.

⁶ Governor Brown, [Governor’s letter to Chair Nichols Signed by Edmund G. \(Jerry\) Brown Jr](https://www.arb.ca.gov/msprog/zero_emission_fleet_letter_080118.pdf?utm_medium=email&utm_source=govdelivery), 2018 (web link: https://www.arb.ca.gov/msprog/zero_emission_fleet_letter_080118.pdf?utm_medium=email&utm_source=govdelivery, last accessed August 2022).

The Proposed Project complements recently adopted CARB fleet regulations such as the ACT regulation, the Innovative Clean Transit (ICT) regulation, and the Airport Shuttle Bus (ASB) regulation. The ACT regulation requires manufacturers to sell medium- and heavy-duty ZEVs as a percentage of annual sales. The two measures work together to ensure suitable ZEVs are available and that fleets purchase and deploy them. Staff anticipates that some ZEV sales will go to private individuals and fleets that are not included in the Proposed Project primarily in the Class 2b-3 category but will be counted towards compliance with the ACT regulation. Most other ZEV sales made by manufacturers are expected to be made by fleets included in the Proposed Project. Staff anticipate that the two regulations together would result in a relatively small net increase in ZEV deployments than the ACT regulation alone would achieve. Both regulations also overlap with previously approved regulations that require zero-emission airport shuttle and transit bus purchases, and AB 739 that requires State fleets to purchase zero emission (ZE) trucks. The ICT regulation applies to buses with a GVWR greater than 14,000 lbs. It requires transit agencies to begin purchasing zero-emission buses (ZEBs) in 2023 and is phased-in so that 100 percent of bus purchases must be ZEBs beginning in 2029. Similarly, the ASB regulation requires the purchase of zero-emission shuttle buses with a GVWR greater than 8,500 lbs with a complete transition to zero-emission shuttles by 2035. Finally, AB 739 requires California State-owned fleets to purchase 15 percent ZEVs at or over 19,000 lbs GVWR starting in 2026 and ramping up to 30 percent by 2030.

The Proposed Project also complements other regulations approved by CARB and the United States Environmental Protection Agency (U.S. EPA) to reduce GHG emissions from medium- and heavy-duty vehicles. The U.S. EPA Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles - Phase 2 (Federal Phase 2 GHG) is structured to provide a range of options to manufacturers to reduce the fuel consumption of medium- and heavy-duty vehicles through use of a range of technologies including aerodynamics, more efficient engines, ZEVs, and other technologies⁷. California adopted this federal program with minor changes. The California Greenhouse Gas Emissions Standards for Medium- and Heavy-duty Engines and Vehicles, and the Amendments to the Tractor-Trailer GHG Regulation (CA Phase 2 GHG) were adopted by the Board in February 2018.

The Proposed Project also complements the Advanced Clean Cars (ACC) ZEV regulation. The Proposed Project requires the purchase and deployment of Class 2b and 3 vehicles, which manufacturers may apply excess credits under the ACC regulation. The ACC regulation requires manufacturers of Class 1 and 2A vehicles to

⁷ U.S. Environmental Protection Agency, 2016. [Final Rule for Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles - Phase 2. Final Rule](https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf), 2016 (web link: <https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf>, last accessed August 2022).

produce and sell ZEVs in California as a percentage of total annual sales⁸. The ACC regulation does not require manufacturers to produce and sell Class 2b and 3 ZEVs, but it does give credits if they do.

ZEVs sold in California to comply with the proposed ACT regulation will be required to meet the Zero-Emission Powertrain (ZEP) Certification starting in the 2024 model year (MY). This requirement does not affect the emissions analysis. ZEP certification helps ensure fleet purchasers are provided with consistent and reliable information about zero-emission technology and the vehicles that use it, as well as that heavy-duty electric and fuel-cell vehicles are well supported once deployed⁹.

The cost analysis includes the value of Low Carbon Fuel Standard program (LCFS) credits as part of the analysis to show the potential impacts on the economy of the state. The LCFS is a regulation designed to reduce GHG emissions associated with the lifecycle of transportation fuels used in California. A fleet owner that opts into the LCFS program can receive credits for consuming electricity or producing an alternative fuel (e.g., hydrogen) onsite. The credits can be sold to regulated parties in the LCFS credit market, thereby reducing operating costs for fleet owners. These credit values will have a monetary value when sold to fuel suppliers and other regulated parties who must offset deficits created by their supply of fuels with carbon intensities that exceed the LCFS standards. According to the LCFS staff report, regulations encourage the adoption of ZEVs, and the generation of these valuable credits can assist that effort. To isolate the effects of the LCFS, the program does not count GHG benefits that are resultant from regulations and trends that influence carbon intensities of transportation fuels. Therefore, all the GHG emissions benefits of deploying ZEVs would be counted as part of the Proposed Project except if the ZEVs are already required to be purchased from existing regulations or legislation.

Additionally, in 2018, the Legislature passed AB 2061,¹⁰ which complements the Proposed Project by mitigating vehicle weight concerns for ZEVs required by the Proposed Project. Existing state and federal law established a maximum gross vehicle weight limit of 80,000 pounds for vehicles with two or more axles that travel on highways. AB 2061, to the extent expressly authorized by federal law, authorizes alternative fueled vehicles including a NZEV or ZEV to exceed the maximum gross

⁸ California Air Resources Board, [Advanced Clean Cars Rulemaking Package](https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program), 2012 (web link: <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program>, last accessed August 2022).

⁹ California Air Resources Board, [2018 ZEV Action Plan Update](https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf), 2018 (web link: <https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf>, last accessed August 2022).

¹⁰ California Legislature, [Assembly Bill No. 2061](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB2061), 2022 (web link: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB2061, last accessed August 2022).

vehicle weight limit by 2,000 pounds. AB 2061 factors into staff's assessment because it improves the suitability of ZEVs with higher range characteristics.

The Proposed Project is a part of a comprehensive strategy that builds on many other state actions designed to reduce criteria and GHG pollutants from medium- and heavy-duty vehicles and goes beyond what these other combustion-based measures can achieve. For example, the Heavy-Duty Omnibus regulation was recently adopted to maximize NO_x emissions reductions from combustion engines starting with the 2024 model year but it does not reduce GHG. The HD I/M regulation was also recently adopted to ensure in-use combustion engines were tested in use so they would not become high emitters or will be repaired as quickly as possible. The LCFS regulation already seeks to lower the carbon intensity of our transportation fuels to reduce GHG emissions to the maximum extent feasible. These strategies seek to maximize emissions reductions for combustion engines. However, zero emission vehicles completely eliminate all criteria pollutant emissions at the tail pipe, further reduce PM emissions from reduced brake wear, and greatly reduce energy use, and simultaneously reduce GHG emissions. The Proposed Project accelerates ZEV deployments where feasible and does not rely on the other CARB regulatory efforts that address ICE vehicles. CARB staff would put forward the Proposed Project regardless of the existence of the other efforts.

The Proposed Project would establish requirements that transform the medium- and heavy-duty vehicle sector and demonstrate independent utility through achievement of the following objectives:

- Achieve criteria and GHG emissions reductions consistent with the goals identified in the State Implementation Plan (SIP) Strategy and Scoping Plan.
- Provide emissions reductions in disadvantaged communities (DAC), thereby supporting the implementation of Assembly Bill (AB) 617 (Garcia, C., Chapter 136, Statutes of 2017).
- Support the goals of Executive Order N-79-20 which calls for accelerated ZEV deployment with these targets:
 - 100 percent ZE drayage by 2035
 - 100 percent ZE trucks and buses where feasible by 2045.
- Ensure requirements, such as ZEV deployment schedules and related infrastructure build-out, are technologically feasible, cost-effective, and support market conditions.
- Lead the transition away from petroleum fuels and towards electric drivetrains.
- Contribute towards achieving carbon neutrality in California pursuant to Senate Bill (SB) 100, and in accordance with Executive Order B-55-18.

- Mindfully set requirements to allow time for public ZE infrastructure buildout for smaller fleets or for regional haul applications who would be reliant on a regional network of public chargers.
- Ensure manufacturers and fleets work together to place ZEVs in service suitably and successfully as market expands.
- Establish a fair and level playing field among fleet owners.
- Craft the Proposed Project in a way that ensures institutional capacity for CARB to manage, implement, and enforce requirements.

The Proposed Project provides a ZEV phase-in approach which provides initial focus where the best fleet electrification opportunities exist, sets clear targets for regulated fleets to make a full conversion to ZEVs, and creates a catalyst to accelerate development of a heavy-duty public infrastructure network. In addition, it aggressively pushes drayage trucks given the suitability of their duty cycles, outsized impact on disproportionately impacted communities, and ability to maximize emissions reductions in heavily impacted communities. This approach gives fleets the flexibility to phase in ZEVs in the most suitable applications first and focuses initial ZEV infrastructure development to support community health around ports and railyards.

The Proposed Project attempts to strike a balance between moving the market quickly to ZE while recognizing fleets more suited for electrification should lead the way. Staff recognizes the complexities of applying purchase mandates to fleets affected by the proposed regulation and acknowledges that additional tools may be needed to meet the 100 percent ZE by 2045 goal set in the Governor's Executive Order N-79-20.

C. Environmental Review Process

1. Requirements under the California Air Resources Board Certified Regulatory Program

CARB is the lead agency for the Proposed Project and has prepared this Draft EA pursuant to its CEQA certified regulatory program. Public Resources Code (PRC) Section 21080.5 allows public agencies with regulatory programs to prepare a "functionally equivalent" or substitute document in lieu of an Environmental Impact Report (EIR) or Negative Declaration, once the program has been certified by the Secretary for Resources Agency as meeting the requirements of CEQA. CARB's regulatory program was certified by the Secretary of the Resources Agency in 1978 (California Code of Regulations [CCR], Title 14, Section 15251[d]). As required by CARB's certified regulatory program, and the policy and substantive requirements of CEQA, CARB prepared this Draft EA to assess the potential for significant adverse and beneficial environmental impacts associated with the Proposed Project and to provide a succinct analysis of those impacts (Title 17 CCR Section 60005[a], [b]). The resource areas from the CEQA Guidelines (Title 14 CCR Section 15000 et. seq.) Environmental Checklist (Appendix G of the CEQA Guidelines) were used as a framework for assessing potentially significant impacts.

CARB has determined that approval of the Proposed Project is a “project” as defined by CEQA. CEQA defines a project as “the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is an activity directly undertaken by any public agency” (Title 14 CCR Section 15378[a]). Although the policy aspects of the Proposed Project do not directly change the physical environment, indirect physical changes to the environment could result from reasonably foreseeable compliance responses taken in response to implementation actions identified in the Proposed Project. In addition, some of the construction activities undertaken to comply with this Proposed Project may also be part of California electric utilities projects mandated by SB 350¹¹.

The requirements of PRC Section 21159 apply when CARB adopts a rule or regulation requiring the installation of pollution control equipment, a performance standard, or treatment requirement pursuant to authority granted to CARB under AB 32 and SB 32. Thus, as required by CEQA, this Draft EA contains “an environmental analysis of the reasonably foreseeable methods by which compliance with that rule or regulation will be achieved (14 CCR Section 15187).” The analysis shall include reasonably foreseeable environmental impacts of the methods of compliance, reasonably foreseeable feasible mitigation measures related to significant impacts, and reasonably foreseeable alternative means of compliance that would avoid or eliminate significant impacts.

Compliance responses are activities undertaken by regulated communities to comply with regulations. Behavior by regulated entities would change in response to regulatory requirements included under the Proposed Project. This Draft EA presents a programmatic evaluation that describes reasonably foreseeable environmental impacts resulting from the change in compliance responses by regulated communities. The analysis considers reasonable, potential compliance responses, but does not speculate as to all the conceivable iterations of compliance responses that could occur within the vehicle fleet or at the site or project-specific level.

It is not possible to know with a reasonable level of certainty the specific actions that would be selected by regulated communities to comply with the regulatory changes under the Proposed Project. Depending on the specific characteristics and needs of a community, Proposed Project related compliance responses may differ as compared to those evaluated in this Draft EA. Compliance responses may involve an entity that is not a regulated entity. For example, individual manufacturers or major refiners for hydrogen and renewable fuels could choose other compliance responses that result in

¹¹ California Public Utilities Commission, [General Rulemaking Proceeding for Developing Regulations, Guidelines, and Policies for Implementing SB 350 and AB 802](https://www.energy.ca.gov/rules-and-regulations/energy-suppliers-reporting/clean-energy-and-pollution-reduction-act-sb-350#:~:text=What%20Does%20SB%20350%20Do,%2C%20biomass%2C%20geothermal%20and%20others), 2017 (web link: <https://www.energy.ca.gov/rules-and-regulations/energy-suppliers-reporting/clean-energy-and-pollution-reduction-act-sb-350#:~:text=What%20Does%20SB%20350%20Do,%2C%20biomass%2C%20geothermal%20and%20others>, last accessed August 2022).

different project impacts. Such entities, in addition to local communities, would be required to undergo project-level environmental review, which could conclude more adverse or less substantial environmental effects as those contained in this Draft EA. For the purposes of this Draft EA, the least expensive compliance responses are generally expected to be implemented by covered industries, although the responses of individual regulated communities within affected industries may differ depending on relative compliance costs and other factors.

2. 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. 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 Section 15146(a)). Since this analysis addresses a state-wide program, a general level of detail is appropriate. However, this Draft 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 Proposed Project and contains as much information about those impacts as is currently available, without being unduly speculative. The scope of analysis in this Draft EA is intended to help focus public review and comments on the Proposed Project and ultimately to inform the Board of the environmental benefits and adverse impacts of the proposal.

The analysis of potentially significant adverse environmental impacts of the Proposed Project is based on the following assumptions:

1. This analysis addresses the potentially significant adverse environmental impacts resulting from implementing the Proposed Project compared to existing conditions (see Chapter 2, "Project Description").
2. The analysis of environmental impacts and determinations of significance are based on reasonably foreseeable compliance responses taken in response to implementation of the Proposed Project.
3. The analysis in this Draft EA addresses environmental impacts both 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 Proposed Project is programmatic. While the general locations of fleets covered under the Proposed Project are known within California, decisions by the regulated entities regarding compliance options are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation

of the Proposed Project would be speculative at this stage due to 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 EA. Consequently, this Draft EA takes the conservative approach in its post-mitigation significance conclusions (i.e., tending to overstate the risk that feasible mitigation may not be implemented by the agency with authority to do so, or 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. 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 EA for any specific compliance response. Specific actions undertaken to implement the Proposed Project would undergo project-level environmental review as required and compliance processes at the time they are proposed. It is expected that potentially significant impacts of many individual development projects would be avoidable or mitigable to less than significant.

5. This Draft EA generally does not analyze site-specific impacts when the location of future facilities or other infrastructure changes are speculative. However, the Draft EA does examine regional (e.g., 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 Proposed Project.

D. Organization of the Draft EA

The Draft EA is organized into the following chapters:

- **Chapter 1, Introduction and Background**, provides a project overview and background information, and other introductory material.
- **Chapter 2, Project Description**, summarizes the Proposed Project, the potential reasonably foreseeable compliance responses taken in response to the Proposed Project, and implementation assumptions.
- **Chapter 3, Environmental and Regulatory Setting**, contains the environmental and regulatory setting relevant to the environmental analysis of the Proposed Project.
- **Chapter 4, Impact Analysis and Mitigation**, identifies the potential environmental impacts associated with the Proposed Project and mitigation measures for each resource impact area.

- **Chapter 5, Cumulative and Growth-Inducing Impacts**, analyzes the potential for cumulative effects of implementing the Proposed Project 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 Proposed Project 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 Proposed Project.
- **Chapter 8, References**, identifies sources of information used in this Draft EA.

E. Public Review Process for the Environmental Analysis

At a public workshop held on March 4, 2021 CARB staff solicited public input on the appropriate scope and content of the EA. Additionally, the purpose of the workshop was to provide an overview of the regulation's scope and solicit stakeholder feedback on the proposed strategy as well as a discussion of alternative concepts. The workshop included a discussion on the proposed schedule and requirements for the following: Public fleets (local and State), drayage trucks, private and federal fleets, and outsourcing for zero-emission transportation services.

In accordance with CARB's certified regulatory program, and consistent with CARB's commitment to public review and input, this Draft EA is subject to a public review process through the posting of the Proposed Project document. The Proposed Project document, which includes this Draft EA, is posted for a public review period that begins on September 2, 2022 and ends on October 17, 2022. This period complies with regulatory requirements for a minimum of 45 days of public review.

At the end of the public review period, staff will compile public comments and responses, including comments on the Draft EA, and prepare the final proposed regulation order document, as well as the Final EA and response to environmental comments, for the Board's consideration at a future public hearing before considering adoption of the Proposed Project.

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Government Code, title 2, division 3, part 1, chapter 3.5 (commencing with section 11340).

Following the public hearing, the Board may vote on a resolution directing the Executive Officer to: make any proposed modified regulatory language that is sufficiently related to the originally proposed text that the public was adequately placed on notice and that the regulatory language as modified could result from the proposed regulatory action, and any additional supporting documents and

information, available to the public for a period of at least 15 days; consider written comments submitted during this period; and make any further modifications as may be appropriate in light of the comments received available for further public comment. The Board may also direct the Executive Officer to: evaluate all comments received during the public comment periods, including comments regarding the Draft EA, and prepare written responses to those comments; and present to the Board, at a subsequently scheduled public hearing, the final proposed regulatory language, staff's written responses to comments on the Draft EA, along with the Final EA for action. If the finalized regulation is adopted by the Board at that time, a Notice of Decision will be filed with the Secretary of the Natural Resources Agency.

This page intentionally left blank.

2.0 PROJECT DESCRIPTION

A. Objectives

Recognizing the requirements of Senate Bill (SB) 32 and Executive Order S-3-05 (Ch. 249, Stats. 2016, Pavley) to reduce greenhouse gas (GHG) emissions as well as the need for California to attain National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for criteria air pollutants and to reduce exposure to Toxic Air Contaminant (TAC) emissions, the primary objectives of the Proposed Project include the following:

1. Accelerate the deployment of Zero-Emission Vehicles (ZEVs) that achieve the maximum emissions reduction possible from medium- and heavy-duty vehicles to assist in the attainment of NAAQS for criteria air pollutants (Health & Safety Code Sections 43000.5(b), 43018(a)).
2. Reduce the State's dependence on petroleum as an energy resource and support the use of diversified fuels in the State's transportation fleet (Health & Safety Code Section 43000(e), Public Resources Code [PRC] Section 25000.5). In addition, petroleum use as an energy resource contributes substantially to the following public health and environmental problems: air pollution, acid rain, global warming, and the degradation of California's marine environment and fisheries (PRC Section 25000.5(b), (c)).
3. Decrease GHG emissions in support of statewide GHG reduction goals by adopting strategies to deploy medium- and heavy-duty ZEV in California to support the Scoping Plan, which was developed to reduce GHG emissions in California, as directed by SB 32. California's 2017 Climate Change Scoping Plan and 2020 Mobile Source Strategy aim to accelerate development and deployment of the cleanest feasible mobile source technologies and to improve access to clean transportation. Implementation of the Proposed Project would also provide further GHG reductions pursuant to Assembly Bill (AB 1493 (Ch. 200, Stats. of 2002, Pavley).
4. Develop a regulation that is consistent with and meets the goals of the SIP, providing necessary emissions reductions from vehicular sources for all of California's nonattainment areas to meet NAAQS (Health & Safety Code Sections 39002, 39003, 39602.5, 43000, 43000.5, 43013, 43018).
5. Maintain and continue reductions in emissions of GHGs beyond 2020, in accordance with SB 32 (Health & Safety Code Sections 38551(b), 38562, 38562.5, 38566); pursue measures that implement reduction strategies covering the State's GHG emissions in furtherance of California's mandate to reduce GHG emissions to the 1990 level by 2020 and 40 percent below the 1990 level by December 31, 2030. In addition, target and achieve carbon neutrality in

California no later than 2045, pursuant to SB 100 (Ch. 312, Stats. of 2018, De León), and maintain net negative emissions thereafter in accordance with Executive Order B-55-18.

6. Lead the transition of California's medium- and heavy-duty transportation sector from internal combustion to all electric powertrains. Promote this development alongside the manufacturer sales requirements established in the Advanced Clean Truck (ACT) regulation to support ZEV sales and Executive Order N-79-20 setting a course to transition truck and bus fleets to zero-emission by 2045 with earlier targets for key segments including drayage operations to ZE by 2035.
7. 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 GHG emissions, criteria pollutants, petroleum-based transportation fuels, and TAC emissions.
8. Incentivize and support emerging zero-emission technology that will be needed to achieve California Air Resources Board's (CARB's or Board's) State Implementation Plan (SIP) goals.
9. Achieve emission reductions that are real, permanent, quantifiable, verifiable, and enforceable (Health & Safety Code Sections 38560, 38562(d)(1)).
10. Provide market certainty for zero-emission technologies and fueling infrastructure to guide the acceleration of the development of environmentally superior medium- and heavy-duty vehicles that will continue to deliver performance, utility, and safety demanded by the market.
11. Take steps to ensure all Californians can live, work, and play in a healthful environment free from harmful exposure to air pollution. Protect and preserve public health and well-being, and prevent irritation to the senses, interference with visibility, and damage to vegetation and property (Health & Safety Code Section 43000(b)) in recognition that the emission of air pollutants from motor vehicles is the primary cause of air pollution in many parts of the State (Health & Safety Code Section 43000(a)).
12. Spur economic activity of zero-emission technologies in the medium- and heavy-duty vehicle sectors. Incentivize innovation that will transition California's economy into greater use of clean and sustainable zero-emission technologies and promote increased economic and employment benefits that will accompany this transition (AB 1493, Section 1(g); Health & Safety Code Section 38501(e)).

B. Description of Proposed Project and Reasonably Foreseeable Compliance Responses

The proposed ACF regulation would require State and local government fleets, drayage trucks, high-priority fleets, and federal fleets to phase in light-duty package delivery vehicles and medium- and heavy-duty ZEVs over time. As a backstop, the proposed regulation sets a clear end date for combustion-powered new vehicle sales in California. The proposed regulation includes four components: requirements on State and local government fleets, drayage trucks, and high priority and federal fleets, and a ZEV sales requirement on medium- and heavy-duty truck manufacturers. The following bullets provide more detailed information on each component of the Proposed Project.

State and Local Government Fleets

- Applies to California cities, counties, public utilities, special districts, and State government agencies that own a Class 2b-8 vehicle
 - Excludes federal agencies, which are regulated under the high priority and federal fleet requirements
- When adding vehicles to their California fleet, affected fleet owners must add ZEVs per the following schedule
 - 50 percent of the total number of vehicle additions must be ZEVs from January 1, 2024 to January 1, 2027 except for fleets in designated low-population counties
 - 100 percent of the total number of vehicle additions must be ZEVs beginning January 1, 2027 for all fleets
 - Near-zero-emission vehicles (NZEV)¹², like plug-in hybrids, with a minimum all electric range would count the same as ZEVs until 2035.
- Compliance exemptions for backup vehicles, daily usage, ZEV unavailability, and mutual aid assistance as well as compliance extensions for infrastructure construction and vehicle delivery delays.
- Annual reporting, starting April 1, 2024, with recordkeeping requirements
- For more details on these requirements and provisions, see Appendix H-1 Purpose and Rationale for State and Local Government Agency Fleets.

Drayage Trucks

- Applies to Class 7-8 heavy-duty trucks transporting containerized, bulk, or break-bulk goods, empty containers or chassis' to and from California's intermodal seaports and railyards

¹² "Near-zero-emissions vehicle" or "NZEV" means a vehicle as defined in title 13, CCR section 1963(c)(16) that is capable of operating like a ZEV using electricity stored on-board the vehicle for a minimum number of miles, or "all-electric range," as specified and tested in accordance with section 1037.150p(2)(ii) of "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," as last amended September 9, 2021.

- All trucks added to CARB's Online System must be a ZEV beginning January 1, 2024
 - All drayage trucks must visit a regulated seaport or intermodal railyard at least once each calendar year to remain in CARB's Online System
 - Existing ICE drayage trucks may not exceed their minimum useful life to remain in the CARB's Online System. All drayage trucks entering seaports and intermodal railyards would be required to be ZE by 2035
- Compliance exemptions from drayage truck requirements for dedicated use uni-body vehicles (e.g., auto transports), as well as extensions for infrastructure construction and ZEV vehicle delivery delays.
- Annual reporting starting January 1, 2024, with reporting or recordkeeping requirements for truck owners, seaports, railyards, and marine terminals.
- For more details on these requirements and provisions, see Appendix H-3 Purpose and Rationale for Drayage Fleets.

High Priority and Federal Fleets

- Applies to fleets who meet the following criteria:
 - Any fleet owner who owns, operates, or directs 50 or more Class 2b-8 vehicles including vehicles under common ownership and control
 - Any entity with \$50 million or more in annual revenue and owns at least 1 Class 2b-8 vehicle
 - Federal government agencies
- Affected vehicles include all Class 2b-8 on-road vehicles, off-road yard tractors, and light-duty package delivery vehicles in the fleet
- Must meet the Model Year Schedule, or opt-in to the ZEV Milestones Option
 - Model Year Schedule: Beginning January 1, 2024, all additions to the fleet must be ZEVs, and all ICE vehicles must be removed from the California fleet at the end of their useful life
 - ZEV Milestones Option: ZEV phase-in requirement where a portion of the fleet must be ZE based on the schedule laid out in Table 1
 - Near-zero-emission vehicles (NZEV) such as plug-in hybrids with a minimum all electric range would count the same as ZEVs until 2035.¹³

¹³ "Near-zero-emissions vehicle" or "NZEV" means a vehicle as defined in title 13, CCR section 1963(c)(16) that is capable of operating like a ZEV using electricity stored on-board the vehicle for a minimum number of miles, or "all-electric range," as specified and tested in accordance with section 1037.150p(2)(ii) of "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," as last amended September 9, 2021.

Table 1: High Priority and Federal Fleet ZEV Phase-In Schedule

Group	Percentage of Fleet that Must be ZEVs	10%	25%	50%	75%	100%
1	Box trucks, vans, two-axle buses, yard trucks, light-duty delivery vehicles	2025	2028	2031	2033	2035
2	Work trucks, day cab tractors, three-axle buses	2027	2030	2033	2036	2039
3	Sleeper cab tractors and specialty vehicles	2030	2033	2036	2039	2042

- Compliance exemptions for backup vehicles, daily usage, ZEV unavailability, and declared emergency events as well as compliance extensions for infrastructure construction and vehicle delivery delays.
- Annual reporting due starting February 1, 2024, recordkeeping requirements
- For more details on these requirements and provisions, see Appendix H-2 Purpose and Rationale for High Priority Fleets.

100 Percent ZEV Sales Requirement

- Beginning 2040 MY, all medium- and heavy-duty vehicles sold in California must be ZEV.
 - Beginning in the 2040 model year, any manufacturer that certifies on-road vehicles over 8,500 lbs. gross vehicle weight rating for sale in California may only produce and deliver for sale ZEVs to the ultimate purchaser in California.
 - ZEVs over 14,000 pounds gross vehicle weight rating (GVWR) and incomplete medium-duty ZEVs from 8,501 through 14,000 pounds GVWR produced and delivered for sale in California must meet the requirements of the Zero-Emission Powertrain Certification regulation.

C. Reasonably Foreseeable Compliance Responses

Reasonably foreseeable compliance responses under the Proposed Project would include a net increase in the purchase of ZEVs beyond the deployments already expected through implementation of the existing ACT regulation and other consumer-related ZEV purchases and a corresponding decrease in ICE vehicle purchases. Any net increase in ZEV sales would correspond to an increase in the manufacturing of new ZEVs or ZEV drivetrains which could include the construction of new manufacturing facilities or an increase in the intensity of ZEV component manufacturing at existing facilities. Currently, the medium- and heavy-duty ICE truck market is mainly served by 10 major manufacturers selling vehicles under multiple brands, as well as a handful of smaller manufacturers. More than 20 newer companies have been selling ZEVs and new ZEV conversions within California and some of the major manufacturers have also started to produce ZEVs. Under the proposed regulation, battery electric vehicle (BEV)

and hydrogen fuel cell sales in the medium to heavy-duty sector would increase from less than 5 percent to 100 percent by 2040. Manufacturers may modify existing facilities to build ZEVs, open new facilities, repurpose or close facilities building ICE vehicles and components, or potentially reopen currently closed plants. For example, BYD's California manufacturing facility is a formerly shuttered recreational vehicle manufacturing site.¹⁴ Tesla's Fremont facility was formerly operated by GM and Toyota. Many of these manufacturing changes are expected to occur outside California as the majority of medium- and heavy-duty vehicles sold in California are not built in the State. The macroeconomic analysis shows a shift between sectors (e.g., some losses for automotive repair and maintenance and petroleum and coal products manufacturing), but growth in other sectors such as electric power generation, transmission, distribution, and construction over the analysis period. The estimated number of medium- and heavy-duty ZEVs in California would increase beyond the BAU scenario from about 320,000 to about 510,000 in 2035, from about 780,000 to about 1,230,000 ZEVs by 2045, and from about 950,000 to about 1,590,000 ZEVs by 2050. In 2050, staff projects 85 percent would be BEVs and 15 percent would be fuel-cell electric vehicles (FCEVs). This EA reflects one likely scenario based on staff's understanding of vehicle and fleet projections. Staff notes business and personal decisions may differ from these projections affecting the projected ratio between BEVs and FCEVs. Based on the expected number of ZEVs, deployment of the Proposed Project would result in increasing the 2024-2050 ZEV growth rate from roughly 35,000 ZEVs per year to 59,000 ZEVs per year. Additionally, enhanced efforts to support additional ZEV purchases would require the construction and operation of new infrastructure systems to support charging or refueling of ZEVs. Depending on the ZEVs purchases to adhere to the requirements of the Proposed Project, such infrastructure could be constructed as BEV charging stations or hydrogen fueling stations. CEC's preliminary modeling, which considered 50-kilowatt (kW) and 350- kW charging power levels, suggests that to charge these 180,000 medium and heavy-duty BEVs, 157,000 DC fast chargers would be needed, of which 141,000 would be 50 kW and 16,000 would be 350 kW by 2030.¹⁵ These numbers align with estimates in the ISOR which indicate roughly 135,000 depot chargers by 2030, although staff's analysis assumes a wider range of power ratings for depot chargers. In addition to new alternative fueling stations, existing conventional fueling stations could be converted to support hydrogen fueling, particularly given the other programs and market forces shifting fleets toward vehicles powered by alternative fuel. The California Fuel Cell Partnership (CAFCP) suggests that 200 heavy-duty hydrogen stations by 2035 would be needed to support an interim milestone of 70,000 Class 8 FCEVs and would

¹⁴ BYD, [Buy America](https://en.byd.com/news/buy-america/), 2022 (web link: <https://en.byd.com/news/buy-america/>, last accessed August 2022).

¹⁵ California Energy Commission, , [Assembly Bill 2127 – Electric Vehicle Charging Infrastructure Assessment](https://efiling.energy.ca.gov/getdocument.aspx?tn=238853), 2021 (web link: <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>, last accessed August 2022).

represent a “market sustainability tipping point.”¹⁶ CARB’s analysis indicates 75,000 FCEVs would be deployed by 2035, indicating that CAFCP station number estimate should be generally applicable to the proposed ACF regulation. Most of these 200 hydrogen stations would likely be station conversions given the similarities to diesel fueling logistics, which provides the necessary business case for diesel truck stops and private fleet fueling operations.¹⁷ According to the CAFCP, “the existing network of approximately 500 public access truck stop stations is the perfect proxy for creating a heavy-duty hydrogen roadmap.” Increased deployment of ZEVs would require an increase in the production of electricity and hydrogen fuel resulting in reduced rates of oil and gas extraction and distribution. Although, due to the long life of medium- and heavy-duty vehicles, and the amount of interstate traffic, there may still be about half of the vehicles on California’s roads using combustion propulsion technology.

Other compliance responses include increased extraction of raw materials required to produced ZEVs such as lithium, platinum, or other elements, which could occur outside of California. Increased demand for batteries would increase their production and manufacture, resulting in the likely expansion of and/or construction of new facilities. Expanded production of ZEVs would result in increased rates of disposal of these batteries and hydrogen-fuel cells. Disposal of any portion of these vehicles, particularly the batteries and hydrogen fuel cells, would be subject to with existing laws and regulations governing solid and hazardous waste, such as California’s Hazardous Waste Control law, and implementing regulations, and the Universal Waste Rule (22 CCR Chapter 23), which prohibits the disposal of spent batteries to solid waste landfills. However, such batteries have the potential to be refurbished and re-used, or disposed of as hazardous waste. To meet an increased demand of refurbishing or reused batteries, it is reasonably foreseeable that new facilities or modifications to existing facilities would be required to accommodate an increase of battery recycling activities.

Increased ZEV purchases and deployments would also, over time, result in decreased disposal of ICE vehicles-related components and associated distribution and disposal of fluids and ICE vehicle-related components such as engine oil, filters, exhaust catalysts, diesel particulate filters, reduced brake disposal and other accessories. Existing ICE vehicles that could be required to be replaced earlier than normal could

¹⁶ California Fuel Cell Partnership, [A Vision for Freight Movement in California and Beyond](https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%94Today%2C%20the,by%20200%20heavy%2Dduty%20truck), 2021 (web link: <https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%94Today%2C%20the,by%20200%20heavy%2Dduty%20truck>, <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>, last accessed August 2022).

¹⁷ California Fuel Cell Partnership, [A Vision for Freight Movement in California and Beyond](https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%94Today%2C%20the,by%20200%20heavy%2Dduty%20truck), 2021 (web link: <https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%94Today%2C%20the,by%20200%20heavy%2Dduty%20truck>, last accessed August 2022).

be designated as a back-up vehicle, or sold out-of-state, sold to a non-regulated entity in California, junked, or sold to a salvage yard to be dismantled. However, the Proposed Project allows existing vehicles to continue in service until the end of their minimum useful life, as defined in the regulation, which would limit accelerated turnover. As described above, disposal of any of these vehicles and the conventional batteries would be subject to comply with the applicable laws and regulations governing solid and hazardous waste.

In addition, the Proposed Project includes several provisions that can serve as guardrails for specific fleet situations in case ZEVs are not suitable for the fleet at the time they are purchased or there are unforeseen temporary delays. State and local government fleets would have compliance exemptions for backup vehicles, daily usage, ZEV unavailability, and for mutual aid assistance, as well as extensions for infrastructure construction and vehicle delivery delays. Drayage fleets would have compliance extensions for infrastructure construction and ZEV vehicle delivery delays, and exemptions for declared emergency events. And high priority and federal fleets would have compliance exemptions for backup vehicles, daily usage, ZEV unavailability, declared emergency events, as well as extensions for infrastructure construction and vehicle delivery delays. Staff did not model the potential utilization of all these provisions since usage of these exemptions or extensions are expected to be rather small in comparison to all the vehicles and use-cases affected by the Proposed Project. However, the “backup vehicle” exemption applies more generally to affected fleets except for drayage trucks, therefore this exemption was modeled in the inventory and emissions analysis. The inventory analysis modelled a portion of the high priority and federal fleets would use the backup vehicle exemption. Staff assumed that high priority and federal fleets using the Model Year Schedule would designate ten percent of their vehicles that exceed their useful life as backup vehicles. For the ZEV Milestones Option, ten percent of tractors and four percent of non-tractors are anticipated to be designated as backup vehicles regardless of age. Further, a small portion of existing combustion powered vehicles are anticipated to be retained by fleets longer than the useful life specified in the Proposed Project but would have negligible impact to the foreseeable compliance response as previously discussed.

3.0 ENVIRONMENTAL SETTING

The California Environmental Quality Act (CEQA) Guidelines require an Environmental Impact Report (EIR) to include an environmental setting section, which discusses the current environmental conditions near the project. This environmental setting constitutes the baseline physical conditions by which an impact is determined to be significant (CEQA Guidelines Section 15125). For this Environmental Analysis (EA), CARB is using a 2021 baseline, as that is the year in which CARB filed the notice of preparation (the Notice of Preparation was posted on February 16, 2021). The 2021 CEQA baseline includes existing vehicle and related fuel emissions programs, policies, and regulations. This baseline reflects the implementation of all existing State and federal laws and regulations on the vehicles which would potentially be affected by the proposed regulation. This CEQA baseline therefore includes the Existing Regulation, as it applied in 2021.¹⁸

As discussed in Chapter 1 of this Appendix, CARB has a certified regulatory program and prepares an EA in lieu of an EIR. This Draft EA is a functional equivalent to an EIR under CEQA. Therefore, to comply with the policy objectives of CEQA, an environmental setting, as well as a regulatory setting with relevant environmental laws and regulations, has been included as Attachment A to this document.

¹⁸ Separate from the CEQA baseline discussed in this paragraph and used throughout this EA, a second baseline analysis was also evaluated by CARB to determine differences in the analysis and results if the Heavy-Duty Inspection and Maintenance (HD I/M) regulation is approved. This analysis is in the Modified Baseline Analysis Appendix of the ACF ISOR, Appendix I and presents a scenario that anticipates the HD I/M regulation being finalized prior to implementation of the proposed regulation. Only NO_x and PM exhaust emissions are incrementally affected under the Modified Baseline because HD I/M is expected to have minimal impact on PM brake wear and GHG emissions. As such, the analysis presented within this EA is considered reasonably conservative and appropriate for the purposes of evaluating the potential physical environmental impacts of the Proposed Project. The HD I/M regulation is considered as part of the cumulative impact analysis provided in Section K of this EA.

This page intentionally left blank.

4.0 IMPACT ANALYSIS AND MITIGATION MEASURES

A. Basis for Environmental Impact Analysis and Significance Determinations

This chapter contains an analysis of environmental impacts and mitigation measures that could result from the proposed Advanced Clean Fleets (ACF) regulation (Proposed Project). The California Environmental Quality Act (CEQA) requires the baseline for determining the significance of environmental impacts to the date the lead agency files a notice of preparation or, if the lead agency did not file a notice of preparation, the existing conditions at the time the environmental review is initiated (14 California Code of Regulations [CCR] Section 15125 (a)(1)). Therefore, significance determinations reflected in this Environmental Analysis (EA) are based on a comparison of the potential environmental consequences of the Proposed Project with the regulatory setting and physical conditions in 2018 (see Attachment A). To determine whether the Proposed Project would have a potential effect on the environment, the California Air Resources Board (CARB or Board) 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 EA.

1. Adverse Environmental Impact

The analysis of adverse effects on the environment and significance determinations for those effects reflect the programmatic nature of the analysis of the reasonably foreseeable compliance responses of the regulated entities and the marketplace. These reasonably foreseeable compliance responses are described in detail in Chapter 2. The Draft EA addresses broadly defined types of impacts or actions that may be taken by others in the future as a result of the Proposed Project, recognizing that CARB does not have the ability to determine specific projects or locations, facility size and character, or site-specific environmental characteristics affected by any potential future facilities.

This Draft 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 Proposed Project and environmentally sensitive resources or conditions that may be affected. This approach tends to overstate environmental impacts considering these uncertainties and is intended to satisfy the good-faith, full-disclosure intention of CEQA. If specific projects are proposed and subjected to project-level environmental review, it is expected that many of the impacts recognized as potentially significant in the Draft EA that are not already mitigated or avoided with this proposed project, can later be avoided or reduced to a less-than-significant level. If a potentially significant environmental effect cannot be feasibly mitigated with certainty, this Draft EA identifies the impact as significant and unavoidable. If the Board adopts the Proposed Project with one or more significant and unavoidable environmental effect identified in this

Draft EA, the Board would adopt findings as part of the approval action for each significant impact in addition to a statement of overriding considerations (i.e., other benefits of the action including economic, legal, social, technological are determined to outweigh and override its significant unavoidable effects).

2. Mitigation Measures

The Draft EA contains a degree of uncertainty regarding implementation of mitigation for potentially significant impacts. While CARB is responsible for adopting the Proposed Project, it does not have authority over all the potential infrastructure and development projects that could be carried out in response to the Proposed Project. 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 approve proposals to construct new facilities. 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 specific infrastructure projects that may occur, the programmatic analysis in the Draft 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 mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in the Draft EA. Consequently, this Draft 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. 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 EA on a case-by-case basis. It is expected that many potentially significant impacts of facility and infrastructure projects would be avoidable or mitigable to a less-than-significant level as an outcome of their project-specific environmental review processes.

B. Impact Analysis and Mitigation Measures

The following discussion provides a programmatic analysis of the reasonably foreseeable compliance responses that could result from implementation of the Proposed Project, which are described in Chapter 2 of this Draft EA. The impact analysis is organized by environmental resource areas in accordance with the topics presented in the Environmental Checklist in Appendix G to the CEQA Guidelines. The reasonably foreseeable compliance responses associated with the Proposed Project

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 (i.e., the Proposed Project); (2) the reasonably foreseeable compliance responses would result in generally similar environmental effects that can be mitigated in similar ways (17 CCR Section 15168 subd. (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 EA, the public agency with authority over the later activity would be required to conduct additional environmental review as required by CEQA or other applicable statute.

The analysis is based on an illustrative reasonably foreseeable compliance response scenario that is based on a set of reasonable assumptions. While the compliance response scenario described for each impact is not the only conceivable one, it provides a credible basis for the EA conclusions that is consistent with available evidence. It also includes actions that could likely occur under a broad range of the potential scenarios because the specific location, extent, and design of potential new and/or modified facilities cannot be known at this time, the impact discussions reflect a conservative assessment to describe the type and magnitude of effects that may occur (i.e., in that the conclusions tend to overstate adverse effects). These impact discussions are followed by the types of mitigation measures that could be required to reduce potentially significant environmental impacts.

1. Aesthetics

Impact 1-1: Short-Term Construction-Related Effects to Aesthetics

The reasonably foreseeable compliance responses associated with the Proposed Project would require construction of new or expanded manufacturing facilities, recycling facilities, and hydrogen fueling and electric vehicle (EV) charging stations. In some cases, activities surrounding retrofitting facilities would not substantially affect existing developments in a way that could substantially degrade the visual character or quality of the surrounding area; thus, visual impacts would not be substantial in these cases. However, in cases where new facilities are required, short-term construction-related equipment could be introduced to areas of scenic importance. Construction and modification of these facilities, though likely to occur in areas with consistent zoning where other similar facilities may already be under construction or modification, could introduce or increase the presence of artificial elements (e.g., heavy-duty equipment, removal of existing vegetation, grading) in areas with national, State, or county designated scenic vistas and/or scenic resources visible from State scenic highways. The visual impact of such development would depend on several variables, including sensitivity of viewers, size of facilities, viewer distance, and angle of view, visual absorption capacities, and equipment placement in the landscape. However, temporary introduction of construction in a highly sensitive and natural area, for example, could substantially degrade the area's visual quality. Additionally,

construction may require nighttime lighting for security or to accommodate nighttime work. In areas with minimal existing lighting, construction lighting may be a substantial new source of nighttime lighting.

Therefore, short-term construction-related aesthetic impacts associated with the Proposed Project could be potentially significant.

This impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 1-1

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, and regulations, and policies that provide protection of aesthetic 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 discretionary local land use and/or permitting authority. New or modified facilities in California would qualify as a "project" under CEQA. The jurisdiction with primary permitting authority over a proposed action is the local government 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 lead agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to aesthetic resources include:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed Project 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 shall certify that the environmental document was prepared in compliance with applicable regulations and approve the project for development.
- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to avoid or substantially lessen the environmental impacts of the project.
- The project proponent would color and finish the surfaces of all project structures and buildings visible to the public to ensure that they: (1) minimize visual intrusion and contrast by blending with the landscape; (2) minimize glare; and (3) comply with local design policies and ordinances. The project proponent would submit a surface treatment plan to the lead agency for review and approval.
- 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 possible, construction staging

and laydown areas for equipment, personal vehicles, and material storage shall be sited to take advantage of natural screening opportunities provided by existing topography and vegetation.

- All construction areas shall be kept clean and tidy, including areas of disturbed soils and recent vegetation plantings, and storage shall be screened from view and/or are generally not visible to the general public.
- Projects and their associated elements will be sited to avoid prominent landscape features, and national historic sites, national trails, and cultural resources.
- The project proponent shall prepare and implement a construction lighting mitigation plan and submit the plan to the local jurisdiction for review. The plan shall describe the measures to be used to reduce the visibility of on-site construction lighting from neighboring properties.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant scenic and nighttime lighting impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related scenic and nighttime lighting effects resulting from reasonably foreseeable compliance responses to the Proposed Project would be **potentially significant and unavoidable**.

Impact 1-2: Long-Term Operational-Related Effects to Aesthetics

Development of new facilities for the manufacture of Zero Emission Vehicle (ZEV)-related equipment and fuels (i.e., hydrogen), as well as supporting infrastructure (charging and fueling stations) would be expected to occur in areas appropriately zoned for such uses; 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, 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 deployment of ZEVs could reduce rates of oil and natural gas extraction. Gasoline and diesel fuel use refined from crude oil drilling would be displaced as the

transportation system is electrified and incorporates hydrogen fuels. Further, use of compressed natural gas (CNG)-powered vehicles would be expected to decrease, which could affect rates of natural gas extraction (e.g., hydraulic fracturing [fracking]). The processes of oil and natural gas extraction has substantial aesthetic impacts associated with the use of heavy-duty equipment including drills and rigs, as well as the operation of facilities to refine crude oil and natural gas into usable fuels for automobiles. The operators of oil and natural gas extraction facilities site these facilities in both natural (e.g., Price Canyon Oil Field in scenic Edna Valley, San Luis Obispo County near Pismo Beach) and semi-urban settings (e.g., Newport Banning Ranch Oil Field in Newport Beach, along scenic Highway 1). Transitioning the transportation sector to inclusion of ZEVs could reduce the potential for adverse aesthetic impacts on natural and urban landscapes related to existing or planned oil and gas extraction facilities. Compared to the existing conditions of California, there may be abandoned oil and natural gas facilities; however, it is unknown if these facilities would be decommissioned and the surrounding areas restored such that aesthetic conditions are improved.

Increased use of ZEVs could increase the demand for batteries for ZEVs, resulting in increased demand for certain elements (e.g., lithium, platinum, or another element). Worldwide, the majority (80 to 90 percent) of raw lithium is currently mined and exported from Australia, Chile, Argentina, and Bolivia.¹⁹ Lithium is typically derived from hard rock mining practices or from brine extraction. Hard rock mining, which is typical in Australia and, at the timing of writing this Draft EA, is not practiced within the United States or California, 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, nighttime lighting, and deforestation. In contrast, brine extraction, which occurs in Chile, Argentina, Bolivia, and the United States, involves vertical pumping of brine, which evaporates to form brown and white cones of salt minerals. It is reasonably foreseeable that increased demand for lithium-ion batteries could cause additional lithium extraction resulting in these types of adverse visual effects in areas where hard rock mining (Australia) and brine extraction activities (Chile, Argentina, Bolivia, and United States) occur. Refer to the discussion of Mineral Resources impacts below for further clarification. As such, operational impacts associated with brine extraction could be potentially significant.

Platinum mining is typically conducted in South Africa, Russia, Canada, Zimbabwe, and the United States.²⁰ Mining is typically done in underground or open pit mines where platinum containing ore is extracted and could result in harmful visual changes to the

¹⁹ U.S. Geological Survey. n.d, [Mineral Commodity Summaries Lithium](https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb1-2017-lithi.pdf), 2017 (web link: <https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb1-2017-lithi.pdf>, last accessed August 2022).

²⁰ Mineral Education Coalition. n.d, [Periodic Table of Elements, Platinum](https://mineralseducationcoalition.org/elements/platinum/), 2022 (web link: <https://mineralseducationcoalition.org/elements/platinum/>, last accessed August 2022).

natural environment such as hillside erosion, contamination of surface waters, artificial drainage patterns, subsidence, night-time lighting, and deforestation. The platinum containing substance is then ground down separated. From there, the ore is smelted into matte (metal contained in sulfur). From there the platinum containing matte is purified at a precious metals refinery.²¹ It is reasonably foreseeable that increased demand for fuel cells could cause additional platinum extraction resulting in these types of adverse visual effects in areas platinum mining extraction occurs (Russia, Canada, Zimbabwe, and the United States). As such, operational impacts associated with platinum mining could be potentially significant.

The reasonably foreseeable compliance responses could also result in mid-life battery replacement of batteries for ZEVs which could place additional demand such that existing recycling facilities and manufacturing plants would need to be expanded or modified. Notably, however, ZEV batteries could have a second life when ZEVs are retired. These batteries could be repurposed and continue to be used. For disposal and manufacture of other ZEV batteries, modifications to existing disposal, recycling centers, and manufacturing plants could occur within the confines of such facilities and, therefore, would not result in additions of external equipment that would degrade visual quality. However, development of new recycling facilities, although expected to occur in areas appropriately zoned, could increase the presence of visible human-made elements (e.g., trucks carrying goods for recycling, 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.

There is uncertainty as to the exact locations of potential new and modified facilities and lithium mines. Operation of these facilities, though likely to occur in areas with appropriate zoning where other similar facilities may already exist, could introduce or increase the presence of non-natural appearing elements (e.g., buildings, parking lots, mining equipment) in areas with national, State, or county designated scenic vistas and/or scenic resources visible from State scenic highways. The visual impact of such development would depend on several variables, including sensitivity of viewers, size of facilities, viewer distance, angle of view, visual absorption capacities, and the structure placement in the landscape. Introduction of new facilities in a highly sensitive and natural area, for example, could substantially degrade the area's visual quality. In addition, operation may introduce substantial sources of nighttime lighting for safety and security purposes.

²¹ Glaister, B and Mudd, G, [The environmental costs of platinum – PGM mining and sustainability: Is the glass half-full or half-empty](https://www.sciencedirect.com/science/article/abs/pii/S0892687509003045), 2010 (web link: <https://www.sciencedirect.com/science/article/abs/pii/S0892687509003045>, last accessed August 2022).

Therefore, long-term operational-related effects to aesthetics associated with implementation of the Proposed Project could 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 1-2

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, regulations, and policies that provide protection of aesthetic resources. CARB does not have the authority to require implementation of mitigation measures related to the construction of new or modified facilities in response to the Proposed Project 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 would likely qualify as a “project” under CEQA and, thus, require environmental review. 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 would be identified during the environmental review by agencies with discretionary project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to aesthetic resources include:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed Project would coordinate with local land use agencies to seek land use entitlements for development of the facilities, including the completion of all necessary environmental review requirements (e.g., CEQA). The local land use agency or governing body shall certify that the environmental document was prepared in compliance with applicable regulations and approve the project for development.
- The project proponent shall color and finish the surfaces of all project structures and buildings visible to the public to ensure that they: (1) minimize visual intrusion and contrast by blending with the landscape; (2) minimize glare; and (3) comply with local design policies and ordinances. The project proponent shall submit a surface treatment plan to the lead agency for review and approval.
- Siting projects and their associated elements next to prominent landscape features or in a setting for observation from national historic sites, national trails, and cultural resources shall be avoided to the greatest extent.
- The project proponent shall prepare and implement a lighting mitigation plan and submit the plan to the local jurisdiction for review. The plan

shall describe the measures to be used to reduce visibility of on-site lighting from neighboring properties.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant scenic and nighttime lighting impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational-related scenic and nighttime lighting effects resulting from reasonably foreseeable compliance responses to the Proposed Project would be **potentially significant and unavoidable**.

2. Agriculture and Forestry Resources

Impact 2-1: Short-Term Construction-Related and Long-Term Operational-Related Effects to Agriculture and Forestry Resources

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. There is uncertainty as to the exact locations of these new and modified facilities and therefore their location in relation to agricultural land, including farmland, land zoned for agricultural use, and land under Williamson Act (Government Code Section 51200 et seq.) contract. Similarly, it is uncertain where new and modified facilities would be located in relation to forest land and timberland. Construction and modification of these facilities is likely to occur in areas with appropriate zoning that would not have agricultural or forestry uses. However, if new facilities associated with the Proposed Project are sited in areas of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, Williamson Act conservation contracts, forest land or timberland, they could result in conversion of agricultural land or forest land to other uses. Some of the conversion would be permanent where facilities are constructed, while temporary conversion may be needed to facilitate temporary construction activities. Many local governments have adopted land use policies to protect important agricultural and forest land from conversion to urban development, including the development of industrial facilities such as those considered to be reasonably foreseeable compliance responses associated with the Proposed Project. Land use policies controlling the location of new industrial facilities and diverting development away from agricultural and forest land could avoid some conversion of

agricultural and forest land, but likely would not prevent all substantial conversion of agricultural and forest land. As a result, this impact could be potentially significant.

Increased deployment of ZEVs would result in a corresponding decrease in deployment of gasoline- and diesel-fueled vehicles, which could result in decreased demand for gasoline, diesel, and CNG fuels in the transportation sector. Therefore, rates and levels of oil and gas extraction and production could also decrease. While there is a degree of uncertainty surrounding the location of any future oil and natural extraction sites, it is foreseeable that such sites could be located on Important Farmland or land supporting forest resources, which could result in the conversion of agricultural or forestland. Therefore, the electrification of the transportation sector could result in the preservation of agriculture and forest resources that may otherwise be converted for oil and gas extraction-related activities.

Increased demand for elements, including lithium, platinum, and other elements, associated with elevated use of ZEVs could increase mining and extraction internationally. One example and with respect to lithium, the ore derived from brines typically occurs within desert areas, which would not be considered valuable land for agricultural or forestry practices; however, lithium ore extracted from hard rock mining could result in the loss of agricultural and forest lands of importance depending on where new facilities are located.

Therefore, short-term construction-related and long-term operational-related impacts associated with implementation of the Proposed Project on agricultural and forest resources could be potentially significant.

Potential agricultural and forest resource 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 2-1

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, regulations, and policies that provide protection of agricultural and forest resources. CARB does not have the authority to require implementation of mitigation measures related to new or modified facilities or infrastructure that would be approved by other State agencies or local jurisdictions. The ability to require such mitigation measures is within the purview of jurisdictions with discretionary land use approval and/or permitting authority. Project-specific impacts and mitigation would be identified during the project review process and carried out by agencies with discretionary project approval authority. Recognized practices routinely required to avoid and/or minimize construction-phase impacts to agriculture and forest 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, project proponents would implement all mitigation identified in the environmental document to avoid 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 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:
 - Permanent preservation of 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 towards the ultimate purchase of an agricultural conservation easement.
 - Participation in any agricultural land mitigation program, including local government maintained, 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.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts related to the conversion of agriculture and forest resources.

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 operational-related and long-term operational-related impacts to agriculture and forest resources resulting from the Proposed Project would be **potentially significant and unavoidable**.

3. Air Quality

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

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Robust modeling efforts by CEC have estimated that 157,000 chargers will be necessary by 2030 and 258,000 chargers by 2037 to support medium-and heavy-duty vehicle electrification.^{22,23} This charging need will initially be focused “behind the fence” through depot charging, but publicly accessible options will be needed to enable a widespread charging network for long-range and interstate travels. In addition, the California Fuel Cell Partnership suggests that 200 heavy-duty hydrogen stations by 2035 would be needed to support an interim milestone of 70,000 Class 8 FCEVs and would represent a “market sustainability tipping point.”²⁴ Construction-related

²² California Energy Commission, [Assembly Bill 2127 – Electric Vehicle Charging Infrastructure Assessment](https://efiling.energy.ca.gov/getdocument.aspx?tn=238853), 2021 (web link: <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>, last accessed August 2022).

²³ California Air Resources Board, [2022 State Strategy for the State Implementation Plan \(2022 State SIP Strategy\)](https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy), 2022 (web link: <https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy>, last accessed August 2022).

²⁴ California Fuel Cell Partnership, [A Vision for Freight Movement in California and Beyond](https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-), 2021 (web link: <https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks->

activities, if they occur, would be anticipated to result in an increase in criteria air pollutants and toxic air contaminants (TACs) (e.g., use of heavy-duty construction equipment for grading, trenching, etc.). All projects, no matter their size or type, would be required to seek applicable local land use approvals prior to their implementation. Part of the land use entitlement process requires that each of these projects undergo environmental review consistent with environmental review requirements (e.g., CEQA) and other applicable local requirements (e.g., local air district rules and regulations). This environmental review process would assess whether project implementation would result in short-term construction air quality impacts. Notably, where hydrogen fueling is added to an existing conventional gas station, hydrogen fueling stations may fall under CEQA categorical exemptions for (1) expansion of existing facilities, (2) new construction or conversion of small structures, and (3) minor alterations to land. Further, stand-alone hydrogen fueling stations may also qualify for a categorical exemption or a negative declaration under CEQA.²⁵ These existing CEQA exemptions recognize the minimal impact of these kinds of minor modifications.

At this time, the specific location, type, and number of construction activities is not known and would be dependent upon a variety of factors that are not within the control of CARB. Nonetheless, the analysis provided herein provides a reasonable accounting of the types of environmental impacts that would occur with implementation of the Proposed Project as discussed below for short-term construction emissions. Further, subsequent environmental review would generally be conducted at such time that an individual project is proposed, and land use entitlements are sought.

During the construction phase, criteria air pollutants and 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 (including respirable PM (PM₁₀) and fine PM (PM_{2.5})) vary as a function of parameters such as soil silt content and moisture, wind speed, acreage of disturbance area, and the intensity of activity performed with construction equipment. Site preparation equipment and activities typically include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Local air districts often require and/or recommend the incorporation of fugitive-dust-reduction measures into individual projects, including watering of exposed surfaces twice daily, covering/maintaining at least two feet of freeboard space on haul trucks, limiting

supported#:~:text=Sacramento%2C%20California%E2%80%94Today%2C%20the,by%20200%20heavy%2Dduty%20truck, last accessed August 2022).

²⁵ Arnold and Porter, [Hydrogen Fuel Stations in California: A Practical Guide to Permitting and CEQA Review](https://www.arnoldporter.com/en/perspectives/publications/2015/04/~/_media/7457d6dc9bd7491f8aff1289ab4457e0.ashx), 2015, (web link: https://www.arnoldporter.com/en/perspectives/publications/2015/04/~/_media/7457d6dc9bd7491f8aff1289ab4457e0.ashx, last accessed August 2022).

vehicle speeds to less than 15 mph on-site, and using wet power vacuum sweepers on paved areas of the site and immediately adjacent roadways.

Exhaust emissions from off-road construction equipment, material delivery trips, and construction worker-commute trips could also contribute to short-term increases in PM, but to a lesser extent than grading and excavation. Exhaust emissions from construction-related mobile sources also include reactive organic gases and oxides of nitrogen (NOx) emissions. These emission types and associated levels fluctuate greatly depending on the particular type, number, and duration of usage for the varying equipment. CARB has a number of regulations in place to reduce off-road equipment emissions and is currently developing draft amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road Regulation). The goal of these amendments would be to reduce emissions of criteria pollutants (PM and NOx) and toxics from off-road diesel vehicles operating in California, beyond the reductions being achieved via the ongoing implementation of the existing Off-Road Regulation. Driven by the Draft 2022 State Strategy,²⁶ the Off-Road Regulation sets a goal of reducing NOx emissions by 4.1 tons per day (tpd) in the off-road diesel sector. Other regulations relevant to the construction sector and included in the 2022 State Strategy (draft) include adopting Tier 5 Off-Road New Compression Engine Standards to reduce NOx and PM emissions from new, off-road compression-ignition (CI) engines across all power categories, including those that do not currently utilize exhaust aftertreatment such as diesel particulate filters and selective catalytic reduction. CI engines are used in a wide range of off-road equipment including tractors, excavators, bulldozers, graders, and backhoes. In addition to considering Tier 5 engine standards for off-road CI engines, CARB is also considering an Off-Road Zero-Emission Targeted Manufacturer Rule to achieve criteria pollutant and GHG emission reductions by accelerating the development and production of zero-emission off-road equipment and powertrains for a variety of equipment used in the construction sector. 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, etc.) however, as technology advancements occur, more sectors, including wheel loaders, excavators, and bulldozers) could potentially be accelerated through this or other measures.

The site preparation phase typically generates the most substantial emission levels because of the on-site equipment and ground-disturbing activities associated with grading, compacting, and excavation. Although detailed construction-specific 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

²⁶ California Air Resources Board, [2022 State Strategy for the State Implementation Plan \(2022 State SIP Strategy\)](https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy), 2022 (web link: <https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy>, last accessed August 2022).

emission rates and default parameters for above mentioned equipment and activities, typical construction activities could result in hundreds of pounds of daily NO_x and PM, which may exceed applicable significance thresholds depending on the exact location of generation. Thus, implementation of the Proposed Project could generate levels that conflict with applicable air quality plans, violate or contribute substantially to an existing or projected violation, result in a cumulatively considerable net increase in non-attainment areas, 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 could be potentially significant.

As a result, short-term construction-related air quality impacts associated with the Proposed Project could be potentially significant. This short-term construction-related air quality impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB.

Mitigation Measure 3-1

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, regulations, and policies that provide protection of air quality. CARB does not have the authority to require implementation of mitigation measures related to new or modified facilities that would be subject to project approval by local jurisdictions. The ability to require such measures is within the purview of jurisdictions with local or state land use approval and/or permitting authority. New or modified facilities in California would likely qualify as a “project” under CEQA, because they would generally need a discretionary public agency approval and could result in a physical change in the environment. 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. 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 constructed as a result 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 jurisdiction with land use authority

- would determine that the environmental review process complied with CEQA and other applicable regulations, prior to project approval.
- Based on the results of the environmental review, proponents would implement all feasible mitigation identified in the environmental document to avoid or substantially lessen the construction-related air quality impacts of the project.
- Project proponents would 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 would comply with the federal Clean Air Act and the California Clean Air Act (e.g., New Source Review and Best Available Control Technology criteria, if applicable).
- Project proponents would comply with local plans, policies, ordinances, rules, and regulations regarding air quality-related emissions and associated exposure (e.g., construction-related fugitive dust regulations and indirect source review).
- For projects that exceed applicable PM thresholds, prepare and comply with a dust abatement plan that addresses emissions of fugitive dust during construction and operation of the project.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. With mitigation, construction emissions, though not likely, could still exceed local air district threshold levels of significance depending on the magnitude of construction activities.

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 air quality impacts resulting from compliance responses associated with the Proposed Project would be **potentially significant and unavoidable**.

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

Implementation of the Proposed Project would result in an increase in manufacturing of ZEVs, along with a corresponding decrease in the manufacturing and deployment of gasoline fueled vehicles. Manufacturing needs for new vehicles would largely be met by existing facilities, and no new infrastructure or plants would be required for vehicle manufacturing. This increase in ZEV volumes would result in associated increases in lithium, nickel, cobalt, and possibly platinum mining and exports from source countries

or other states. Increased demand for lithium-ion batteries could increase battery production and manufacture, which could result in the expansion of or construction of new battery facilities. Implementation of the Proposed Project would also result in the construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations. Likewise, increased deployment of ZEVs would result in an increase in production and distribution of electricity and hydrogen fuel, while potentially decreasing rates of oil and gas extraction and gasoline refining activities.²⁷ The Proposed Project would also result in the disposal of lithium-ion batteries that induce increased demand of refurbishing, reusing, and recycling of batteries and fuel cells, new facilities may be constructed or modifications to existing facilities may occur.

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, nickel, and cobalt 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.

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 PM₁₀, PM_{2.5}, and ozone. The Proposed Project would introduce new ZEV requirements that would directly reduce tailpipe emissions.

ZEVs would be mostly battery-electric (excepting ZEVs powered by hydrogen fuel cells), while PHEVs would have an electric range that would be supplemented by a hybrid ICE. The electricity needed to power ZEV and PHEVs can be provided by

²⁷ As noted earlier, grid demand response strategies and rate price signals can mitigate some of the new electricity generation needed to serve increased demand for plug-in electric vehicles.

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, 2030.²⁸

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 from eligible renewable energy resources and zero-carbon resources by December 31, 2045.²⁹

According to the California Energy Commission, in 2020, 36 percent of all California consumed electricity was sourced from renewable power.³⁰ 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, the shift to ZEVs 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.

Upstream emissions associated with the generation of electricity used for ZEVs (i.e., emissions from power plants that supply electricity to the grid) are considered in the reduction benefits of the Proposed Project. The emission reductions associated with reduced gasoline/diesel consumption are spatially distributed according to the locations and activities of existing refineries and biofuel production facilities

²⁸ California Energy Commission, [Renewables Portfolio Standard- Verification and Compliance](https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard), 2022 (web link: <https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard>, last accessed August 2022).

²⁹ California Legislature, [Senate Bill No. 100, California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases](https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100), 2018 (web link: https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100, last accessed August 2022).

³⁰ California Energy Commission, [Tracking Progress](https://www.energy.ca.gov/sites/default/files/2019-12/renewable_ada.pdf), 2020 (web link: https://www.energy.ca.gov/sites/default/files/2019-12/renewable_ada.pdf, last accessed August 2022).

throughout California. Specifically, the reductions occur in the air basins where existing fuel production facilities reside. Staff also modeled criteria emissions from the fuel product transportation phase via heavy-duty trucks that deliver fuel. The emissions are allocated proportionally by the fraction of state-wide fuel consumption for each air basin.

The main purpose of the Proposed Project is to reduce mobile source emissions of criteria air pollutants and toxic air contaminants to improve air quality. The Proposed Project is an action in addition to existing commitments in the State Implementation Plan that would help further CARB's federal obligations to attain the National Ambient Air Quality Standards.

The emissions impacts of the Proposed Project are evaluated against the BAU scenario each year for the analysis period from 2024 to 2050. The BAU scenario emissions analysis for the Proposed Project uses the same vehicle inventory for all analyses. The BAU scenario reflects the implementation of all existing State and federal laws and regulations on the vehicles the proposed regulation would affect. The HD I/M regulation was heard by the Board in December 2021 but was not included in the BAU scenario because it was not approved by Office of Administrative Law (OAL) at the time this analysis was prepared. While it is not possible to precisely forecast future levels of noncompliance, staff has made a good faith effort to anticipate and disclose the emissions levels.

Staff used CARB's EMFAC to assess the BAU scenario's vehicle inventory, including vehicle sales and population growth assumptions, for Class 2b and larger vehicles for all fuel types.³¹ EMFAC includes the effects of CARB's ASB, ICT, Truck and Bus, Heavy-Duty Omnibus, and ACT regulations, and LCFS program compliance. It is important to note that the benefits of low carbon fuels, such as RNG and renewable diesel (RD), that are part of LCFS are already included in the BAU scenario. Therefore, the economic and environmental impacts attributable to the proposed regulation are solely attributable to new regulatory actions beyond those already expected. This means only ZEV deployments required by the Proposed Project that exceed the ZEV sales already expected from the ACT regulation would result in new emissions benefits and costs. When compared to the BAU scenario, the proposed regulation would increase the expected number of medium- and heavy-duty ZEVs (beyond existing regulations) from about 320,000 to about 510,000 by 2035 and from about 780,000 to about 1,230,000 ZEVs by 2045. This increase in ZEVs is expected to be mainly from Class 4-8 vehicles up to 2040, then across all Class 2b-8 vehicles afterwards.

The Proposed Project would reduce NO_x and PM_{2.5} tail pipe emissions from conventional medium- and heavy-duty vehicles relative to the BAU scenario conditions. As described in Chapter 2, the Proposed Project would require certain

³¹ California Air Resources Board, [EMFAC 2021 Database](https://arb.ca.gov/emfac/), 2021 (web link: <https://arb.ca.gov/emfac/>, last accessed August 2022).

fleets to deploy ZEVs starting in 2024 and would establish a clear end to medium- and heavy-duty internal combustion engine (ICE) vehicle sales in 2040. The Proposed Project achieves criteria air pollutant emission reductions from the medium- and heavy-duty vehicle sector by targeting fleets best suited for electrification and requiring these fleets to purchase new ZEVs instead of new ICE vehicles, which will replace older and more polluting conventional vehicles.

The projected statewide emissions benefits of the Proposed Project from 2024 through 2050 are identified in Table 2 and Table 3 with respect to NO_x and PM_{2.5}. The emissions presented are TTW (i.e., vehicle tank to tailpipe) emissions reductions.

Table 2: NO_x Emission Benefits from the Proposed Project

Calendar Year	BAU Emissions (tpd)	ACF Regulation Emissions (tpd)	Emissions Reductions (tpd)	Emission Reductions (tpy)	Percent Emission Reduction
2024	204.7	202.3	2.4	747	1.2
2030	165.8	150.6	15.2	4,753	9.2
2035	151.3	110.7	40.7	12,688	26.9
2040	147.5	78.9	68.6	21,401	46.5
2045	154.4	70.5	83.9	26,173	54.3
2050	169.7	72.5	97.2	30,338	57.3

Table 3: PM_{2.5} Emission Benefits from the Proposed Project

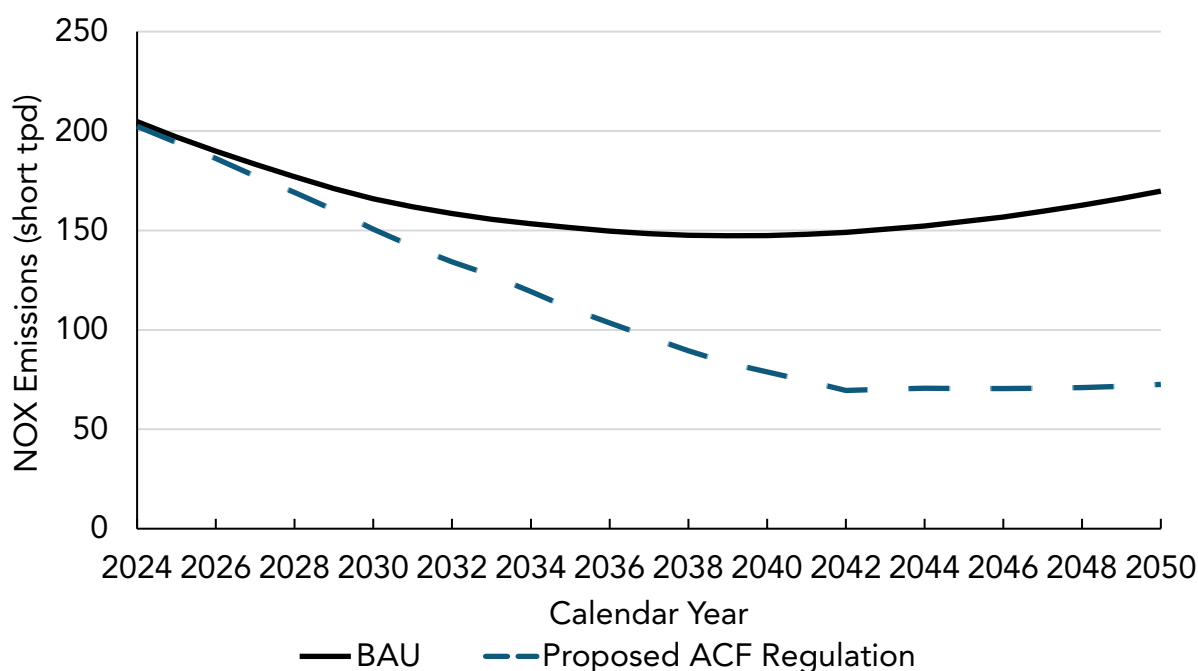
Calendar Year	BAU Emissions (tpd)	ACF Regulation Emissions (tpd)	Emissions Reductions (tpd)	Emission Reductions (tpy)	Percent Emission Reduction
2024	5.39	5.35	0.03	10.3	0.6
2030	5.19	4.95	0.24	76.4	4.7
2035	5.24	4.51	0.72	225.9	13.8
2040	5.38	4.07	1.31	407.8	24.3
2045	5.71	3.86	1.86	579.1	32.5
2050	6.22	3.93	2.29	715.1	36.9

Emissions benefits increase as the ZEV fleet requirements phase in and the population of medium- and heavy-duty ZEVs increase. The cumulative total emissions reductions from 2024 to 2050 is estimated to result in 418,943 tons reduction in NO_x and 8,638 tons reduction in PM_{2.5}, relative to the BAU scenario.³²

³² The total cumulative emissions reductions for PM_{2.5} and NO_x are converted from tpd into years and assumes 312 operational days per year. Due to rounding errors, the 2024-2050 cumulative totals differ very slightly when compared to the sum values listed.

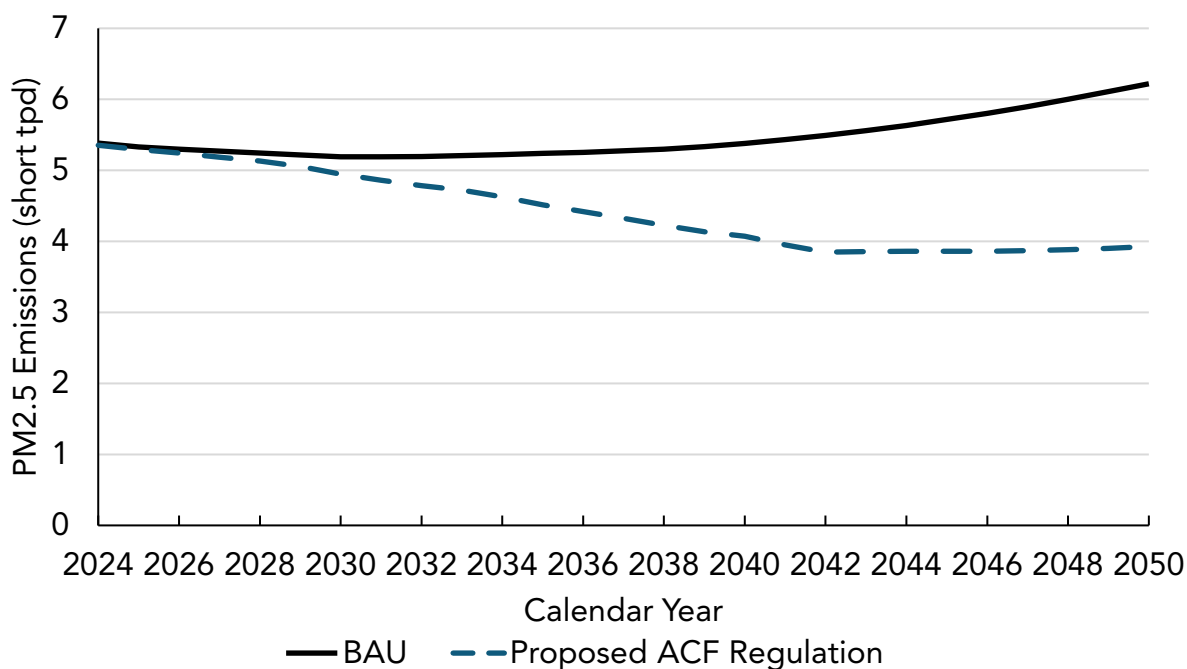
The statewide NO_x and PM_{2.5} emissions impacts of the proposed regulation are presented in the following two figures and are shown in short tpd. Figure 1 summarizes the Tailpipe NO_x emissions under the proposed ACF regulation relative to BAU conditions to illustrate the continuing air quality benefits from the Proposed Project over time. Beginning in 2024, the BAU scenario for NO_x emissions continues to decline as cleaner engines and ZEVs are phased in, even as VMT continues to grow, due to the normal replacement of existing vehicles with newer and cleaner ones as well as from existing regulations. However, in later years, the BAU scenario NO_x emissions begin to increase with projected VMT growth.

Figure 1: Projected Statewide NO_x Tank-to-Wheel Emissions, BAU scenario and Proposed Regulation



For PM_{2.5} emissions shown in Figure 2, the BAU scenario is initially expected to remain relatively flat as most diesel trucks already have PM filters and only limited additional reductions are expected from newer engines. Then PM_{2.5} emissions are expected to increase as projected VMT grows. With the Proposed Project, PM_{2.5} emissions are expected to decline rapidly until about 2042 and then slow as more regulated fleets make a full conversion to ZEVs. Under the BAU scenario, PM_{2.5} emissions are expected to increase from 5.4 tpd in 2024 to 6.2 tpd in 2050. With the proposed regulation, PM_{2.5} emissions are expected to decrease from 5.4 tpd in 2024 to 3.9 tpd in 2050. Remaining emissions are largely due to vehicles not covered by the rule and other non-exhaust sources such as brake or tire wear.

Figure 2: Projected Statewide PM_{2.5} Tank-to-Wheel Emissions, BAU scenario and Proposed Regulation



For more details regarding quantified emission reductions from the operations associated with the Proposed Project, see Appendix F of the ISOR. Overall, the Proposed Project 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.

With respect to odors, implementation of the Proposed Project would not include activities or processes that are associated with major odor sources (e.g., landfills, wastewater treatment facilities, petroleum refineries, or rendering plants). Therefore, the Proposed Amendments would not be expected to result in the exposure of a substantial number of people to odors.

Implementation of the Proposed Project would minimize emissions associated from light-duty delivery vehicles, medium-duty, and heavy-duty vehicles and would assist the State in meeting the NAAQS and CAAQS both regionally and statewide. As discussed in detail in the Staff Report, emission reductions resulting from the implementation of the Proposed Program 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 Proposed Program. For these reasons, long-term operational-related air quality impacts would be **beneficial**.

4. Biological Resources

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

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs along with a decrease in the use of existing ICE vehicle facilities, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation and decreased use of combustion fuels. Construction of new recycling and manufacturing facilities 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) through direct mortality of individual plants and animals and from destruction of dens, burrows, or nests through ground compaction, ground disturbance, or debris and vegetation removal. Indirect impacts to species could result from construction noise disturbance that might 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.

Overall, implementation and compliance with the Proposed Project could result in potentially significant impacts to biological resources. Depending on the regulatory status of the species (e.g., listed as endangered under the 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, or related state or local laws would be required. It is expected that potential impacts to 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 could be potentially significant.

Therefore, short-term construction-related effects to biological resources associated with the Proposed Project could be potentially significant.

Potential construction-related biological resources impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 4-1

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, regulations, and policies that provide protection of 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 land use and/or permitting authority. New or modified facilities in California would 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 construction project 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 biological resources include:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed Project 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 avoid or substantially lessen the environmental impacts of 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.
- Preparation of a biological inventory of site resources by a qualified biologist 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. Ensure that important fish or wildlife movement corridors or nursery sites are not impeded by project activities.
- Preparation of a wetland survey of onsite resources. 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 ensure that project activity does not cause an active nest to fail.

- Preparation of site design and development plans that avoid or minimize disturbance of habitat and wildlife resources, and prevents 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.

Plant replacement trees and establish permanently protection suitable habitat at ratios considered acceptable to comply with “no net loss” requirements.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 impacts to biological resources associated with the Proposed Project would be **potentially significant and unavoidable**.

Impact 4-2 Long-Term Operational-Related Effects to Biological Resources

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation.

Long-term operation of new manufacturing plants, stations, and recycling facilities would often include the presence of workers; movement of automobiles, trucks, and heavy equipment; and operation of stationary equipment. Generally, industrial uses and fueling stations would 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. In addition, 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 result in species mortality, nest failure, or other effects on habitat.

Implementation of the Proposed Project would increase the number of ZEVs within the transportation sector, which would result in higher demand for hydrogen fuel and electricity as well as a reduction in the level of fossil fuel use. Current oil and gas extraction activities can disrupt wildlife migration routes and habitat from noise

pollution, traffic, and fences. Further, accidental release of oil and gas-related substances can pollute important aquatic and terrestrial habitat resulting in adverse effects to biological resources. Due to the deployment of ZEVs, such impacts associated with existing and potential future oil and gas extraction would likely be reduced as a result of the Proposed Project.

Increased demand for ZEV batteries and fuel cells could also result in increased mining-related activities, including hard rock and continental brines for the procurement of ore (e.g., lithium, platinum, or other elements). 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). As an example, lithium may also be collected from lake brines and clays. This process involves the pumping of salty groundwater into lagoons where it undergoes evaporation producing salts containing lithium compounds. An increase in demand for fuel cells could result in increased mining and exports from source countries or other states and increase recycling, refurbishment, or disposal of hydrogen fuel cells. If mining activities occur on or near biological resources, which is probable, they could result in loss or degradation of these resources. Such activities could result in substantial disturbances to biological resources and could cause a reduction in sensitive habitat, interference with a wildlife corridor, loss of special-status species, or conflict with a habitat conservation plan or natural community conservation plan.

Therefore, long-term operational-related effects to biological resources associated with the Proposed Project could be potentially significant.

This impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies (in the U.S. and abroad), but is beyond the authority of CARB.

Potential operational-related biological resources impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 4-2

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, regulations, and policies that provide protection of 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 land use and/or permitting authority. New or modified facilities in California would 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 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 biological resources include:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed Project 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 avoid or substantially lessen the environmental impacts of 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 prevents stormwater discharge that could contribute to sedimentation and degradation of local waterways during project operation.
 - Maintain and replace, as needed, replacement trees and permanently protected suitable habitat identified during the construction phase of the project.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 biological resources associated with the Proposed Project would be **potentially significant and unavoidable**.

5. Cultural Resources

Impact 5-1: Short-Term Construction-Related Effects and Long-Term Operational-Related Effects to Cultural Resources

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Construction of new manufacturing plants 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. 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, structures, or archaeological sites associated with agriculture and mining, and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, also may exist. Historic buildings and structures may also be adversely affected by demolition-related activities. Such resources may occur individually, in groupings of modest size, or in districts because culturally sensitive resources can also be located in developed settings, historic, archeological, and paleontological resources, and places important to Native American communities, could also be adversely affected by the installation of hydrogen fuel dispensing units at existing gasoline service stations and as a result of modifications to existing hydrogen production plants within existing footprints, or at other sites in areas with consistent zoning. For example, installation of a new dispensing unit may require ground disturbance that unearths a previously unknown resource (e.g., artifacts). As a result, construction impacts would be potentially significant.

Operation of these facilities would not result in additional ground disturbance beyond that occurring 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. Operation of new facilities may, however, change the visual setting of the surrounding area, which could adversely affect historic resources and districts with a visual component. For example, a new industrial facility may not be consistent with the visual character of a historic district. As a result, operation impacts would be potentially significant.

As noted above as part of "Reasonably Foreseeable Compliance Responses," implementation of the Proposed Project could result in decreased demand for gasoline-, diesel-, and CNG-powered automobiles, which could affect rates of oil and gas extraction. Current oil and gas extraction activities have the potential to affect

important cultural resources through ground moving activities which could unearth or disturb previously unknown historical, cultural, or archeological sources. As such, a decrease in existing oil and gas extraction activity could reduce the future potential of adverse effects to cultural resources.

However, due to the possible presence of undocumented cultural resources and paleontological resources in locations of new manufacturing plants, stations, and recycling facilities, short-term construction-related and long-term operational effects to cultural resources associated with the Proposed Project could be potentially significant.

The increased demand for battery storage and fuel cells could result in increased mining for lithium, platinum, and other elements. Ground disturbing activities from hard rock and continual brine mining activities could affect areas and artifacts of cultural, historical, and/or paleontological significance.

Potential construction-related and operational-related cultural resources impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 5-1

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, regulations, and policies that provide protection of 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 land use and/or permitting authority. New or modified facilities in California would 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 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 cultural resources include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the proposed project 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 cultural resources associated with the project.
- Actions required to mitigate potentially significant cultural 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.
- If a resource determined to be significant by the qualified archaeologist (i.e., because the find is determined to constitute either an historical resource or a unique archaeological resource), the archaeologist shall work with the project applicant to avoid disturbance to the resources, 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.
- 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, 1995.³³
- Regulated entities shall conduct initial scoping assessments to determine whether proposed construction activities, if any, could disturb formations

³³ Society of Vertebrate Paleontology, [Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources](https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf), 2010 (web link: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf, last accessed August 2022).

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.
 - 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.

The authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and since this programmatic environmental analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this programmatic EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potentially significant short-term construction-related and long-term operational-related impacts regarding cultural resources

associated with the Proposed Project would be **potentially significant and unavoidable**.

6. Energy

Impact 6-1: Short-Term Construction-Related Impacts on Energy Demand

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Temporary increases in energy demand associated with construction and modification of facilities would include fuel consumption from use of heavy equipment, vehicles, and generators. Typical equipment that may be necessary for construction include graders, scrapers, backhoes, jackhammers, front-end loaders, 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, limited in magnitude, and subject to rules and regulations related to electrification and the use of renewable fuels. Additionally, this temporary expenditure of energy is meant to, in the long-term, allow for a transition to vehicles that use substantially less energy. Therefore, energy use during construction would not be wasteful, inefficient, or unnecessary. Short-term construction-related impacts on energy demand, associated with the Proposed Project, would be **less than significant**.

Impact 6-2: Long-Term Operational-Related Impacts on Energy Demand

Implementation of the Proposed Program would result in an increase in manufacturing of ZEVs and NZEVs, along with a corresponding decrease in the manufacturing and deployment of ICE vehicles. Manufacturing needs for new vehicles would largely be met by existing facilities, modifications of existing facilities and new infrastructure or plants for vehicle manufacturing. Total vehicle population would not change significantly and the primary change would be the drivetrain type and energy sources. This increase in ZEV and NZEV drivetrain volumes would result in associated increases in lithium, nickel, cobalt, and possibly platinum mining and exports from source countries or other states. Increased demand for lithium-ion batteries could increase battery production and manufacture, which could result in the expansion of or construction of new battery facilities. Implementation of the Proposed Program would also result in the construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations. Likewise, increased deployment of ZEVs would result in an increase in production and distribution of electricity and hydrogen fuel, while potentially decreasing rates of oil and gas extraction and gasoline refining activities. The Proposed Project would also result in the disposal of lithium-ion batteries that induce increased demand of refurbishing, reusing, and recycling of batteries and fuel cells, new facilities may be constructed or modifications to existing facilities may occur. It would also result in reduced disposal of expendable ICE engines

components, like oil filters, oil, and antifreeze and reduced disposal of transmissions and ICE engines and fluids when vehicles are decommissioned.

Utility service and hydrogen fuel providers would provide the electricity and hydrogen to meet the demand generated from various regulations covered under the Proposed Program, including those that directly result in the displacement of energy derived from the combustion of gasoline and diesel fuel and other fuels used to power vehicles to ZEVs and NZEVs that rely on electricity. The electrification of the various sectors affected by the Proposed Program could increase local and regional energy use and impact supplies and requirements for additional capacity. The Proposed Program may also impact peak and base load period demands for electricity and other forms of energy. 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 potential stresses on the electric grid resulting from implementation of the Proposed Program could be avoided through asset management, system design practices, and managed charging to shift a significant amount of the load away from system peaks. Charging management strategies beyond time-of-use rates, including those that reflect wholesale prices and carbon intensity, will be needed to align electric vehicle loads with daytime solar generation. And charging technologies should be coordinated with distribution systems to lessen the impact of charging timed to begin at off peak periods when appropriate.

CEC's preliminary modeling, which considered 50-kilowatt (kW) and 350- kW charging power levels, suggests that to charge these 180,000 medium and heavy-duty BEVs, 157,000 DC fast chargers will be needed, of which 141,000 are 50 kW and 16,000 are 350 kW by 2030.³⁴ To properly launch the necessary charging infrastructure to meet fleets' needs, it is important to identify enough geographically dispersed locations that can economically host charging stations. This charging need will initially be focused "behind the fence" through depot charging, but publicly accessible options will be needed to enable a widespread charging network for long-range and interstate travels. To meet the charging and refueling infrastructure needs, expanded incentive programs were launched by CEC. CPUC has directed the investor-owned utilities (IOU) to offer infrastructure support programs and incentives for fleet owners to install infrastructure in their territories. Federal investments in charging and hydrogen stations are starting to takeoff through the Infrastructure Investment and Jobs Act.

³⁴ California Energy Commission, [Assembly Bill 2127 – Electric Vehicle Charging Infrastructure Assessment](https://efiling.energy.ca.gov/getdocument.aspx?tn=238853), 2021 (web link: <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>, last accessed August 2022).

CEC's HEVI-LOAD model is designed to help users focus charger deployment strategies and plan infrastructure investments.³⁵ CEC modeling indicates that the necessary make-ready infrastructure to support EVSEs requires special attention and investment. To support the needed infrastructure for PEVs in California, investment in transformers, meters, breakers, wires, conduit, and associated civil engineering work would be necessary.

Nevertheless, 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 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 light duty ZEV Regulation proposals in this project, 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 ZEVs and NZEVs, which would replace vehicles powered by internal combustion engines. Electric utilities are working in coordination with the CPUC to fund infrastructure expansion projects to meet this future demand. The CEC is also working to fund hydrogen stations to increase the passenger vehicle hydrogen fueling network. 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 electrical 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 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 transportation GHG emissions by 80 percent of 1990 levels by 2050, and achieving carbon neutrality statewide across all sectors by 2045).

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

³⁵ California Energy Commission, [Medium and Heavy -Duty Vehicle Load Shapes](https://www.energy.ca.gov/sites/default/files/2021-09/5%20LBNL-FTD-EAD-HEVI-LOAD%20Medium-%20and%20Heavy-Duty%20Load%20Shapes_ADA.pdf), 2021 (web link: https://www.energy.ca.gov/sites/default/files/2021-09/5%20LBNL-FTD-EAD-HEVI-LOAD%20Medium-%20and%20Heavy-Duty%20Load%20Shapes_ADA.pdf, last accessed August 2022).

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.

The Proposed Project could result in the expansion of hydrogen fuel-cell vehicle technologies and an increase in operation of fuel cells within the state. This could increase the energy demand of producing hydrogen fuel cells. Further, hydrogen fuel used for transportation is required to achieve specific renewable energy targets. SB 1505 requires that state to adopt regulations that will ensure that state funding for the production and use of hydrogen fuel, as described in the California Hydrogen Highway Blueprint Plan. SB 1505 requires that 33.3 percent of total hydrogen production be supplied from renewable sources. Additionally, the LCFS allows for the generation of low-CI credits from hydrogen fueling stations that meet a 40 percent renewables requirement. Currently, SB 1505 only applies to stations with State co-funding. To date, the requirements of SB 1505 has been primarily handled by similar requirements in CEC solicitations for grant co-funding. However, it is also important to note that CEC does not guarantee that meeting their solicitation requirements will also meet SB 1505. CARB and CEC currently estimate actual renewable content right now between 82-92 percent. However, significant amounts of that renewable content are from indirect sources (such as renewable energy credits from steam methane reformers (SMR) of renewable natural gas occurring elsewhere in the hydrogen provider's operations, with book-and-claim accounting).

Production of hydrogen fuel and operation of recycling facilities and manufacturing plants could place additional demand on the existing electricity grid. However there are opportunities for hydrogen could be produced using curtailed energy and generate no grid demand whatsoever³⁶ and for battery electric vehicles to support the local grid using vehicle grid technology. As previously discussed, through the implementation of other statewide regulatory programs, renewable electricity resources would become an increasingly larger portion of the state's electricity portfolio. It would be expected that electricity derived from the burning of fossil fuels would decrease over time as electricity produced from renewable resources replaces such sources in which case technologies that store energy and help with managing flexible grid loads could be utilized.

Use of ZEV and NZEV emission technologies, as discussed above, would divert energy from fossil fuel-powered systems and engines to electrical systems, which, as

³⁶ Tyler H. Ruggles, Jacqueline A. Dowling, Nathan S. Lewis, Ken Caldeira, [Opportunities for flexible electricity loads such as hydrogen production from curtailed generation, Advances in Applied Energy, Volume 3, 2021, 100051, ISSN 2666-7924](https://doi.org/10.1016/j.adapen.2021.100051), 2021 (web link: <https://doi.org/10.1016/j.adapen.2021.100051>, last accessed August 2022).

mandated by the renewable portfolio standard, will become increasingly more renewable in the coming years. Through the increased use of highly efficient ZEVs powered by an increasingly more renewable energy grid, implementation of the Proposed Program would improve the efficiency of energy usage across the State.

As such, implementation of the Proposed Program would not result in the wasteful, unnecessary, or inefficient use of energy. Furthermore, implementation of the Proposed Project would decrease the amount of fossil fuel-based vehicular fuels (i.e., gasoline, diesel, and CNG) and the recycling need for changed oil and other parts through increased use of ZEVs. Thus, there would be a net **beneficial** long-term operational impact related to energy consumption.

7. Geology and Soils

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

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Although it is reasonably foreseeable that these construction activities could occur, there is uncertainty as to the exact location of new facilities and, as a result, there is uncertainty as to geologic conditions at project sites. Furthermore, characteristics of any new facilities and what kinds of modifications to existing facilities would occur. 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. These activities would have the potential to adversely affect soil and geologic resources in construction areas.

Project implementation would not result in the addition of new sensitive receptors (e.g., housing, schools) to seismic and geologic hazards. New and modified facilities and infrastructure associated with compliance responses under the Proposed Project could be located 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. For example, grading for new buildings could increase the potential for erosion or could further destabilize existing landslide conditions. The level of susceptibility to geologic effects, such as erosion and landslides, varies by location and geologic conditions. 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.

Through the deployment of ZEVs, implementation of the Proposed Project could decrease demand for gasoline, diesel, and CNG fuels, thus potentially reducing the amount and rate of oil and gas extraction activities. Fracking, in particular, can induce microseismic events from the modification of local tectonic stress. Further, chemical additives may affect the geochemistry of rocks in the mid- and long-term.³⁷ As discussed under Impact 4-2, "Long-Term Operational-Related Effects to Biological Resources," oil and gas extraction can result in loss of habitat and vegetation, which could induce erosion of soils near drilling sites. As the Proposed Project is implemented and ZEVs replace non-ZEV trucks, demand for these activities could decrease, which would reduce the likelihood of adverse geological effects occurring as a result of oil and gas extraction.

Implementation of the Proposed Project could result in increased demand for batteries for ZEVs, which could cause a surge in extraction activities for lithium, platinum, and other elements within the U.S. as well as internationally. For example, hard rock lithium ion extraction, which would be expected to occur outside of the state and U.S. would have adverse effects to erosion from potential loss of forests and soil disturbance.³⁸ Therefore, short-term construction-related and long-term operational impacts to geology and soils associated with the Proposed Project could be potentially significant.

The impacts to geology and soil resources could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of CARB and not within its purview. Short-term construction-related effects on geology and soils associated with the ACF regulation would be potentially significant.

Mitigation Measure 7-1

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws, regulations, and policies that provide protection of 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 land use and/or permitting authority. New or modified facilities in California would 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 would be identified during the

³⁷ European Parliament, [Impact of Shale Gas and Shale Oil Extraction on the Environmental and Human Health](http://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf), 2012 (web link: <http://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf>, last accessed August 2022).

³⁸ Kinhal, Vijayalaxmi, , [How Does Mining Affect the Environment](https://greenliving.lovetoknow.com/How_Does_Mining_Affect_the_Environment), 2017 (web link: https://greenliving.lovetoknow.com/How_Does_Mining_Affect_the_Environment, last accessed August 2022).

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 as a compliance response to the Proposed Project 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 avoid or substantially lessen the environmental impacts of the project. 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 would be determined by the local lead agency.
- Prior to the issuance of any development permits, proponents of new manufacturing plants and hydrogen fueling stations would 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, minerals resources and the presence of hazardous materials.
- Proponents of new manufacturing plants and hydrogen fueling stations would provide a complete site grading plan, and drainage, erosion, and sediment control plan with applications to applicable lead agencies. Proponents would 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.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 the potentially significant short-term construction-related

and long-term operational-related impacts to geology and soils associated with the Proposed Project would be **potentially significant and unavoidable**.

8. Greenhouse Gases

Impact 8-1: Short-Term Construction-Related Effects on GHGs

Based on the reasonably foreseeable compliance responses, implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Increased deployment of ZEVs would result in a corresponding decrease in deployment of gasoline- and diesel-fueled vehicles. Likewise, increased deployment of ZEVs could result in an increase in production of electricity and hydrogen fuel (see section 3.0(B)(6) above), reduce rates of oil and gas extraction, and result in associated increases in mining and exports from source countries or other states. This could result in increased rates of disposal of ZEV batteries and hydrogen fuel cells; however, disposal would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. For such 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. The Lithium-Ion Car Battery Recycling Advisory Group issued final report this March that will help California meet the growing demand to recycle Lithium-ion car batteries in a way that is safe for the public and the environment.³⁹ To meet an increased demand of refurbishing or reusing batteries and fuel cells, new facilities or modifications to existing facilities could be constructed to accommodate recycling activities.⁴⁰ The number of vehicles affected is not expected to change significantly.

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 (MT CO₂e/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 2017. These models require consideration of assumptions, including construction timelines and energy demands (e.g., fuel and electricity). Some local agencies do not recommend or

³⁹ California Environmental Protection Agency, [Lithium-Ion Car Battery Recycling Advisory Group Final Report](https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022_AB-2832_Lithium-Ion-Car-Battery-Recycling-Advisory-Goup-Final-Report.pdf), 2022 (web link: https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022_AB-2832_Lithium-Ion-Car-Battery-Recycling-Advisory-Goup-Final-Report.pdf, last accessed August 2022).

⁴⁰ Nissan, [Nissan Gives EV Batteries a Second Life](https://global.nissanstories.com/en/releases/4r), 2021 (web link: <https://global.nissanstories.com/en/releases/4r>, last accessed August 2022).

require the quantification of short-term construction-generated GHGs for typical construction projects because these only occur for a finite period of time which is typically much shorter than the operational phase. These local agencies generally recommend that GHG analyses focus on operational phase emissions, as discussed below, unless the project is of a unique nature requiring atypical (e.g., large scale, long-term) construction activity levels (e.g., construction of a new dam or levee) for which quantification and consideration (e.g., amortization of construction emissions over the lifetime of the project) may be recommended.⁴¹ However, because GHGs typically have long lifespans, it is important to note that the Proposed Project's benefits outweigh the emissions from the construction level.

Additionally, this temporary increase in emissions of GHGs is essentially a short-term trade-off for substantial long-term GHG reductions resulting from a transition to vehicles that reduce overall emissions of GHG. Therefore, when these short-term construction-related GHG emissions associated with construction activities under the Proposed Project are considered in relation to the overall long-term operational GHG benefits discussed below, they are not considered substantial.

Implementation of the Proposed Project is anticipated to result in long-term operational reductions in GHG emissions statewide; as such, short-term construction-related GHG emissions associated with the Proposed Project would be **less than significant**.

Impact 8-2: Long-Term Operational-Related Effects on GHGs

Implementation of the Proposed Project would result in an increase in manufacturing of ZEVs, along with a corresponding decrease in the manufacturing and deployment of ICE vehicles. Manufacturing needs for new ZEVs would largely be met by existing facilities, refurbishing old facilities or plants for vehicle and manufacturing. This increase in ZEV volumes would result in associated increases in lithium, nickel, cobalt, and possibly platinum mining and exports from source countries or other states. Increased demand for lithium-ion batteries could increase battery production and manufacture, which could result in the expansion of or construction of new battery facilities. Implementation of the Proposed Project would also result in the construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations. Likewise, increased deployment of ZEVs would result in an increase in production and distribution of electricity and hydrogen fuel, while potentially decreasing rates of oil and gas extraction and gasoline refining activities.⁴² The Proposed Project would also result in the disposal of lithium-ion batteries that induce

⁴¹ South Coast Air Quality Management District, [Draft Guidance Document – Interim CEQA Greenhouse Gas \(GHG\) Significance Threshold](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf), 2008 (web link: [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/ghgattachmente.pdf](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf), last accessed August 2022).

⁴² As noted earlier, grid demand response strategies and rate price signals can mitigate some of the new electricity generation needed to serve increased demand for plug-in electric vehicles.

increased demand of refurbishing, reusing, and recycling of batteries and fuel cells, new facilities may be constructed or modifications to existing facilities may occur.

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, nickel, and cobalt 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. The amount of cobalt would depend on battery technology used as newer batteries reduce the cobalt content and others contain no cobalt at all.

Compliance responses are likely to increase 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 GHG 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, the combustion of which would produce GHG emissions. However, these materials would ultimately offset the combustion of gasoline, diesel, and other fossil fuels, reducing associated emissions.

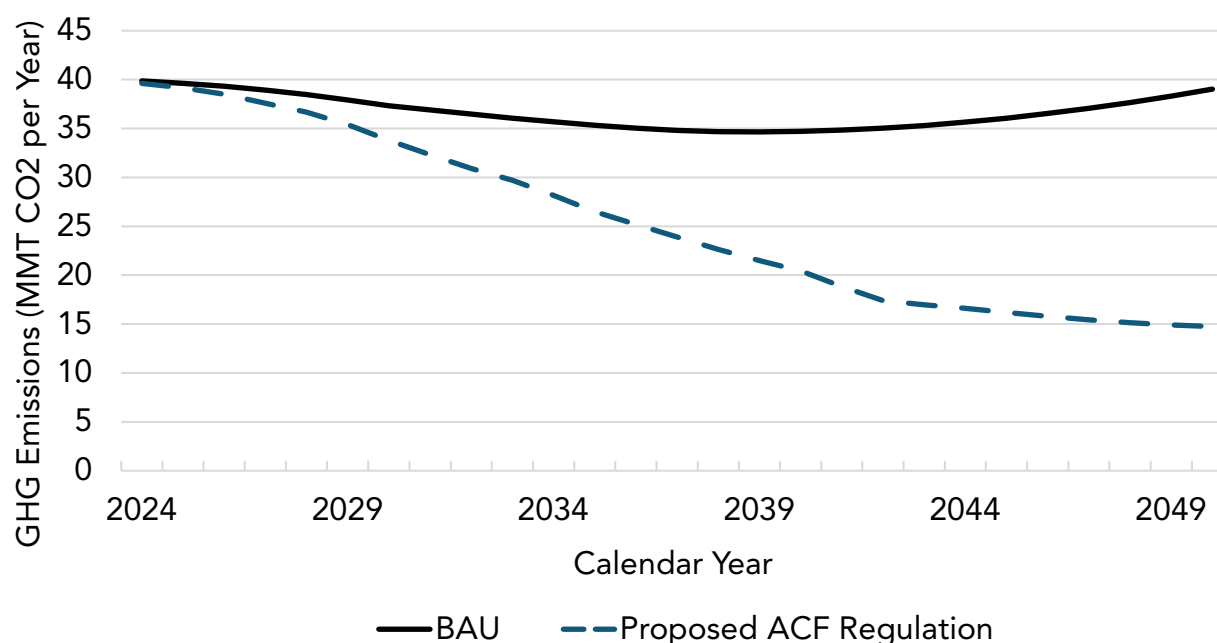
The Proposed Project would be expected to result in significant GHG emissions reductions, due to replacing ICE vehicles with considerably more efficient ZEV technologies. ZEVs produce no tailpipe emissions and have lower upstream emissions. These emissions reductions contribute to keeping California on the GHG emissions reductions path set in the Climate Change Scoping Plan. The projected statewide GHG emissions benefits of the Proposed Project from 2024 through 2050 are identified in Table 3 and result in an estimated cumulative 307 million metric tons (MMT) reduction of CO₂ TTW emissions. The emissions presented are TTW (i.e., vehicle tank to tailpipe) emissions reductions.

Table 4: PM_{2.5} Emission Benefits from the Proposed Project

Calendar Year	BAU Emissions (MMT CO ₂ per year)	ACF Regulation Emissions (MMT CO ₂ per year)	Emissions Reductions (MMT CO ₂ per year)	Percent Emission Reduction
2024	39.9	39.6	0.3	0.7
2030	37.3	33.8	3.5	9.4
2035	35.3	26.5	8.8	25.0
2040	34.7	20.4	14.3	41.1
2045	36.1	16.2	19.9	55.1
2050	39.0	14.7	24.3	62.2

Figure 3 summarizes the estimated TTW GHG emissions from both the Proposed Project and the BAU scenario, in units of MMT of CO₂ per year from 2024 to 2050.

Figure 3: Projected Statewide Tank-to-Wheel Greenhouse Gas Emissions of the Proposed Regulation



In the BAU scenario, GHG emissions display a gradual overall decline from 2024 to 2039. The decline is the result of engine manufacturers meeting stricter emissions standards resulting in older models being replaced with more efficient models when normal replacements are made, and of the ACT regulation requiring manufacturers to build and sell a percentage of medium- and heavy-duty ZE trucks and buses. However, emissions begin to increase in about 2040, and by 2050, reach about the same annual emissions level as 2024. The GHG emissions increase is primarily due to the projected growth in medium- and heavy-duty truck VMT.

With the proposed regulation, GHG emissions demonstrate a rapid decline from 2024 to 2042, reducing the annual emissions by roughly half of the 2024 estimate. The decrease in GHG emissions in comparison to the BAU scenario is attributed to an increase in the number of ZEVs and some early retirement of medium- and heavy-duty ICE vehicles that reach the end of their useful life. The benefits are from the fact that ZEVs have no tailpipe emissions. From 2043 to 2050, GHG emissions continue to decline but at a much slower rate than in prior years.

The oil and gas and refining sector account for half of the industrial sector emissions in the State's annual GHG inventory, roughly 10 percent of the state's total GHGs. The electricity sector currently accounts for approximately 14 percent of the state's total GHGs. As the state moves away from fossil fuel combustion technology, there will be less dependence on petroleum, and this could potentially result in a reduction in petroleum industry-related GHG emissions and similar impacts from reduced use of other ICE fuels. In addition, during the COVID-19 pandemic and the stay-at-home orders, there was a drastic reduction in demand for petroleum fuels as residents stayed home. As a result of that reduced demand, several refineries shutdown or announced the repurposing of those facilities to produce low carbon fuels. It is reasonable to expect that as fleets turnover and transition away from petroleum fuel and demand is reduced, we may see resulting upstream reductions in petroleum industry activities which could translate into additional GHG reductions.

As discussed under Impact 3-2, "Long-Term Operation-Related Effects on Air Quality," of this Draft EA, the electrical demand generated by the use of ZEVs would be supplied by public utility companies. California's electrical grid will become increasingly cleaner by utilizing more renewable energy over the coming years to comply with the targets mandated by the RPS. Implementation of the Proposed Project would minimize emissions associated with operation of medium- and heavy-duty vehicles and would assist the State in meeting GHG reduction goals. Therefore, long-term operational-related GHG impacts associated with implementation of the Proposed Project would be **beneficial**.

9. Hazards and Hazardous Materials

Impact 9-1: Short-Term Construction-Related Effects on Hazardous Materials

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Construction activities would use heavy-duty equipment requiring periodic refueling and other maintenance. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained as needed at the construction site. There is potential for spills and releases of fuels and other hazardous materials during refueling and maintenance activities. There is also a potential that hazardous materials may be transported near sensitive receptors, such as schools. Although spills are typically minor and limited to the immediate area of the fueling or maintenance, and

precautions would be taken to ensure that any hazardous materials are properly contained and disposed, the potential still remains for a release of hazardous materials into the environment that could cause adverse public health and environmental effects. Consequently, the project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Therefore, short-term construction-related impacts to hazards and hazardous materials associated with the Proposed Project could be potentially significant.

The impacts to hazards and hazardous materials could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of CARB and not within its purview.

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 would 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 would 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 Proposed Project 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 avoid 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 as discussed below; 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 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.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 the potentially significant short-term construction-related impacts regarding hazards and hazardous materials associated with the Proposed Project would be **potentially significant and unavoidable**.

Impact 9-2: Long-Term Operational-Related Effects on Hazardous Materials

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs. Increased deployment of ZEVs would result in a corresponding decrease in deployment of gasoline- and diesel-fueled vehicles. Likewise, increased deployment of ZEVs could result in a relatively small increase production of electricity and hydrogen fuel, reduce rates of oil and gas extraction, and result in associated increases in mining and exports from source countries or other states. This could result in increased rates of disposal of ZEV batteries and hydrogen fuel cells; however, disposal would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. For such 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 and fuel cells, new facilities or modifications to existing facilities could be constructed to accommodate recycling activities. Fleet turnover largely would be unaffected since the regulation is implemented at the time of normal vehicle purchase.

The long-term operation of new plants, stations, and modifications would result in the routine transport, use, and disposal of hazardous materials (i.e., batteries, fuel cells, and hydrogen). Compared to construction, use of hazardous materials during operations would be more likely to occur indoors, in a contained area, limiting the potential effects of spills and accidents; or outdoors, during the movement of raw goods to manufacturing facilities or the export of finished goods containing hazardous materials following the manufacturing process. However, 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.

Implementation of the Proposed Project could increase demand for mining of elements, including lithium, platinum, and other elements. For example, lithium is currently sourced in two ways: from hardrock, and from the evaporation of salt brines. Lithium from rock sources is primarily produced from spodumene, a lithium/aluminum/silicate mineral. 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.⁴³

Lithium metal batteries contain potentially toxic metals, such as copper and nickel, and organic chemicals, like toxic and flammable electrolytes.⁴⁴ 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

⁴³ Sepadi, Maasago M., Martha Chadyiwa, and Vusumuzi Nkosi, [Platinum Mine Workers' Exposure to Dust Particles Emitted at Mine Waste Rock Crusher Plants in Limpopo, South Africa](#), 2020 (web link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7014327/>, last accessed August 2022).

⁴⁴ Zeng, Xianlai, Jinhui Li, and Lili Liu, [Solving Spent Lithium-ion Battery Problems in China: Opportunities and Challenges](#), *Renewable and Sustainable Energy Reviews*, 52, 1759-1767, 2015 (web link: <https://ideas.repec.org/a/eee/rensus/v52y2015icp1759-1767.html>, last accessed August 2022).

interactions between a battery's cathodes and anodes, and water is an ineffective extinguisher.⁴⁵ 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 batteries pose no environmental hazard (79 Fed. Reg. 46011, 46032), and therefore no increased demand on public services related to emergency responders is anticipated. Further, these impacts are largely associated with the use and production of lithium-ion batteries used in consumer products as compared to lithium-ion storage batteries.

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.⁴⁶ However, fuel cell manufacturers developed and extensively safety-tested carbon-fiber hydrogen tanks, which can withstand environmental and man-made damage, including crash testing 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 batteries and fuel cells and the compliance with regulations are sufficient to reduce adverse impacts associated with hazards and hazardous materials. An increase in demand for batteries and fuel cells could result in increased recycling, refurbishment, or disposal of lithium batteries and hydrogen fuel cells. As noted in greater detail below in Section 12, the useful life of a ZEV or lithium battery (300,000-500,000 miles) generally exceeds the average useful life of vehicles (150,000 miles) in California. As a result, there could be an increase in the use of facilities that recycle and refurbish batteries and fuel cells related 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.⁴⁷ 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

⁴⁵ Battery University, "[BU-304a: Safety Concerns with Li-Ion](http://batteryuniversity.com/learn/article/safety_concerns_with_li_ion)," 2018 (web link: http://batteryuniversity.com/learn/article/safety_concerns_with_li_ion, last accessed August 2022).

⁴⁶ Health and Safety Executive, [Fuel Cells: Understand the Hazards, Control the Risks](https://www.thenbs.com/PublicationIndex/documents/details?Pub=HSE&DocID=278597), 2004 (web link: <https://www.thenbs.com/PublicationIndex/documents/details?Pub=HSE&DocID=278597>, last accessed August 2022).

⁴⁷ Jacoby, M, [It's Time to Get Serious About Recycling Lithium-Ion Batteries](https://cen.acs.org/materials/energy-storage/time-serious-recycling-lithium/97/i28), *Chemical & Engineering News*, 2019 (web link: <https://cen.acs.org/materials/energy-storage/time-serious-recycling-lithium/97/i28>, last accessed August 2022).

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.

However, any increased rates of recycling and/or disposal of batteries and 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 batteries and fuel cells because they ensure adequate handling and disposal safeguards to address these risks.

ZEVs introduced to the transportation sector as a result of the implementation of the Proposed Project could reduce reliance on fossil fuel-powered vehicles, which could result in decrease demand for gasoline, diesel, and CNG as well as the activities required to extract them. The process of extracting and producing oil and gas presents numerous opportunities for the introduction of hazardous materials to human and natural environments. Oil and gas extraction requires the use of chemicals that can be harmful to human and biological health and produces toxic wastewater and air contaminants. Additionally, accidental release of oil and gas products may occur during distribution through piping and freight, which introduces hazards including pollution and explosion. Through the use of ZEVs under the Proposed Project, these hazards associated with oil and gas extraction and distribution would be less as the demand for ICE vehicles decreases.

In addition, ZEVs have few parts compared to the conventional internal combustion engine vehicles and do not need an engine oil change. Through the use of ZEVs under the Proposed Project, the hazards associated with oil change and potential illegal dumping would be less as the demand for ICE vehicles decreases and would result in significant reductions in the impacts of spills and releases of fuels and other hazardous materials during refueling and maintenance activities associated with ICE vehicles.

Implementation of the Proposed Project could also result in increased installation of hydrogen fueling stations. Most retail hydrogen fueling stations would be located at existing gasoline stations, adjacent to or on the same island as the gasoline dispenser. To accommodate the use of ZEVs, new, stand-alone hydrogen fuel stations could be constructed and could qualify for a categorical exemption under CEQA.⁴⁸ The hydrogen nozzles form an airtight connection with the FCEV fuel tank and are not physically similar to gasoline nozzles. Thus, the release of hydrogen during fueling

⁴⁸ Arnold and Porter, [Hydrogen Fuel Stations in California: A Practical Guide to Permitting and CEQA Review](https://www.arnoldporter.com/en/perspectives/publications/2015/04/~/_media/7457d6dc9bd7491f8aff1289ab4457e0.ashx), 2015 (web link: https://www.arnoldporter.com/en/perspectives/publications/2015/04/~/_media/7457d6dc9bd7491f8aff1289ab4457e0.ashx, last accessed August 2022).

would not be expected to occur. Further, hydrogen fuel stations and vehicle maintenance facilities are equipped with a hydrogen detector to detect hydrogen leaks.

Potential hazardous conditions 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.⁴⁹ However, FCEV manufacturers developed and extensively safety-tested carbon-fiber hydrogen tanks, which can withstand environmental and man-made damage, including crash testing 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.

Finally, lithium-batteries and hydrogen fuel cell systems are designed to reduce the potential for hazardous conditions associated with transport, use, and disposal, and because regulations exist to ensure that lithium-ion batteries are managed properly, and disposed of appropriately, operational-related effects to hazards and hazardous materials associated with the Proposed Project would likely be less than significant. However, the potential remains for the release of hazardous materials into the environment.

As such, long-term operational-related effects associated with the Proposed Project to hazards and hazardous materials could be potentially significant.

Potential construction-related hazards and hazardous materials impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

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

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

⁴⁹ Health and Safety Executive, [Fuel Cells: Understand the Hazards, Control the Risks](https://www.thenbs.com/PublicationIndex/documents/details?Pub=HSE&DocID=278597). 2004 (web link: <https://www.thenbs.com/PublicationIndex/documents/details?Pub=HSE&DocID=278597>, last accessed August 2022).

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 the potentially significant short-term construction-related impacts regarding hazards and hazardous materials associated with the Proposed Project would be **potentially significant and unavoidable**.

10. Hydrology and Water Quality

Impact 10-1: Short-Term Construction-Related Effects on Hydrology and Water Quality

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. New facilities could be located in locations with a range of hydrologic conditions. For example, some places may be vulnerable to flooding and mudflow. Construction of buildings may exacerbate hydrologic hazards. For example, grading for building construction may alter drainage in a way that would increase potential flood risk on and around the project site. Grading and vegetation removal could also increase erosion, which could result in sedimentation in nearby waterways. Site leveling may also require fill of regulated water bodies. Precise impacts cannot be determined because specific construction details, siting locations, and associated hydrology and water quality conditions are not known at this time.

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 (SWPPP)).

Short-term construction-related effects to hydrologic resources associated with the Proposed Project could be potentially significant.

Potential construction-related hydrology and water quality impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 10-1

The Regulatory Setting in Appendix A includes, but is not limited to, applicable laws, regulations, and policies in regard to 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 discretionary land use and/or permitting authority. New or modified facilities in California would qualify as a “project” under CEQA. The jurisdictions 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 would be identified during the environmental review by agencies with discretionary project-approval authority. Recognized practices that are routinely required to avoid and/or mitigate hydrology and water quality-related impacts include:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed Project 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 avoid or substantially lessen the environmental impacts of the 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. 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.
- 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 U.S. and waters of the State to the extent feasible. If activities require a Waste Discharge Requirements under Title 27 CCR, section 20005 et seq. or Clean Water Act Section 401 Water Quality Certification, comply with all avoidance, reduction, and compensatory measures.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 the potentially significant short-term construction-related impacts related to hydrology and water quality associated with the Proposed Project would be **potentially significant and unavoidable**.

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

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs. The operation of new plants, stations, and modifications would be required to comply with applicable erosion, water quality standards, and waste discharge requirements (e.g., NPDES, SWPPP). Operation of these facilities would not require additional ground disturbance beyond that already disturbed during construction. With respect to depleting groundwater supplies, new facilities are not being anticipated to result in substantial demands due to the nature of associated activities.

Under the Proposed Project, ZEVs would be deployed to reduce air pollutant and GHG emissions from the transportation sector. As a result, fewer ICEs would be in operation and demand for petroleum, diesel, and CNG would decrease. As such, it would be expected that oil and gas extraction activities could also 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.⁵⁰ As on June 2015, U.S. EPA had identified 1,173 known chemicals used in the fracking industry.⁵¹ 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.⁵² Through implementation of the Proposed Project, the aforementioned effects to hydrologic resources would be reduced as ZEVs displace ICE-powered vehicles. As a result, adverse hydrologic effects associated with oil and gas extraction would be reduced relative to current operations.

Implementation of the Proposed Project would result in increased demand for lithium-ion batteries, which would accelerate the market for mined lithium. 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

⁵⁰ European Parliament, [Impact of Shale Gas and Shale Oil Extraction on the Environmental and Human Health](http://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf), 2012 (web link: <http://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf>, last accessed August 2022).

⁵¹ Environmental Health Perspectives., [Salting the Earth, The Environmental Impact of Oil and Gas Wastewater Spills](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132645/). Environmental Health Perspectives. 124 (12): pp. A230-A235, 2016. (web link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132645/>, last accessed August 2022).

⁵² Environmental Health Perspectives, [Salting the Earth, The Environmental Impact of Oil and Gas Wastewater Spills](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132645/). Environmental Health Perspectives. 124 (12): pp. A230-A235, 2016. (web link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132645/>, last accessed August 2022).

material (e.g., bedrock, vegetation). Additionally, lithium can be collected from continental brines found in basins. Salty groundwater is pumped into lagoons where it undergoes evaporation producing salts containing lithium compounds. This process could result in over drafting of groundwater.

Extraction of lithium has substantial effects on water quality. Due to its high reactivity, lithium is found bound to other elements. To process lithium, toxic chemicals must be used which can cause water pollution through leaching and spills. Further, lithium mining from continental brines is a water-intensive process, which, as mining typically occurs in arid landscapes, could result in the depletion of available for water resources.⁵³

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 Bureau of Land Management (BLM) and U.S. Forest Service (USFS) mining permit conditions contain protections for hydrologic resources and require mining reclamation standards. However, lithium is 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 Proposed Project.

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

This impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

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

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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

⁵³ Friends of the Earth, , Lithium, 2013 (web link: https://www.foeeurope.org/sites/default/files/publications/13_factsheet-lithium-gb.pdf, last accessed August 2022).

water quality under the Proposed Project would be **potentially significant and unavoidable**.

11. Land Use Planning

Impact 11-1: Short-Term Construction-Related and Long-Term Operational-Related Effects on Land Use Planning

Implementation of the Proposed Project could result in the construction of new manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Construction and operation of new or expanded manufacturing facilities or opening of new mining locations may require the conversion of non-industrial land uses to industrial land uses. These impacts would be subject to zoning and land use regulations of the appropriate local jurisdictions and regulations and may be within the purview of natural resource agencies other than CARB. Project areas under the purview of existing land use plans, zoning codes, or other regulatory requirements of other agencies are not likely to place industrial land uses amongst incompatible or sensitive land uses, such as residential uses. Therefore, the Proposed Project is not anticipated to divide existing communities or conflict with existing land use plans. Additionally, linear facilities such as interconnections would generally be located within port area and would be small enough that they would not require displacing existing dissimilar uses (e.g., housing).

Potential environmental effects associated with land use change on agriculture and forestry, biology, geology and soils, and hydrology and their related mitigation measures are discussed in further detail under their respective impact discussions.

Thus, implementation of the Proposed Project is not anticipated to divide an established community or conflict with a land use policy. There would be **no impact** related to land use conflicts.

12. Mineral Resources

Impact 12-1: Short-Term Construction-Related and Long-Term Operation-Related Impacts on Mineral Resources

Implementation of the Proposed Project could result the construction of additional manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Increased deployment of ZEVs would increase demand for electricity and hydrogen fuel, reduce rates of oil and gas extraction, and result in associated increases in lithium, platinum, and other element mining and exports from source countries or other states. This could result in increased rates of disposal of batteries

and fuel cells, which is required to be done in compliance with California law, including but not limited to the Hazardous Waste Control Law and implementing regulations. Generally, it is assumed that ZEV batteries would require replacement every 300,000 miles prior to 2030 and every 500,000 miles afterwards (based on emerging technology). Compared to the average useful life (15 years or 150,000 miles) of a vehicle in California, as enumerated in Title 13 CCR, Section 1976, it is anticipated that batteries and fuel cells still have a useful life at the end of vehicle life, and are likely to be repurposed for a second life.⁵⁴ To meet an increased demand of refurbishing or reusing batteries and fuel cells, new facilities, or modifications to existing facilities, could be constructed to accommodate recycling activities. Fleet turnover largely would be unaffected since the regulation is based on changes at time of normal vehicle purchase. For example, lithium-ion batteries are currently expensive and represent a sizeable physical system in a vehicle (volume and mass). As a result, it is natural to consider battery second use where a vehicle battery is repurposed for other uses after reaching its useful life in the car or battery recycling (to minimize waste).

As a result of regular and repeated vehicle use, the capacity of a battery will naturally degrade based on usage, thermal management, number of fast charging sessions, and other factors. If battery capacity drops below 70 percent, or if the vehicle is out of warranty and the battery pack or individual modules are replaced, those batteries can enter the first stage in the end-of-life management process: reuse (second life) or recycle. Electric-drive vehicles are relatively new to the U.S. market, so to date only a small number of them have approached the end of their useful lives. As a result, few post-consumer batteries from electric-drive vehicles are available; thus, limiting the extent of battery-recycling infrastructure. However, as electric-drive vehicles become increasingly common, the battery-recycling market is expected to expand in response to the supply of batteries and demand for the resource they can fulfill, described below. Academic studies and industry reports estimate a range of 112-275 GWh per year of second-life batteries becoming available by 2030 globally. California is the largest market for EVs in the U.S. and by 2027, an estimated 45,000 EV batteries could be retired from the state.⁵⁵ Properly thermally managed battery modules, with minimal degradation and free from defects or damage, can either be refurbished and reused directly as a warranty replacement for the same vehicle model or can be used for energy storage.⁵⁶ Examples of energy storage applications include backup power for

⁵⁴ Nissan, [Nissan Gives EV Batteries a Second Life](https://global.nissanstories.com/en/releases/4r), 2021 (web link: <https://global.nissanstories.com/en/releases/4r>, last accessed August 2022).

⁵⁵ Ambrose, Hanjiro, Hanjiro, [The Second Life of Used EV Batteries](https://blog.ucsusa.org/hanjiro-ambrose/the-second-life-of-used-ev-batteries/), 2020 (web link: <https://blog.ucsusa.org/hanjiro-ambrose/the-second-life-of-used-ev-batteries/>, last accessed August 2022).

⁵⁶ Ibid

homes or cellular towers, or, in larger arrays, for large buildings like arenas or even in utility grid applications.⁵⁷

Using vehicle battery packs (or modules from packs) for second use has significant potential. There are many public and private parties studying battery second use and the potential business opportunities. The business case for battery second use depends on the value of the competitive product, which would be new batteries specifically designed for stationary rather than vehicular purposes. Varying use profiles and applications are being considered. This includes back-up power for buildings (e.g., warehouses, cell phone towers) or energy storage for buildings and/or the grid to supplement renewable energy. Second-life energy storage, when used to back up the utility grid, offers the same power reliability at lower cost than more polluting and less efficient peaker generating plants (e.g., combined-cycle gas turbines). It also allows utilities to store excess renewable energy during periods of high production (e.g., solar generation during the afternoons) and use it when demand for energy ramps up in the evenings at the same time as renewables production drops off.

Preliminary analysis shows cost margins may be small, but there is strong potential for battery reuse to grow. Second-life batteries may be 30 to 70 percent less expensive than new ones in energy storage applications in 2025. Minimizing costs for removing the batteries and repurposing them will be important. This includes identifying quick and low cost means to test the used battery's varying cells for performance and life to determine if some cells need to be repaired or replaced. By 2030, the second-life battery supply from the burgeoning electric vehicle market could exceed 200 gigawatt-hours per year, which could exceed demand by almost 25 percent.⁵⁸

Second-life batteries would reduce the demand for virgin materials used in the production of new energy storage batteries and could have an extended lifetime of approximately ten years in reuse applications.⁵⁹ Nonetheless, depending on the magnitude of required materials for new batteries, implementation of the Proposed Project could affect the availability of known materials because it would involve additional mining of elements, including lithium, platinum, and other elements.

⁵⁷ Wentworth, Adam, [Amsterdam Arena installs major new battery storage](https://www.climateaction.org/news/amsterdam-arena-installs-major-new-battery-storage), 2018 (web link: <https://www.climateaction.org/news/amsterdam-arena-installs-major-new-battery-storage>, last accessed August 2022).

⁵⁸ Engle H., Hertzke P., and G. Siccardo, [Second-life EV batteries: The newest value pool in energy storage](https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/second-life-ev-batteries-the-newest-value-pool-in-energy-storage#), 2019 (web link: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/second-life-ev-batteries-the-newest-value-pool-in-energy-storage#>, last accessed August 2022).

⁵⁹ Lluc Canals Casals et al, [Second life batteries lifespan: Rest of useful life and environmental analysis](https://www.sciencedirect.com/science/article/pii/S0301479718313124), 2018 (web link: <https://www.sciencedirect.com/science/article/pii/S0301479718313124>, last accessed August 2022).

a) Lithium

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. There are current initiatives at the State and federal level that are likely to influence lithium mining domestically, which includes efforts in California. 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. Lithium consumption for batteries has increased substantially in recent years due to increased demand for rechargeable lithium batteries, which use approximately 71 percent of the world's lithium resources. From 2016 to 2019, the United States imported most lithium from Argentina (55 percent), Chile (36 percent); China (5 percent), Russia (2 percent); and others (2 percent).⁶⁰ However, there are current initiatives at the State and federal level that are likely to influence lithium mining domestically, which include efforts in California. Table 5 details lithium mine production and reserves by country.

Table 5: Lithium Mine Production and Reserves by Country

Country	Mine Production in 2019 (Tons)	Mine Production in 2020 (Tons)	Reserve Amount (Tons)
United States	Withheld	Withheld	750,000
Argentina	6,300	6,200	1,900,000
Australia	45,000	40,000	4,700,000
Brazil	2,400	1,900	95,000
Canada	200	—	530,000
Chile	19,300	18,000	9,200,000
China	10,800	14,000	1,500,000
Portugal	900	900	60,000
Zimbabwe	1,200	1,200	220,000
Other Countries	—	—	2,100,000
Worldwide Total (rounded and excluding US production)	86,000	82,000	21,000,000

Source: Jaskula, B. W. 2020 (January). U.S. Geological Survey Mineral Commodity Summaries: Lithium. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-lithium.pdf>. Accessed August 11, 2021.

⁶⁰ U.S. Geological Survey, [Mineral Commodity Summaries: Lithium](https://www.usgs.gov/centers/nmic/lithium-statistics-and-information), 2021 (web link: <https://www.usgs.gov/centers/nmic/lithium-statistics-and-information>, last accessed August 2022).

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 2020, lithium resources are currently estimated to be approximately 82 million tons, including 6.2 million tons in Argentina, 21 million tons in Bolivia, 9.6 million tons in Chile, 6.4 million tons in Australia, 5.1 million tons in China, 3 million tons in the Congo, 2.9 million tons in Canada, 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 each. Further, because of steadily increasing demand for lithium, domestic recycling of lithium, as identified above, has also increased.⁶¹

As mentioned above, efforts are underway to increase the domestic supply of lithium. Interest in addressing supply chains of mineral commodities has grown. Both the State and the federal government have sought to address mineral independence and security. Examples of efforts include California AB 1657 (Garcia), Chapter 271, 2020, which requires the California Energy Commission to convene a Blue-Ribbon Commission on Lithium Extraction in California (Lithium Valley Commission). The Lithium Valley Commission is charged with reviewing, investigating, and analyzing issues and potential incentives regarding lithium extraction and use in California. At the federal level, Executive Order (EO) 14017 directs federal agencies to perform a 100-day review of “supply chain risks” for four classes of products: semiconductors, high-capacity batteries (including for EVs), critical and strategic minerals (including rare earths), and pharmaceuticals.⁶² The EO additionally directs agencies to perform year-long reviews of supply chains in six critical sectors, including 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 policy commitment to increasing domestic supply of lithium, specific actions that will be taken in response to this goal of increasing domestic lithium supply remain uncertain.

⁶¹ Jaskula, B. W., [U.S. Geological Survey Mineral Commodity Summaries: Lithium. U.S. Geological Survey](https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-lithium.pdf), 2020 (web link: <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-lithium.pdf>, last accessed August 2022).

⁶² Biden, J. R., [Executive Order 14017 of February 24, 2021: America’s Supply Chains. Federal Register 86\(38\):11849–11854](https://www.govinfo.gov/content/pkg/FR-2021-03-01/pdf/2021-04280.pdf), 2021 (web link: <https://www.govinfo.gov/content/pkg/FR-2021-03-01/pdf/2021-04280.pdf>, last accessed August 2022).

b) Platinum

An increased demand for hydrogen fuel cell-powered vessels and the related demand on the production and mining of platinum-group metals (PGMs) could occur. The leading domestic use for PGMs is in catalytic converters to decrease harmful emissions from automobiles. 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.⁶³ Table 6 summarizes world platinum and palladium production and reserves.

Table 6: Platinum and Palladium Mine Production and Reserves¹

Country	Platinum		Palladium		Reserves (metric tons)
	2018 (metric tons)	2019 (metric tons)	2018 (metric tons)	2019 (metric tons)	
U.S.	4,160	3,600	14,300	12,000	900,000
Canada	7,400	7,400	20,000	20,000	310,000
Russia	22,000	22,000	90,000	86,000	3,900,000
South Africa	137,000	130,000	80,600	80,000	63,000,000
Zimbabwe	15,000	15,000	12,000	12,000	1,200,000
Other Countries	4,470	4,300	2,920	3,000	Not Available
World total (rounded)	190,000	180,000	220,000	210,000	69,000,000

¹ 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.

Source: Schulte, R. F. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Chromium. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf>. Accessed March 16, 2022.

c) Palladium

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. Currently, the U.S. imports platinum from South Africa (46 percent), Germany (16 percent), Italy (7 percent), Russia (6 percent) and other countries (28 percent). The United States also imports palladium from South Africa

⁶³ Schulte, R. F., [U.S. Geological Survey Mineral Commodity Summaries: Chromium. U.S. Geological Survey](https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf>, last accessed August 2022).

(33 percent), Russia (33 percent), Germany (7 percent); Italy (7 percent), and other countries (20 percent).⁶⁴

d) Graphite

The Proposed Project 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, the United States imported an estimated 53,000 tons of natural graphite, with about 57 percent flake and high-purity, 42 percent amorphous, and 1 percent lump and chip graphite. Table 7 summarizes mine production of graphite by country in 2020 and 2021. Note that reserves data are dynamic. Reserves may be considered a working inventory of mining companies' supply of an economically extractable mineral commodity. Inventory is limited by many considerations, including the cost of drilling, taxes, the price of the mineral commodity being mined, and the demand for it.

Table 7: Graphite Mine Production and Reserves by Country

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
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

⁶⁴ Schulte, R. F., [U.S. Geological Survey Mineral Commodity Summaries: Chromium. U.S. Geological Survey](https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf>, last accessed August 2022).

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
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

Source: Olson, D. W. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Graphite (Natural). U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-graphite.pdf>. Accessed March 16, 2022.

e) Cobalt

Cobalt mining may also increase as a result of implementation of the Proposed Project as battery production, which often requires the use of cobalt, to support the electrification of the on-road mobile source sector. Cobalt content in some battery chemistries has continued to decline with technology improvement and some battery technologies do not use any cobalt at all.⁶⁵ 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 8 summarizes cobalt extraction by country.⁶⁶

⁶⁵ Petrova, M., "[Here's Why Battery Manufacturers Like Samsung and Panasonic and Car Makers Like Tesla Are Embracing Cobalt-Free Batteries](https://www.cnbc.com/2021/11/17/samsung-panasonic-and-tesla-embracing-cobalt-free-batteries.html)," 2017 (web link: <https://www.cnbc.com/2021/11/17/samsung-panasonic-and-tesla-embracing-cobalt-free-batteries.html>, last accessed August 2022).

⁶⁶ Shedd, K. B., [U.S. Geological Survey Mineral Commodity Summaries: Cobalt. U.S. Geological Survey](https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-cobalt.pdf), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-cobalt.pdf>, last accessed August 2022).

Table 8: Cobalt Mine Production and Reserves by Country

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

Source: Shedd, K. B. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Cobalt. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-cobalt.pdf>. Accessed March 16, 2022.

f) Nickel

The Proposed Project could also result in an increase in nickel mining to manufacture 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.⁶⁷ Table 9 summarizes mine production of nickel by country in 2020 and 2021.

Table 9: Nickel Mine Production and Reserves by Country

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

⁶⁷ McRae, M. E., [U.S. Geological Survey Mineral Commodity Summaries: Nickel](https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nickel.pdf). U.S. Geological Survey, 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nickel.pdf>, last accessed August 2022).

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
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	not available
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

Source: McRae, M. E. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Nickel. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nickel.pdf>. Accessed March 16, 2022.

g) Copper

Increase in the manufacture of battery technology from implementation of the Proposed Project could also increase the 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 the value in 2020 (\$7.61 billion). 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 percent of mine production), two smelters, two 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 10 summarizes copper production by country in 2020 and 2021.

Table 10: Copper Mine Production and Reserves by Country

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

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
Democratic Republic of the Congo	1,600	1,800	31,000
Indonesia	505	810	24,000
Kazakhstan	552	520	20,000
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

Source: Flanagan, D. M. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Copper. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-copper.pdf>. Accessed March 16, 2022.

h) Other Elements

The Proposed Project 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.⁶⁸ Worldwide chromium mine production totaled 41,000 thousand metric tons in 2021.⁶⁹ Worldwide reserves for zinc, the 23rd most common element, are estimated to be about 1.9 billion tons.⁷⁰

i) Summary

Appendix G of the CEQA Guidelines considers a potentially significant 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. This type of impact could result from actions such as building a structure over an area that contains mineral resources, thereby prohibiting access to mining activities. As discussed above, buildings developed in response to implementation of the Proposed Project would be located in areas within existing footprints or in areas with consistent zoning where original permitting and analyses considered these issues. Implementation of the Proposed Project and associated compliance responses could result in increased mining for certain elements but would not affect the economic potential related to known

⁶⁸ Schnebele, E. K., [U.S. Geological Survey Mineral Commodity Summaries: Manganese. U.S. Geological Survey](https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-manganese.pdf), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-manganese.pdf>, last accessed August 2022).

⁶⁹ Schulte, R. F., [U.S. Geological Survey Mineral Commodity Summaries: Chromium. U.S. Geological Survey](https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf>, last accessed August 2022).

⁷⁰ Tolcin, A. C., [U.S. Geological Survey Mineral Commodity Summaries: Zinc. U.S. Geological Survey](https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-zinc.pdf), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-zinc.pdf>, last accessed August 2022).

mineral resources. Local jurisdictions are responsible for identifying appropriate areas to protect and/or allow mining of mineral resources. Facilities developed in response to implementation of the Proposed Project 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 resource. This impact would be **less than significant**.

With respect to the physical environmental impacts of increases in mining activities as a result of the Proposed Project, these impacts are assessed as part of the reasonably foreseeable compliance responses throughout this EA (e.g., see the aesthetics, agriculture and forestry resources, hazards and hazardous materials, hydrology and water quality, and transportation sections).

13. Noise

Impact 13-1: Short-Term Construction-Related Noise Effects

Implementation of the Proposed Project could result in the construction new manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Additionally, to meet an increased demand of refurbishing or reusing batteries and fuel cells, new facilities or modifications to existing facilities could be constructed to accommodate repurposing and recycling activities. Construction and modification of buildings could involve activities such as earth moving, grading, demolition, and building construction. These activities would generate noise through the use of heavy equipment such as bulldozers, pile drivers, excavators, cranes, and vehicles. The effects of construction noise would vary and would largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise sensitive receptors, whether the equipment is mobile or stationary, and the existing ambient noise environment in the receptor's vicinity 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 it requires the noisiest types of construction equipment. Although a detailed construction equipment list is not known, based on the anticipated compliance responses it is expected that the primary sources of noise would include backhoes, bulldozers, and excavators. Noise 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 characteristics 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. 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 local noise 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 to 0.089 inches per second (in/sec) peak particle velocity (PPV) at 25 feet. Similar to 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), respectively, at 25 feet. 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 the Proposed Project could result in the generation of short-term construction noise levels 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 associated with the Proposed Project could be potentially significant.

Potential construction-related noise impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 13-1

The Regulatory Setting in Appendix A includes, but is not limited to, applicable laws, regulations, and policies that pertain to noise. 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 discretionary land use and/or permitting authority. New or modified facilities in California would 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 would be identified during the

environmental review by agencies with discretionary project-approval authority. Recognized practices that are routinely required to avoid and/or minimize noise include:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed Project 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 avoid 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.
- Consider use of noise barriers, such as berms, 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.
- 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 operational-related vehicles to minimize noise and ensure safe operations. 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.
- Consider use of flashing lights instead of audible back-up alarms on mobile equipment.

Install mufflers on air coolers and exhaust stacks of all diesel and gas-driven engines.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 the potentially significant short-term construction-related noise impacts associated with the Proposed Project would be **potentially significant and unavoidable**.

Impact 13-2: Long-Term Operational-Related Effects on Noise

The Proposed Project would increase the number of ZEVs in operation and would decrease the number of conventional diesel, natural gas, or gasoline trucks in operation. While no specific noise testing has been conducted on the ZEVs subject to the Proposed Project, testing has been conducted on battery electric buses which are technologically similar in battery engine operation and size to the trucks subject to the Proposed Project. Testing has demonstrated that battery electric buses are, on average, quieter than ICE buses. Altoona testing of a representative battery electric bus, the BYD BEB, found exterior operational noise levels of roughly 60 dB(A) during acceleration;⁷¹ by comparison, the New Flyer D40LF diesel bus generated 77.2 dB(A) of exterior noise,⁷² and the New Flyer C40LF CNG powered bus generated 71.8 dB(A) of exterior noise.⁷³ Operation of ZEVs would therefore result in a net decrease in traffic noise levels where ZEVs are deployed, such as areas with distribution centers, ports, warehouses, and most roadways. Similarly, it is expected that the ZEVs subject to the Proposed Project would also result in a net decrease in traffic noise levels where ZEVs are deployed, such as freight facilities within urban and suburban areas throughout California.

Increased use of ZEVs could indirectly decrease oil and gas extraction activities, which requires the use of heavy-duty mechanical equipment (e.g., drills, dozers, explosives). These pieces of equipment generate levels of noise that could potentially adversely affect ambient noise levels near sensitive receptors or to biological resources (see Impact 4-2, "Long-Term Operational-Related Effects to Biological Resources"). Under

⁷¹ Altoona Bus Research and Testing Center, [BYD Electric Bus](https://www.altoonabustest.psu.edu/bus-details.aspx?BN=1307), 2014 (web link: <https://www.altoonabustest.psu.edu/bus-details.aspx?BN=1307>, last accessed August 2022).

⁷² Altoona Bus Research and Testing Center, [New Flyer of America Model D40 LE](https://www.altoonabustest.psu.edu/bus-list.aspx), 2006 (web link: <https://www.altoonabustest.psu.edu/bus-list.aspx>, last accessed August 2022).

⁷³ Altoona Bus Research and Testing Center, [New Flyer of America C40LF](https://www.altoonabustest.psu.edu/bus-list.aspx), June 2012 (web link: <https://www.altoonabustest.psu.edu/bus-list.aspx>, last accessed August 2022)..

the Proposed Project, oil and gas extraction activity and related noise could be reduced as demand for petroleum, diesel, and CNG decreases.

Operational-related activities associated with lithium 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 lithium mines constructed as a compliance response to the Proposed Project within the U.S. or state would be in areas of consistent zoning and therefore not in close proximity to sensitive receptors.

New sources of noise associated with implementation of Proposed Project could include operation of manufacturing plants and recycling facilities. Manufacturing and recycling 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 effects associated with the Proposed Project could be potentially significant.

Potential long-term operational noise impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 13-2

The Regulatory Setting in Appendix A includes, but is not limited to, applicable laws, regulations, and policies that pertain to noise. 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 discretionary land use and/or permitting authority. New or modified facilities in California would 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 would be identified during the environmental review by agencies with discretionary project-approval authority. Recognized practices that are routinely required to avoid and/or minimize noise include:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed Project 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 avoid 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
- 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.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 Proposed Project would be **potentially significant and unavoidable**

14. Population and Housing

Impact 14-1: Short-Term Construction-Related and Long-Term Operational-Related Effects on Population and Housing

Implementation of the Proposed Project could result in the construction of new or refurbished manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations at new or existing ICE fueling facilities to support ZEV operations and associated increase in hydrogen fuel supply and transportation. The Proposed Project is expected to result in changes to employment that do not exceed 0.2 percent of baseline California employment across the entire regulatory horizon. Initially changes to jobs include gains in the construction sector as businesses install EVSE and make

other facility upgrades, and in the electric power sector due to increased demand. Additionally, to meet an increased demand of refurbishing or reusing batteries and fuel cells, new facilities or modifications to existing facilities could be constructed to accommodate recycling activities. Construction and modification activities would be anticipated to require minimal if any crew relocation because manufacturing facilities are frequently constructed and the demand for crews would be temporary (e.g., 6 to 12 months per project). Furthermore, it would not be anticipated that a substantial amount of new personnel would be needed to operate the facilities and that sufficient employment base would likely be available from the local population. At this time, CARB does not have any information as to whether new manufacturers will build truck assembly plants in response to the Proposed Project. If manufacturers do build new plants in California, it is reasonable to anticipate these (potential) workers are local and are not likely to migrate from other places.

Operation of new or modified infrastructure would generate varying levels of employment opportunities. The number of jobs produced would be directly related to the size, capacity, and demand for what is being produced, whether that be batteries, fuel cells, or alternative fuels. There is inherent uncertainty surrounding the exact locations of the new infrastructure and the size of any new or increased mining efforts; however, it would be expected that locations would be selected in consideration of an appropriate employment base to support operation, or where local jurisdictions have planned for increased population and employment growth based on available natural resources and desires for economic growth. As such, no additional housing would be required to implement the reasonably foreseeable compliance response to the Proposed Project.

Additionally, it is unlikely that industrial facilities or mining 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 Proposed Project would displace existing housing.

Therefore, there would be minimal if any relocation and it is likely that there will be sufficient housing for any relocated employees. Therefore, this impact would be **less than significant**.

15. Public Services

Impact 15-1: Short-Term Construction-Related and Long-Term Operational-Related Effects on Public Services

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Increased deployment of ZEVs would result in a corresponding decrease in

deployment of gasoline- and diesel-fueled vehicles. Likewise, increased deployment of ZEVs could increase production of electricity and hydrogen fuel, reduce rates of oil and gas extraction, and result in associated increases in mining and exports from source countries or other states. This could result in increased rates of disposal of batteries and fuel cells; however, disposal would need to be in compliance with California law, including but not limited to the Hazardous Waste Control Law and implementing regulations. Improper management or unsafe disposal of batteries could cause adverse environmental hazards and be a concern of public safety; however, when packaged and handled properly, batteries would pose no environmental hazard (79 Fed. Reg. 46011, 46032) and therefore no increased demand on public services related to fire protection is anticipated. 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 and fuel cells, new facilities, or modifications to existing facilities, could be constructed to accommodate recycling activities. Fleet turnover largely would be unaffected since the regulation is based on changes at time of normal vehicle purchase.

An increased need for public services is generally associated with growth in population. As discussed under Impact 14-1, the Proposed Project is not expected to result in an increase in employment opportunities that is great enough to substantially increase a community's population. Similarly, because vessel repowering and manufacturing is expected to take place at existing facilities, existing public services would be sufficient to serve these operations. Other activities and facilities, such as those for battery recycling, would likely occur at existing facilities or in areas with zoning that would permit the development of such uses. Therefore, the use would be anticipated and planned for. As a result, short-term construction-related and long-term operational-related effects, associated with the Proposed Project 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 Operational-Related Effects on Recreation

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Increased deployment of ZEVs would result in a corresponding decrease in deployment of gasoline- and diesel-fueled vehicles. Likewise, increased deployment of ZEVs could result in a relatively small increase production of electricity and hydrogen fuel, reduce rates of oil and gas extraction, and result in associated increases in lithium and platinum mining and exports from source countries or other states. This could result in increased rates of disposal of batteries and fuel cells; however, disposal would

need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. 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 and fuel cells, new facilities or modifications to existing facilities could be constructed to accommodate recycling activities. Fleet turnover largely would be unaffected since the regulation is implemented at the time of normal vehicle purchase.

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, 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 Proposed Project 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 Proposed Project on recreational facilities would be **less than significant**.

17. Transportation/Traffic

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

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Increased deployment of ZEVs would result in a corresponding decrease in deployment of gasoline- and diesel-fueled vehicles. Likewise, increased deployment of ZEVs could result in a relatively small increase production of electricity and hydrogen fuel, reduce rates of oil and gas extraction, and result in associated increases in mining and exports from source countries or other states. This could result in increased rates of disposal of batteries and fuel cells; however, disposal would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. 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 and fuel cells, new facilities or modifications to existing facilities could be constructed to accommodate recycling activities. Fleet turnover largely would be unaffected since the regulation is implemented at the time of normal vehicle purchase.

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 unplanned population growth. Therefore, while implementation of the Proposed Project 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. Thus, increased VMT from construction-related activities would not be substantial and would be short-term.

Implementation of the Proposed Project could result in the construction of new or modified infrastructure. Construction of infrastructure could result in short-term construction traffic (primarily motorized) in the form of worker commute and material delivery trips. The amount of construction activity would fluctuate depending on the particular type, number, and duration of usage of equipment, as well as 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 facilities and construction, 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.

As such, short-term construction-related impacts to transportation and traffic associated with the Proposed Project could be potentially significant.

Potential construction-related traffic and transportation impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 17-1

The Regulatory Setting in Appendix A includes, but is not limited to, applicable laws, regulations, and policies related to 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 discretionary land use and/or permitting authority. New or modified facilities in California would 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 would be identified during the environmental review by agencies with discretionary 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 as a compliance response to the Proposed Project 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 avoid or substantially lessen the environmental impacts of the project. 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 would 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 the proposed project site. Utilize flaggers where necessary to control traffic at site entrances during construction.
- Prepare a Construction Traffic Control Plan and a Traffic Management Plan.
- Encourage carpooling to the site.

Avoid materials deliveries during peak traffic periods.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 the potentially significant short-term construction-related transportation and traffic impacts associated with the Proposed Project could be **potentially significant and unavoidable**.

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

Implementation of the Proposed Project would result in increased deployment of ZEVs as well as infrastructure to support their use, including charging and hydrogen fueling stations. FCEV fueling stations could be placed at strategic locations around ports or major distribution hubs and the majority of BEV charging stations would be at the fleet

yards. The use of these fueling stations would create no additional transportation and traffic impact to the surrounding areas.

Increased use of ZEVs under the Proposed Project could reduce the magnitude of oil and gas extraction as use of petroleum, diesel, and CNG concurrently decrease. Operational-related transportation of raw oil and gas to refineries as well as the transport of refined oil and gas products could subsequently decrease; however, deployment of FCEVs could increase the production of hydrogen fuel, the distribution of which could introduce VMT to new areas. It would not be anticipated that the increase in hydrogen fuel production and demand attributed to the implementation of the Proposed Project would be substantial, however.

These compliance responses could include construction and operation of new or modified manufacturing plants to support ZEVs and related technology, recycling centers for disposal or repurposing of high-emission equipment and spent batteries, and new or expanded mining operations in the State, the U.S., and globally. 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. 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 VMT. Additionally, new or expanded mining operations, both within the United States and internationally, could generate additional VMT, or increase cargo ship activity, as lithium ore is traded and distributed on a global scale. However, it is conceivable that such operations would displace existing levels of VMT associated with oil and gas extraction, production, and transportation.

New facilities may result in additional egress/ingress points or increased traffic that would result in hazardous conditions on local roadways. Inadequate access may impede emergency vehicle access to new facilities. New facilities would require staff during operations, which would add trips to the new facilities. 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 cannot currently be known; therefore, the total change in VMT cannot be assessed. Therefore, it is possible that a compliance response may maintain, increase, or insufficiently reduce VMT considering the general goal of reducing VMT over the long-term.

As a result, long-term operational-related impacts associated with the Proposed Project could be potentially significant.

Potential construction-related traffic and transportation impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 17-2

The Regulatory Setting in Appendix A includes, but is not limited to, applicable laws, regulations, and policies related to 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 discretionary land use and/or permitting authority. New or modified facilities in California would 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 would be identified during the environmental review by agencies with discretionary project-approval authority. Recognized practices that are routinely required to avoid and/or minimize construction traffic impacts include:

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

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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 effects to transportation and traffic associated with the Proposed Project would be **potentially significant and unavoidable**.

18. Tribal Cultural Resources

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

Tribal cultural resources (TCRs) include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. Consistent with the requirements of AB 52 and in an effort to determine how rulemaking could affect tribal cultural resources, CARB issued letters on July 23, 2021 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.

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Increased deployment of ZEVs would result in a corresponding decrease in deployment of gasoline- and diesel-fueled vehicles. Likewise, increased deployment of ZEVs could result in a relatively small increase production of electricity and hydrogen fuel, reduce rates of oil and gas extraction, and result in associated increases in mining and exports from source countries or other states. This could result in increased rates of disposal of batteries and fuel cells; however, disposal would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. 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 and fuel cells, new facilities or modifications to existing facilities could be constructed to accommodate recycling activities. Fleet turnover largely would be unaffected since the regulation is implemented at the time of normal vehicle purchase.

Implementation of the Proposed Project 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 TCRs. Therefore, it is foreseeable that known or undocumented TCRs 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 TCRs.

Presence of new facilities and infrastructure may, however, change the visual setting of the surrounding area, which could adversely affect TCRs, as determined by a California Native American tribe. As a result, operational-related impacts would be potentially significant.

Therefore, short-term construction-related and long-term operational-related impacts on TCRs associated with implementation of the Proposed Project would be potentially significant.

Short-term construction-related and long-term operational-related effects on TCRs would be potentially significant.

Mitigation Measure 18-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to TCRs. 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 TCRs include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the 2022 Scoping Plan 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 TCRs associated with the project.
- Actions required to mitigate potentially significant TCR 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 culturally and geographically affiliated California Native American tribes.
 - Seek guidance from archaeological resource specialists with training and background that conforms to the U.S. Secretary of the Interior's Professional Qualifications Standards, as published in 36 CFR Part 61.

- Seek guidance from the State and local lead agencies, as appropriate, for coordination of government-to-government consultations with the Native American tribes.
- Follow notification procedures and conduct consultation as required with California Native American tribes under AB 52 (including PRC Sections 21080.3.1 and 21080.3.2). Provide notice to Native American tribes of project details to identify potential TCRs. In the case that a TCR is identified, consistent with PRC Section 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 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 it is unlikely, even after implementation of Mitigation Measure 18-1, a significant impact on TCRs could 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 a compliance-response-related project, this Draft 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 TCRs associated with the Proposed Project would remain **potentially significant and unavoidable**.

19. Utilities and Service Systems

Utilities and Service Systems impacts are inherently long-term and related to the operational facilities; thus, short-term construction-related impacts are not discussed below.

Impact 19-1: Long-Term Operational-Related Effects on Utilities and Service Systems

Implementation of the Proposed Project could result in an increase in manufacturing and associated facilities to increase the supply of ZEVs, along with construction of new hydrogen fueling stations and electric vehicle charging stations to support ZEV operations and associated increase in hydrogen fuel supply and transportation. Increased deployment of ZEVs would result in a corresponding decrease in deployment of gasoline- and diesel-fueled vehicles. Likewise, increased deployment of ZEVs could result in a relatively small increase production of electricity and hydrogen fuel, reduce rates of oil and gas extraction, and result in associated increases in lithium and platinum mining and exports from source countries or other states. This could result in increased rates of disposal of lithium batteries and hydrogen fuel cells; however, disposal would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. 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 and fuel cells, new facilities or modifications to existing facilities could be constructed to accommodate recycling activities. Fleet turnover largely would be unaffected since the regulation is implemented at the time of normal vehicle purchase.

New facilities that may occur as a result of the Proposed Project, as well as potential increases in mining operations, could substantially increase the demand for water, wastewater treatment, storm water drainage, energy, and solid waste services in their local areas. Additionally, depending on the location, new facilities may require new utility service lines and connections. At this time, the specific location, type, and number of new facilities that would be developed 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, and environmental constraints. Therefore, the ultimate magnitude and location of demand for utilities such as water and wastewater cannot be known. However, common impacts to utilities and service systems could include exceedances in wastewater treatment requirements of the applicable Regional Water Quality Control Board, requiring the construction of new wastewater treatment infrastructure and/or plants as well as new or expanded stormwater drainage facilities, producing water demand in exceedance of available water supplies, and generating levels of solid waste that exceeds an existing landfill's capacity. Thus, while the specific impacts from new manufacturing plants and recycling facilities on utility and service systems cannot be identified with any certainty, and individual plants could potentially result in significant environmental impacts related to procurement and delivery of utilities and service systems.

Reasonably foreseeable compliance responses to the Proposed Project could result in increased demand for lithium-ion storage batteries. Spent lithium-ion may be recycled, and due to increasing demand for other lithium-ion based batteries (e.g., zero-

emissions vehicles and technologies), rates of lithium-ion battery recycling have increased. In California, disposal of lithium-ion batteries within the State would be required to comply with California's Universal Waste Rule (22 CCR Chapter 23) which contains regulations to prohibit the disposal of used batteries to landfills, which would ensure that lithium-ion batteries would be properly disposed of. However, lithium batteries may be sold out of state as turnover increases. In the United States overall, there are limited regulations for the disposal of lithium-ion batteries; however, due to value of rarer metals (e.g., cobalt) there is incentive to collect and recycle batteries. When applied, typical recycling procedures (i.e., hydrometallurgical recovery, high-temperature or pyrometallurgical, and direct recycling) recover an average of approximately 97 percent of the battery material, redirecting about 3 percent of battery waste to landfills. Notably, these figures pertain to batteries subject to recycling, not of which all batteries are. As such, battery disposal occurring outside of California could be directed to a landfill.

Thus, long-term operational-related effects to utilities and services systems, associated with the Proposed Project could be potentially significant.

Potential long-term operational-related utilities and service systems impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 19-1

The Regulatory Setting in Appendix A includes, but is not limited to, applicable laws, regulations, and policies related 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 subject to approval by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with discretionary land use and/or permitting authority. New or modified facilities in California would 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 would be identified during the environmental review by agencies with discretionary 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 as a compliance response to the Proposed Project 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 avoid or substantially lessen the environmental impacts of the project. 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 and include the application with applications to appropriate lead agencies.
- Where appropriate, prepare a Water Supply Assessment (WSA) consistent with the requirements of Section 21151.9 of the Public Resources Code/ Section 10910 et seq. of the Water Code. The WSA would be approved by the local water agency/purveyor prior construction of the project.

Comply with local plans and policies regarding the provision of wastewater treatment services.

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 EA does not attempt to address project-specific details of mitigation. As such, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

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, long-term operational-related effect to utilities and service systems associated with the Proposed Project would be **potentially significant and unavoidable**.

20. Wildfire

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

Production of new vessels and vessel engine replacement work would occur in response to the Proposed Project and is expected to occur outside of California, and most retired vessels are expected to be sold out of state. Increased demand for lithium-ion 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 batteries could also increase lithium mining and exports from countries with raw mineral supplies. Some lithium demand may be met domestically. 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. Implementation of the Proposed Project could also require substantial new and improved infrastructure (e.g., holding tanks, fueling stations, natural gas pipelines, distribution centers) to support the use of alternative fuels and fuel cells.

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 BLM, the BLM coordinates fire response.

Overhead powerlines associated with new infrastructure, including battery and fuel cell facilities, 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 California Public Utilities Commission (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, certain batteries (e.g., lithium batteries) have caused large explosions 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, batteries pose no environmental

hazard (79 Fed. Reg. 46011, 46032. Thus, the increased use of lithium-based batteries in vehicles would not substantially increase the risk of wildland fire.

Thus, implementation of the Proposed Project would have a **less-than-significant** short-term construction-related and long-term operational impact on wildfire.

This page intentionally left blank.

5.0 CUMULATIVE AND GROWTH-INDUCING IMPACTS

A. Introduction and 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.

As noted in Section J above, the Proposed Project would result in potentially significant and unavoidable impacts with respect to aesthetics, air quality (short-term construction), biological resources, cultural resources, geology, and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation, tribal cultural resources, and utilities and service systems. These impacts are primarily attributed to the potential increase in construction and operation of vehicle and battery manufacturing and recycling facilities, as well as the construction and operation of new infrastructure to support ZEVs and increased extraction of raw materials for the manufacture of new ZEVs and associated components.

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 the 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).) The related plans and programs considered for cumulative impacts of the Proposed Program include the Community Air Protection Blueprint and 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 § 15150). Therefore, the following documents for comprehensive programs that encompass the goals of the proposed project are incorporated by reference.

- Final EA for the 2030 Target Scoping Plan Update⁷⁴
- Final EA for the Community Air Protection Blueprint⁷⁵

The portions of these documents relevant to this discussion are summarized below and within the respective resource area analyses. These documents are available upon request from CARB. Notably, CARB is in the process of updating the 2022 Scoping Plan Update, which is expected to be adopted after the Proposed Project. However, at the time of preparing this Draft EA, this document has not yet been adopted. It is expected that the environmental impacts identified in the previous 2030 Scoping Plan would be similar to those identified for the 2022 Scoping Plan Update.

1. 2030 Target Scoping Plan Update

Assembly Bill (AB) 32 requires CARB to update the State's Scoping Plan for achieving the maximum technologically feasible and cost-effective reductions of GHG emissions at least once every five years. (Health and Safety Code § 38561 (h).) The Scoping Plan was first approved by the Board in 2008 and was re-approved in 2011. The First Update to the Climate Change Scoping Plan (First Update) was approved by the Board in 2014.

⁷⁴ California Air Resources Board, [Final Environmental Analysis for The Strategy for Achieving California's 2030 Greenhouse Gas Target](https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appf_finalea.pdf), 2017 (web link: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appf_finalea.pdf, last accessed August 2022).

⁷⁵ California Air Resources Board, [Community Air Protection Blueprint](https://ww2.arb.ca.gov/capp-blueprint), 2018 (web link: <https://ww2.arb.ca.gov/capp-blueprint>, last accessed August 2022).

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.

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.

a) Construction of, or Modifications to, Buildings, Infrastructure, and Industrial Facilities

Implementation of the 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.

b) New Operations and Changes to Existing Operational Processes

Under the 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 and heavy-duty vehicles. 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 Scoping Plan are summarized below in Table 11.

Table 11: Summary of Environmental Impacts for the Scoping Plan

Resource Areas and Impact Categories	Significance Determination
Aesthetics - Construction and Operational Impacts	PSU
Agriculture and Forest Resources - Construction and Operational Impacts	PSU
Air Quality - Air Quality Construction Impacts	PSU
Air Quality - Air Quality Operational Impacts	B
Air Quality - Odor Construction and Operational Impacts	PSU
Biological Resources - Construction and Operational Impacts	PSU
Cultural Resources - Construction and Operational Impacts	PSU
Energy Demand - Construction Impacts	LTS
Energy Demand - Operational Impacts	B

Resource Areas and Impact Categories	Significance Determination
Geology, Soils, and Minerals - Construction and Operational Impacts	PSU
Greenhouse Gas - Construction and Operational Impacts	B
Hazards and Hazardous Materials - Construction and Operational Impacts	PSU
Hydrology and Water Quality - Construction and Operational Impacts	PSU
Land Use and Planning - Construction Impacts	LTS
Land Use and Planning - Operational Impacts	PSU
Mineral Resources - Construction and Operational Impacts	LTS
Noise - Construction and Operational Impacts	PSU
Population and Housing - Construction and Operational Impacts	LTS
Public Services - Construction and Operational Impacts	LTS
Recreation - Construction Impacts	LTS
Recreation - Operational Impacts	PSU
Transportation and Traffic - Construction and Operational Impacts	PSU
Tribal Cultural Resources - Construction and Operational Impacts	PSU
Utilities and Service Systems - Operational Impacts	PSU
Wildfire - Operational Impacts	PSU

PSU = Potentially Significant and Unavoidable; LTS = Less Than Significant; B = Beneficial

2. Community Air Protection Blueprint

As noted above, CARB is also relying on the summary of projections contained in the Community Air Protection Blueprint.⁷⁶ CARB prepared the Community Air Protection Blueprint to meet the requirements of Assembly Bill (AB) 617 and provide the structure for the Community Air Protection Program (Program). The Community Air Protection Blueprint is not a regulation but provides commitments from CARB, lays the foundation for the Program, and serves as a guidance document for local air districts, the public, and other stakeholders. In terms of air quality, the Blueprint identifies strategies that would reduce emissions and exposure of TACs in pollution-burdened communities. For the Community Air Protection Blueprint EA, CARB

⁷⁶ California Air Resources Board, [Community Air Protection Blueprint](https://ww2.arb.ca.gov/capp-blueprint), 2018 (web link: <https://ww2.arb.ca.gov/capp-blueprint>, last accessed August 2022).

identified reasonably foreseeable compliance responses, which included the Proposed Project as well as many other emission reduction strategies (e.g., Cargo Handling Equipment Amendment, Drayage Trucks at Seaports and Railyards Amendment). The Community Air Protection Blueprint EA provided a program-level review of significant adverse impacts associated with the reasonably foreseeable compliance responses that appeared most likely to occur.

The objectives of the Community Air Protection Blueprint are to:

1. provide core elements for the Program;
2. provide a process and criteria for the identification, assessment and selection of communities for community emissions reduction programs and air monitoring;
3. describe the tools and resources to be used in future planning to identify strategies to reduce exposure and emissions in pollution-burdened communities;
4. provide the criteria necessary for community air monitoring;
5. provide the criteria necessary for community emissions reduction programs to achieve the requirements of AB 617 as set out in the Health and Safety Code (See Health & Safety Code Section 44391.2);
6. provide other measures to ensure the success of the Program, which include regulatory measures that CARB could undertake using its authorities, funding programs, a statewide emission reporting system, a technology clearinghouse, and other resources as described in Section C below;
7. further the objectives set forth in AB 617 to support a reduction of emissions of TACs and criteria air pollutants in communities affected by a high cumulative exposure burden; and
8. develop a strategy that is consistent with and meets the goals of AB 617.

In addition to supporting tools and resources, identification and recommendation of communities, criteria for community air monitoring, and criteria for community emissions reduction programs, the Community Air Protection Blueprint reduces emissions and exposure to TACs through eleven emission reduction strategies: evaluation and potential development of regulation to reduce idling for all railyard sources, evaluation and potential development of regulation to reduce emissions from locomotives not preempted under the Clean Air Act, drayage trucks at seaports and railyards amendment, cargo handling equipment amendment, catalytic converter theft reduction, chrome plating control measures amendment, composite wood products control measure amendments, commercial cooking suggested control measure, heavy-duty on-road and off-road engine in-use testing, incentive funding to support immediate emission reductions, and the Proposed Project.

a) Evaluation and Potential Development of Regulation to Reduce Idling for All Railyard Sources

This strategy would evaluate and potentially develop a regulation that requires operators to limit idling of all combustion-powered vehicles and mobile equipment operating at railyards and other locations, as well as reducing emissions from stationary locomotive operations (e.g., maintenance and testing). The scope could include both freight and passenger rail activities, in and around intermodal, classification, and maintenance railyards; at seaports, at warehouses, on sidings, at passenger rail stations; and at maintenance and service locations.

Reasonably foreseeable compliance responses could include:

- Changing operational practices at facilities, installation of idle-limiting devices or idle-restricting devices, installation of capture and control technology, and replacing equipment with near-zero or zero-emission technology.
- Temporary increased demand for associated equipment and incentives funds for equipment updates.
- Construction and operation of infrastructure such as new hydrogen fueling stations and EV charging stations
- Increased demand for lead acid and lithium ion batteries, which could require an increase in manufacturing and recycling facilities and associated increases in lithium mining and exports from countries with raw mineral supplies.
- Construction and operation of new facilities or modifications to existing facilities to accommodate battery recycling activities.

b) Evaluation and Potential Development of Regulation to Reduce Emissions from Locomotives not Preempted Under the Clean Air Act

This strategy would evaluate and potentially develop a regulation that requires the retrofit, repower, remanufacture, or replacement of freight and passenger locomotives not preempted under the Clean Air Act, beginning in 2025. As an alternative, CARB could also consider a voluntary agreement with the major railroads to secure greater community health benefits by reducing emissions from interstate locomotives (the dominant source of emissions and community health risk at railyards).

Reasonably foreseeable compliance responses could include:

- Temporary increased replacement rate of locomotives and locomotive engines, requiring that older models are sold outside of California, scrapped, or recycled.
- Construction of new or modifications to existing manufacturing facilities.

- Temporary increased demand for incentive funds to assist in replacement, repower, or retrofit of associated equipment.

c) Drayage Trucks at Seaports and Railyards Amendment

This strategy would amend the existing Drayage Truck Regulation, or adopt a new regulation, to direct a transition to zero-emission operations, beginning 2026–2028. Options to be considered include, but are not limited to, requirements for full zero-emission technology (e.g., a battery or fuel-cell electric short-haul truck) and zero-emission mile capability (e.g., a natural gas-electric hybrid that could drive interstate, but switch to zero emission electric mode while operating near pollution-burdened communities).

Reasonably foreseeable compliance responses could include:

- Construction and operation of equipment to support zero and near-zero emission technologies, such as new hydrogen fueling stations and EV charging stations as well as new or modified roadway infrastructure.
- Increased demand for lithium-ion batteries, including an increased demand for refurbishing or reusing batteries as well as new facilities, or modifications to existing facilities to accommodate battery recycling activities.
- Construction and operation of new facilities or modifications to existing facilities to accommodate battery recycling activities.
- Disposal or sale of non-compliant equipment to areas outside of California.

d) Cargo Handling Equipment Amendment

This strategy would amend the existing Cargo Handling Equipment regulation. This regulation applies to equipment including yard trucks, rubber-tired gantry cranes, container handlers, and forklifts. The strategy would propose an implementation schedule for new equipment and infrastructure requirements, with a focus on the transition to zero-emission operation, and may include provisions for efficiency improvements.

Reasonably foreseeable compliance responses could include:

- Manufacturing and use of zero and near-zero emission cargo handling equipment for use within seaports and railyards.
- Construction and operation of infrastructure such as new hydrogen fueling stations and EV charging stations.
- Increased demand for lead acid and lithium ion batteries, which could require an increase in manufacturing and recycling facilities and associated increases in lithium mining and exports from countries with raw mineral supplies.

- Construction and operation of new facilities or modifications to existing facilities to accommodate battery recycling activities.
- Recycling, scrapping, and/or disposing of non-compliant equipment, or selling equipment to areas outside of California.

e) Catalytic Converter Theft Reduction

A regulation would require manufacturers to stamp catalytic converters with a vehicle identification number. Compliance assistance would offer free vehicle identification number stamping on converters in communities selected through the community identification and selection process. The strategy would make it easier for the recycler to identify stolen catalytic converters.

Reasonably foreseeable compliance responses could include:

- Updating the car manufacturing process to etch VINs into catalytic converters and/or install VIN etching equipment within communities selected through the community assessment process.

The Community Air Protection Blueprint EA concluded that this strategy would not result in a physical change in the environment and therefore it was not further evaluated in the EA.

f) Chrome Plating Control Measures Amendment

This strategy would amend the existing chrome plating regulation to incorporate provisions to align with the federal chrome plating regulation and consider additional measures to further reduce emissions from chrome plating operations. The amendments would include the prohibition of perfluorooctane sulfonate containing fume suppressants (as required by federal regulation), changes to the surface tension requirements, and other actions to reduce uncontrolled emissions. Additionally, staff would evaluate less toxic alternatives to hexavalent chromium and options to phase out perfluorinated chemicals used in fume suppressants.

Reasonably foreseeable compliance responses could include:

- Installation of add-on control equipment for hexavalent chromium containing tanks currently unregulated in the Chrome Plating Airborne Toxic Control Measure
- Installation of building enclosures and associated ventilation systems, enhanced housekeeping and best management practices, periodic source testing, parametric monitoring to test the performance of add-on control equipment, and a change to alternative less-hazardous chemical fume suppressants.
- Construction activities to facilitate installation of add-on control equipment and building enclosures.

g) Composite Wood Products Control Measure Amendments

This strategy would amend the existing ATCM to Reduce Formaldehyde Emissions from Composite Wood Products (Composite Wood Products ATCM), to obtain additional formaldehyde emission reductions, clarify requirements and applicability, improve enforceability, and align with the United States Environmental Protection Agency (U.S. EPA) formaldehyde regulation, where appropriate. The Composite Wood Products ATCM, approved in 2007, established formaldehyde emission standards for three types of composite wood products (e.g., hardwood plywood, particleboard, and medium density fiberboard) and requires that all consumer goods that contain such materials (e.g., flooring, cabinets, furniture) destined for sale in California must comply with the Composite Wood Products ATCM.

Reasonably foreseeable compliance responses could include:

- Development of manufacturing systems or alternative, lower-emitting glues that achieve the same curing rates and strength characteristics as current urea formaldehyde glues
- Installation of new manufacturing systems that could result in construction activities

h) Commercial Cooking Suggested Control Measure

This strategy involves evaluating California's current emission reduction requirements for commercial cooking operations that prepare food for human consumption, and if necessary, making improvements to achieve additional reductions in respirable and fine particulate matter (PM₁₀ and PM_{2.5}, respectively) and volatile organic compound (VOC) emissions that contribute to ozone formation. In the first of two phases, CARB would conduct a technical assessment to evaluate the stringency of existing local air district (e.g., air pollution control and air quality management districts) commercial cooking rules and assess the commercial availability, effectiveness, and cost of more advanced emission control devices or methods, to determine the potential for additional PM₁₀/PM_{2.5} and VOC emission reductions. In the second phase, CARB would use the results of the technical assessment to develop a path forward for additional emission reductions from commercial cooking operations that could include adoption of a Suggested Control Measure, or a combination of up-front incentives to install advanced emission controls with a recommended regulatory backstop.

Reasonably foreseeable compliance responses could include:

- Installation of proven control technologies and applied technologies from other industry sectors that are transferable; typical emissions controls include catalytic oxidizers, self-cleaning ceramic filters, filter-bed filters, thermal incinerators, electrostatic precipitators, wet scrubbers, and carbon absorbers.
- Improved maintenance and control device certification requirements.

i) Heavy-Duty On-Road and Off-Road Engine In-Use Testing

This strategy involves real world screening of heavy-duty trucks and off-road engines operating in selected communities to target heavy-duty in-use compliance testing. Engines that are found to be emitting above expected levels would be brought into CARB's in-use compliance program. Engines found to be in noncompliance would be recalled and emission mitigation projects could include deployment of zero-emission technology in selected communities.

Reasonably foreseeable compliance responses could include:

- Real world testing of heavy-duty and off-road engines.
- Construction and operation of equipment to support zero and near-zero emission technologies, such as new hydrogen fueling stations and EV charging stations.
- Increased demand for lead acid and lithium ion batteries, which could require an increase in manufacturing and recycling facilities and associated increases in lithium mining and exports from countries with raw mineral supplies.
- Construction of new and modifications to existing facilities to accommodate battery recycling activities.

j) Incentive Funding to Support Immediate Emission Reductions

This strategy involves using incentive funding for projects to support early action to reduce emissions through the deployment of cleaner mobile source technologies in pollution-burdened communities. The Governor's Fiscal Year 2017-2018 budget included \$250 million for this purpose. As directed by the Legislature, these funds were administered through the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program), except that at its discretion, an air district may allocate up to 40 percent of the funds it receives to incentivize clean trucks in accordance with CARB's Proposition 1B Goods Movement Emission Reduction Program Guidelines.

Reasonably foreseeable compliance responses evaluated in the Community Air Protection Blueprint EA included:

- CARB and air districts holding community and stakeholder meetings to determine funding needs, CARB updating or creating funding program guidelines, and CARB interfacing with community groups to provide community funding.

k) Commercial Harbor Craft Amendment

As described in the Community Air Protection Blueprint EA, the strategy would amend the existing Commercial Harbor Craft regulation to include more stringent in-use and new vessel requirements for both freight-related and passenger vessels. The

amendments would take into consideration the feasibility of Tier 4 engine technology in Commercial Harbor Craft applications, the performance of advanced retrofit emission control devices, and the availability of zero and near-zero emission technologies for the sector.

Reasonably foreseeable compliance responses as identified in the Community Air Protection Blueprint EA, could include:

- Increase in manufacturing and use of Tier 4 engine technology, advanced retrofit emission control devices, and new vessels containing such technologies.
- Potential acceleration of turnover of engines, vessels, and their components, which may increase recycling, scrapping, and/or disposing of these materials within or outside of California or selling these materials outside of California.
- Potential acceleration of adoption of zero and near-zero emission technologies, which could require construction and operation of equipment to support zero and near-zero emission technologies, such as new hydrogen fueling stations and electric vehicle charging stations.
- Increased demand for lead acid and lithium ion batteries, which could require an increase in manufacturing and recycling facilities and associated increases in lithium mining and exports from countries with raw mineral supplies.
- Construction of new or modifications to existing battery recycling facilities to meet an increased demand for refurbishing or reusing batteries.
- Potential effects on electricity demand, which would depend on factors such as timing of charging demand and diurnal supply patterns associated with new renewable electricity sources.

The Community Air Protection Blueprint EA evaluated the environmental impacts related to the reasonably foreseeable compliance responses described above. Table 12 provides a summary of the conclusions of these impacts.

Table 12: Summary of the Community Air Protection Blueprint Environmental Analysis by Resource

Resource Areas and Impact Categories	Significance Determination
Aesthetics - Construction and Operational Impacts	PSU
Agriculture and Forest Resources - Construction and Operational Impacts	PSU
Air Quality - Air Quality Construction Impacts	PSU
Air Quality - Air Quality Operational Impacts	B
Air Quality - Odor Construction and Operational Impacts	LTS

Resource Areas and Impact Categories	Significance Determination
Biological Resources - Construction and Operational Impacts	PSU
Cultural Resources - Construction and Operational Impacts	PSU
Energy Demand - Construction and Operational Impacts	LTS
Geology, Soils, and Minerals - Construction and Operational Impacts	PSU
Greenhouse Gas - Construction and Operational Impacts	B
Hazards and Hazardous Materials - Construction Impacts	PSU
Hazards and Hazardous Materials - Operational Impacts	LTS
Hydrology and Water Quality - Construction and Operational Impacts	PSU
Land Use and Planning - Construction and Operational Impacts	PSU
Mineral Resources - Construction Impacts	LTS
Mineral Resources - Operational Impacts	PSU
Noise - Construction and Operational Impacts	PSU
Population and Housing - Construction and Operational Impacts	LTS
Public Services - Construction and Operational Impacts	LTS
Recreation - Construction and Operational Impacts	LTS
Transportation and Traffic - Construction and Operational Impacts	PSU
Tribal Cultural Resources - Construction and Operational Impacts	PSU
Utilities and Service Systems - Operational Impacts	PSU
Wildfire - Operational Impacts	PSU

PSU = Potentially Significant and Unavoidable; LTS = Less Than Significant; B = Beneficial

B. Significance Determinations and Mitigation

The impact discussion includes, where relevant, construction-related effects, operational effects of new or modified facilities, and influences of the recommended actions on GHG and air pollutant emissions. Both the 2030 Target Scoping Plan Update EA and the Community Air Protection Blueprint EA considered cumulative impacts of a full range of reasonably foreseeable compliance responses to all the recommendations, including the Proposed Project and considered the cumulative effect of other “closely related” past, present, and future reasonably foreseeable

activities undertaken to address air quality at the State level, as well as other activities with “related impacts” (CEQA Guidelines 15355(b); 15130(a)(1)).

The analysis of both EAs is hereby incorporated by reference. Portions of the Final EAs relevant to this discussion are also summarized below. The analysis of cumulative impacts includes the following:

- A summary of the cumulative impacts found for each resource area in the 2030 Target Scoping Plan Update EA (certified by the Board in December 2017) and the Community Air Protection Blueprint EA (certified by the Board in September 2018).
- A discussion of the types of compliance responses associated with the Proposed Project, pertinent to each resource area.
- A significance conclusion that determines if the Proposed Project could result in a significant cumulative effect or a considerable contribution to an existing significant cumulative impact.

This approach to cumulative impacts analysis is “guided by the standards of practicality and reasonableness” (Title 14 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.” (CBE v. Cal. Res. Agency (2002) 103 Cal.App.4th 98, 119).

Implementation of the Proposed Project was determined to potentially result in cumulatively considerable contributions to significant cumulative impacts to certain resource areas, as discussed below. As is the case for project impacts described in Chapter 4, while suggested mitigation is provided for each potentially cumulatively considerable impact, imposition of mitigation is outside CARB’s authority, and any mitigation would instead need to be imposed by other agencies. Where impacts may not be feasibly mitigated, the EA takes a conservative approach and 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 project as part of the approval process for the ACF regulation (Proposed Project).

C. Cumulative Impacts by Resource Area

1. Aesthetics

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses for the various measures, which includes the Proposed Project, could result in a significant impact to aesthetic resources from construction and operational activities associated with new or modified facilities or infrastructure and increased lithium consumption. As discussed in

the prior EAs, the exact location or character of these new facilities or the modification of existing facilities is uncertain. Depending on hours of construction, sources of glare or light may also be present. Construction activities would introduce typical off-road construction equipment and on-road heavy duty vehicles, as well as staging areas and other typical construction activities. Development of new facilities is expected to occur in areas that are appropriately zoned; however, new facilities can also introduce or increase presence of visible artificial elements (e.g., heavy-duty equipment, new or expanded buildings) in areas of scenic importance, such as visibility from State scenic highways. Facilities may also introduce substantial sources of glare, exhaust plumes, and nighttime lighting for safety and security. The increase in demand for lithium could cause adverse visual effects due to increases in mining.

Implementation of mitigation measures would not 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. Thus, implementation of the Scoping Plan and Community Air Protection Blueprint, which include the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact would be cumulatively considerable due to the development of new facilities and infrastructure, nighttime lighting, and lithium mining that could affect the visual quality and character of a landscape or scenic vista. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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. Therefore, the Proposed project could result in a **cumulatively considerable contribution to a significant cumulative impact** on aesthetic resources.

2. Agriculture and Forestry Resources

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses for the various measures, which includes the Proposed Project, 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 consumption. 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 mitigation measures would not 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. Thus, implementation of the Scoping Plan and Community Air Protection Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact would be cumulatively considerable due to an increased need for alternative fuels and lithium-ion batteries which could require the construction and operation of new or expanded infrastructure in areas currently zoned for or supporting agriculture and forest resources. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact on agriculture and forest resources.**

3. Air Quality

The Scoping Plan EA and Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses for the various measures, which includes the Proposed Project, could result in significant impacts to air quality from construction activities associated with new or modified facilities or infrastructure. The exact location or character of these new facilities or modification of existing facilities is uncertain. However, construction and modification of facilities would emit criteria air pollutants and toxic air contaminants from a variety of activities, such as grading and excavation, operation of off-road construction equipment, and construction worker-commute trips. 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.

Implementation of mitigation measures would not 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. Thus, implementation of the Community Air Protection Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact during construction would be cumulatively considerable, as concluded in Chapter 4, due to air pollutant emissions caused by heavy-duty equipment, worker commute, and truck trips during construction. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact on air quality** during construction.

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses for the various measures, which includes the Proposed Project, could cause some increases in odors during construction and operation. However, construction odors would be short term or generated in areas away from sensitive receptors. The Community Air Protection Blueprint EA concluded this impact would be less than significant, however, the Scoping Plan EA concluded that impacts would be significant due to the potential increase in collection of renewable gas from dairies, landfills, and wastewater treatment plants, which is not part of or related to the Proposed Project. Therefore, the Proposed Project **would not contribute to a significant cumulative odor impact**.

Both the Community Air Protection Blueprint EA and Scoping Plan EA found that implementation of the reasonably foreseeable compliance responses for the various measures, which includes the Proposed Project, would not result in significant impacts to air quality from operational activities. More specifically, the purpose of the approved plans are to improve air quality conditions and reduce emissions (with the Community Air Protection Blueprint specifically targeting reductions in pollution-burdened communities). The measures in both plans are designed to result in substantial long-term reductions in criteria air pollutants and TACs. Although it is possible that certain aspects of the plans may cause comparatively small emission increases, these potential incremental increases would be offset by the overall substantial long-term reductions in criteria air pollutants and TACs. As a result, long-term operational impacts related to air quality as a result of the Scoping Plan and Community Air Protection Blueprint would be beneficial. Emissions during operations are low, however, **cumulative impacts would be less than significant**.

4. Biological Resources

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses for the various measures, which includes the Proposed Project, 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. Additionally, increased demand for biofuel feedstock production could result in expansion of agricultural lands into undeveloped areas, or areas that otherwise support biological resources.

Implementation of mitigation measures would not 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. Thus, implementation of the Community Air Protection Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact would be cumulatively considerable due to the development of new facilities and infrastructure, which would include vegetation removal and noise impacts, as well as mining could adversely affect biological resources such as special-status species. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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. Therefore, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on biological resources.

5. Cultural Resources

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses associated with the recommended actions 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 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. 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, structures, or archaeological sites associated with agriculture and mining, and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values,

also may exist. Historic buildings and structures may also be adversely affected by demolition-related activities.

Implementation of mitigation measures would not 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. Thus, implementation of the Scoping Plan and the Community Air Protection Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact would be cumulatively considerable, as concluded in Chapter 4, due to ground disturbance activities and the potential for new facilities to be sited within a historic district. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on cultural resources.

6. Energy

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the recommended measures within the various source categories, which includes the Proposed Project, would result in less-than-significant construction and operational impacts, although the Scoping Plan determined that operation impacts would also be beneficial. Temporary increases in energy demand associated with new facilities would include fuels used during construction, and gas and electric operational 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. In the long term, the Community Air Protection Blueprint would increase the amount of renewable energy supplies because vehicular fuels would increase the use of electricity (50 percent of which would be renewable by 2030) and decrease the use of petroleum through increased use of plug-in hybrid electric vehicles (NZEVs), zero-emissions vehicles (ZEVs), and low-emission diesel fuels.

The Proposed Project contribution to this significant impact would not be cumulatively considerable because energy required to complete construction would be temporary and limited in magnitude such that a reasonable amount would be expended, as identified in Chapter 4. Furthermore, implementation of the Proposed Project would decrease the amount of fossil fuel-based vehicular fuels (i.e., gasoline, diesel, and CNG) and the recycling need for changed oil and other parts through increased use of

ZEVs. The Proposed Project would not have a cumulatively significant impact on energy. Thus, **cumulative impacts would be less than significant**. The Proposed Project **would not result in a cumulative significant impact**.

7. Geology and Soils

Implementation of the reasonably foreseeable compliance responses associated with the recommended measures in the Scoping Plan and the Community Air Protection Blueprint could result in a significant cumulative impact related to geology and soils from construction and operational activities associated with new or modified facilities or infrastructure. New facilities and infrastructure, and expansion of agricultural lands to support low-emission diesel fuel feedstock, could be located 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 exact location of these new facilities or the modification of existing facilities is uncertain. Construction and operation could be located in a variety of relatively high-risk geologic and soil conditions that are considered to be potentially hazardous. For instance, the seismic conditions at the site of a new facility may have high to extremely high seismic-related fault rupture and ground shaking potential associated with earthquake activity. New facilities could also be subject to seismic-related ground failure, including liquefaction and landslides. Construction and operational activities could be located in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that would be susceptible to soil erosion. Strong ground shaking could also trigger landslides in areas where the natural slope is naturally unstable or is over-steepened by the construction of access roads and structures. Construction and operation could also occur in locations that would expose facilities and structures to expansive soil conditions. Development of new facilities could be susceptible to the presence of expansive soils particularly in areas of fine-grained sediment accumulation typically associated with playas, valley bottoms, and local low-lying areas.

Implementation of mitigation measures would not 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. Thus, implementation of the Scoping Plan and the Community Air Protection Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project contribution to this significant impact would be cumulatively considerable due to potential for ground disturbance activities, such as pile driving and dredging to cause erosion and for new facilities and infrastructure to be located in areas with a variety of seismic conditions. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on geology and soils.

8. Greenhouse Gases

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the recommended measures within the various source categories, which includes the Proposed Project, could require construction and operational activities associated with new manufacturing facilities to support increased market penetration of electric, battery, hydrogen fuel cell, renewable diesel and hybrid vessels. Increased low-emission diesel demand may increase processing of low-emission diesel fuels, and shipment of finished low-emission diesel fuels and/or their feedstocks. Infrastructure to support collection, processing, and distribution of low-emission diesel fuels, including biomethane, and associated feedstocks may also increase. Overall, the Scoping Plan and the Community Air Protection Blueprint would result in substantial long-term GHG reductions, although certain aspects of both would cause comparatively small short-term GHG emission increases. When these short-term construction-related 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 Scoping Plan and the Community Air Protection Blueprint, which includes the Proposed Project, would not have a cumulatively significant impact on GHG emissions. However, given the long term benefits of the Scoping Plan, the Community Air Protection Blueprint, and the Proposed Project, **cumulative impacts would be less than significant**.

9. Hazards and Hazardous Materials

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses associated with the recommended actions in the proposed Draft Blueprint 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 mitigation measures would not 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. Thus, implementation of the Scoping Plan and the Blueprint, which includes

the Proposed Project, could result in a significant cumulative impact during construction.

The Scoping Plan EA, similar to the discussion provided above for operational odors, concluded that operational hazards and hazardous materials impacts would be significant due to the potential increase in collection of renewable gas from dairies, landfills, and wastewater treatment plants, which is not part of or related to the Proposed Project. The Community Air Protection Blueprint EA concludes that operational impacts would be less than significant, due to performance-based requirements and standards for lithium batteries and hydrogen fueling stations. However, the risk of accidental release of hazardous materials still exists during the movement of raw goods to manufacturing facilities or the export of finished goods containing hazardous materials following the manufacturing process.

The Proposed Project contribution to this significant impact would be cumulatively considerable, as concluded in Chapter 4, due to potential for accidental release of hazardous materials into the environment during the movement of raw goods during the operational phase. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** regarding hazards and hazardous materials during operation and construction.

10. Hydrology and Water Quality

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses associated with the recommended actions could result construction and operation activities, such as those associated with new or modified facilities or infrastructure and increased mining activities. Specific construction projects would be required to comply with applicable erosion, water quality standards, and waste discharge requirements. Depending on the location of construction activities, there could be adverse effects on drainage patterns and exposure of people or structures to areas susceptible to flood, seiche, tsunami, or mudflow. In addition, increased demand for low-emission diesel feedstocks, such as oilseed crops or tallow, could result in adverse effects on water quality from farming practices result from polluted runoff that contains sediment, nutrients, pathogens, pesticides, metals, and salts.

Implementation of mitigation measures would not 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. Thus, implementation of the Scoping Plan and the Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact would be cumulatively considerable, as concluded in Chapter 4, due to a possibility for pile driving and dredging to occur, the potential location of new facilities and infrastructure in locations subject to mudflow or flooding, the potential for erosion and sedimentation during construction, lithium mining, and the potential for accidental release during fueling activities. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on hydrology and water quality.

11. Land Use and Planning

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the recommended measures within the various source categories, which includes the Proposed Project, would result in the construction and operation of new or modified facilities or infrastructure (i.e., natural gas and hydrogen refueling stations, lithium battery manufacturing facilities, lithium mines, battery recycling and disposal centers, vehicle emission testing centers, near-zero and zero-emission technology manufacturing facilities, infrastructure associated with low-emission diesel production). Planning efforts associated with the implementation of compliance responses associated with the Blueprint would be made in coordination with local, State, or federal jurisdictions. Thus, reasonably foreseeable compliance responses associated with the Proposed Project would not be anticipated to divide an established community or conflict with a land use or conservation plan. Therefore impacts related to land use and planning **would not be cumulatively significant**.

12. Mineral Resources

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the recommended measures within the various source categories, which includes the Proposed Project, would result in the construction and operation of new or modified facilities or infrastructure. Reasonably foreseeable compliance responses would likely occur within existing footprints or in areas with consistent zoning where original permitting and analyses considered the availability of mineral resources within specific project sites. In addition, increased manufacturing and use of electric, battery, hydrogen fuel cell, and hybrid vessels would require increased battery production and increased lithium mining. In the case that new lithium mines are required, they would go through independent environmental review at the appropriate federal, state, or local level, and it is assumed that any new mines would be located in areas with appropriate zoning, and subject to Federal, State, and/or local requirements. Worldwide demand of global lithium is estimated to be below 20 million metric tons for the period of 2010 through 2100, which is well-below the estimated worldwide reserves and resources currently known to exist worldwide. In

addition, lithium battery recycling potential could supplement future increased demands. Appendix G of the CEQA Guidelines considers an impact on mineral resources to be the result in the loss of availability of a known mineral resource that would be of value to a local entity, a region, or the state. This type of impact could result from actions such as building a structure over an area that contains mineral resources, thereby prohibiting access to mining activities or the consumption of a mineral resource. Because compliance responses could result in an increased development where mining for lithium, cobalt, and other minerals are feasible, they could conceivably affect the availability of these mineral resources if access to resources becomes impeded, and impacts would be significant. Given the impacts of the Community Air Protection Blueprint, however, there would be a significant cumulative impact to mineral resources.

The Proposed Project's contribution to this significant impact would be cumulatively considerable, as concluded in Chapter 4, due to increased demand for lithium and the potential for increased development where mining for lithium is feasible. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on mineral resources.

13. Noise

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses associated with the recommended actions could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Implementation of reasonably foreseeable compliance responses could result in the generation of short-term construction noise from use of heavy-duty equipment and vehicle trips. New long-term operational sources of noise could be associated with low-emission diesel feedstock processing facilities, manufacturing plants, and mining activities. Depending on the proximity to existing noise-sensitive receptors, construction and operational noise levels could exceed applicable noise standards and result in a substantial increase in ambient noise levels, resulting in a significant noise impact.

Implementation of mitigation measures would not 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. Thus, implementation of the Scoping Plan and the Community Air Protection Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact would be cumulatively considerable due to potential noise impacts associated with implementation of Control Measures which would cause additional demand for zero- and near-zero emission technology, resulting in the construction and operation of new or expanded manufacturing and recycling facilities as well as increased mining of lithium for zero- and near-zero emission batteries. Implementation of mitigation measures have the potential to reduce these impacts to a less-than-significant level however the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. As a result, noise impacts may be substantial. Thus, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on noise.

14. Population and Housing

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses associated with the recommended actions could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities.

There is uncertainty as to the specific location of new facilities or the modification of existing facilities associated with the Proposed Project. Construction and operation of these facilities could result in increased job opportunities in the communities surrounding a project site. However, it would be expected that locations of these facilities would be selected such that an appropriate employment base existed to support construction and operation or where local jurisdictions have planned for increased population and employment growth. The Proposed Project would not have a cumulatively significant impact on population and housing. Thus, **cumulative impacts would be less than significant**.

15. Public Services

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses associated with the recommended actions could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities.

Under the Proposed Project there is uncertainty as to the specific location of new facilities or the modification of existing facilities. Construction and operation of the reasonably foreseeable compliance responses would not require a substantial amount of new additional housing to accommodate new populations or generate changes in land use and, therefore, would not be expected to increase population levels such that the provisions of public services would be substantially affected. The Proposed Project

would not have a cumulatively significant impact on public services. Thus, **cumulative impacts would be less than significant.**

16. Recreation

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the recommended measures within the various source categories, which includes the Proposed Project, would result in the construction and operation of new or modified facilities or infrastructure (i.e., natural gas and hydrogen refueling stations, lithium battery manufacturing facilities, lithium mines, battery recycling and disposal centers, vehicle emission testing centers, near-zero and zero-emission technology manufacturing facilities, infrastructure associated with low-emission diesel production).

There is uncertainty as to the specific location of new facilities or the modification of existing facilities associated with the Proposed Project. While implementation of the Scoping Plan and the Community Air Protection Blueprint would produce long-term employment, it would be anticipated that a sufficient employment base would be available. The minimal increase in employment opportunity would not create an increased demand on recreational facilities within communities containing new plants and facilities. Of note, the Scoping Plan EA did conclude the potential operational impacts would be potentially significant and unavoidable due to the potential siting of renewable energy generation and transmission facilities, which is not part of or related to the Proposed Project. As a result, the Proposed Project would not have a cumulatively considerable contribution to the Scoping Plan EA's significant impact on recreation. Thus, **cumulative impacts would be less than significant.**

17. Transportation

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the recommended measures within the various source categories, which includes the Proposed Project, could result in a significant cumulative traffic impact from construction and operational activities associated with new or modified facilities or infrastructure. 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. Implementation of the Scoping Plan and the Community Air Protection Blueprint could result in increased demand for NZEVs and Low-Emission Diesel fuels such as renewable diesel or biomethane, and increased demand for feedstocks and inputs used to produce Low-Emission Diesel. While the total volume and number of vehicles in California is not anticipated to be affected by the proposed Low-Emission Diesel measure, it is anticipated to change the types of vehicles and fuels consumed, which could result in substantial long-term effects on local routes' traffic patterns due to differences in where feedstocks are sourced, how the finished fuels are transported, and where vehicle charging opportunities are

available. In addition, transportation patterns may change in relation to the location and operational shipping needs of new facilities. Depending on the number of trips generated 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.

Implementation of mitigation measures would not 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. Thus, implementation of the Scoping Plan and the Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact would be cumulatively considerable due to potential transportation and traffic impacts associated with additional demand for zero- and near-zero emission technology, resulting in the construction and operation of new or expanded manufacturing and recycling facilities as well as increased mining of lithium for zero- and near-zero emission batteries. Implementation of mitigation measures have the potential to reduce these impacts to a less-than-significant level however the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. As a result, transportation and traffic impacts may be substantial. Thus, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on transportation and traffic.

18. Tribal Cultural Resources

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the reasonably foreseeable compliance responses associated with the recommended actions 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 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. As a result, TCRs could potentially be affected by ground disturbance activities. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, also may exist.

Implementation of mitigation measures would not 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. Thus, implementation of the Scoping Plan and the Community Air Protection

Blueprint, which includes the Proposed Project, could result in a significant cumulative impact. The Proposed Project's contribution to this potentially significant and unavoidable impact would be cumulatively considerable, as concluded in Chapter 4, due to ground disturbance activities. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed 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, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on TCRs.

19. Utilities and Service Systems

The Scoping Plan EA and the Community Air Protection Blueprint EA found that implementation of the recommended measures within the various source categories, which includes the Proposed Project, could result in a significant cumulative impact to utilities and service systems from construction and operational activities associated with new or modified facilities or infrastructure (i.e., natural gas and hydrogen refueling stations, lithium battery manufacturing facilities, lithium mines, battery recycling and disposal centers, vehicle emission testing centers, near-zero and zero-emission technology manufacturing facilities, infrastructure associated with low-emission diesel production). Projects associated with the Scoping Plan and the Community Air Protection Blueprint could result in new demand for water, wastewater, electricity, and gas services for new manufacturing facilities. Changes in land use, associated with biofuel feedstock production are likely to change water demand to support new crop types, depending on the size, location, and existing uses. This could result in an increase or decrease in water demand and would be subject to availability and regulatory requirements. The specific location and type of construction needs 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.

Implementation of mitigation measures would not 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. Thus, implementation of the Scoping Plan and the Community Air Protection Blueprint, which includes the Proposed Project, could result in a significant cumulative impact.

The Proposed Project's contribution to this significant impact would be cumulatively considerable due to utilities impacts associated with implementation of Control Measures which would cause additional demand for zero- and near-zero emission technology, resulting in the construction and operation of new or expanded

manufacturing and recycling facilities as well as increased mining of lithium for zero- and near-zero emission batteries. Implementation of mitigation measures have the potential to reduce these impacts to a less-than-significant level however the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. As a result, utilities impacts may be substantial. Thus, the Proposed Project could result in a **cumulatively considerable contribution to a significant cumulative impact** on utilities and service systems.

20. Wildfire

The Scoping Plan EA and the Community Air Protection Blueprint EA evaluated fire risks in their respective discussion of hazards. For example, the Community Air Protection Blueprint EA discussed the potential for lithium batteries to overheat and ignite, but also concluded that the risk is increased in the case of poor packaging, damage, or exposure to fire or a heat source.

New infrastructure and facilities associated with the Proposed Project 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. When packaged and handled properly, lithium batteries pose no environmental hazard. Additionally, existing methods and recommendations exist for battery system performance to assure that a single point fault will not result in fire or explosion. The Proposed Project would result in less than significant cumulative impacts related to wildfire. Therefore, **cumulative impacts would be less than significant**.

D. 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 Proposed Project would not directly result in any growth in population or housing, as the Proposed Project are meant to spur emissions-reducing changes in the existing fleet of vessels, 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 in Appendix G of the CEQA Guidelines, this EA addresses the mandatory findings of significance for the proposed ACF Regulation (Proposed Project).

A. Mandatory Findings of Significance

- 1. 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?**

Under CEQA Guidelines Section 15065(a), a finding of significance is required if a project “has the potential to substantially degrade the quality of the environment.” In practice, this is the same standard as a significant impact on the environment, which is defined in the CEQA Guidelines Section 15382 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.”

As with all the environmental impacts and issue areas, the precise nature, location and magnitude of impacts would be highly variable, and would depend on a range of reasonably foreseeable compliance responses that could occur with implementation of the Proposed Project. Location, extent, and a variety of other site-specific factors are not known at this time but would be addressed by environmental reviews to be conducted by local or regional agencies with regulatory authority at the project-specific level.

This EA, in its entirety, addresses and discloses potential environmental impacts associated with the recommended actions to comply with the Proposed Project, including direct, indirect, and cumulative impacts in the following resource areas:

- Aesthetics,
- Agriculture and Forest Resources,
- Air Quality,
- Biological Resources,
- Cultural Resources,
- Energy Demand,
- Geology and Soils,
- Greenhouse Gases,

- Hazards and Hazardous Materials,
- Hydrology and Water Quality,
- Land Use and Planning,
- Mineral Resources,
- Noise,
- Population and Housing,
- Public Services,
- Recreation,
- Transportation/Traffic, and
- Utilities and Service Systems.

As described in Chapter 4, this EA discloses potential environmental impacts, the level of significance prior to mitigation, proposed mitigation measures, and the level of significance after the incorporation of mitigation measures.

a) Impacts on Species

Under CEQA Guidelines Section 15065(a)(1), a lead agency shall find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to (1) substantially reduce the habitat of a fish or wildlife species; (2) cause a fish or wildlife population to drop below self-sustaining levels; or (3) substantially reduce the number or restrict the range of an endangered, rare, or threatened species. Chapter 4 of this EA addresses impacts that could occur to biological resources, including the reduction of fish or wildlife habitat, the reduction of fish or wildlife populations, and the reduction or restriction of the range of special-status species.

b) Impacts on Historical Resources

CEQA Guidelines Section 15065(a)(1) states that a lead agency shall find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to eliminate important examples of a major period of California history or prehistory. CEQA Guidelines Section 15065(a)(1) amplifies PRC Section 21001(c) requiring that major periods of California history are preserved for future generations. It also reflects the provisions of PRC Section 21084.1 that require a finding of significance for substantial adverse changes to historical resources. CEQA Guidelines Section 15064.5 establishes standards for determining the significance of impacts to historical resources and archaeological sites that are a historical resource. Chapter 4 of this EA addresses impacts that could occur related to California history and prehistory, historic resources, archaeological resources, and paleontological resources.

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

As required by CEQA Guidelines Section 15065, a lead agency shall find that a project may have a significant impact on the environment where there is substantial evidence that the project has potential environmental impacts that are individually limited, but cumulatively considerable. As defined in CEQA Guidelines Section 15065(a)(3), 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.” Cumulative impacts are addressed for each of the environmental topics listed above and are provided in Chapter 5, “Cumulative and Growth-Inducing Impacts,” in this EA.

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

Consistent with the CEQA Guidelines Section 15065(a)(4), a lead agency shall find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to cause substantial adverse impacts on human beings, either directly or indirectly. 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 impacts on particular individuals. While changes to the environment that could indirectly affect human beings would be represented by all the designated CEQA issue areas, those that could directly affect human beings include air quality (short-term), geology and soils, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, transportation/traffic, and utilities, which are addressed in Chapter 4 of this EA.

This page intentionally blank.

7.0 ALTERNATIVES ANALYSIS

This section satisfies California Environmental Quality Act (CEQA) Guidelines Section 15126.6, which addresses requirements related to alternatives to the proposed project. The following discussion provides an overview of the steps taken to develop alternatives to the proposed action (i.e., adoption of the Proposed Project), the project objectives associated with the proposed action, and an analysis of the alternatives' environmental effects and ability to meet the project objectives.

A. Approach to Alternatives Analysis

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

CARB's 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 that would substantially reduce such adverse impacts. For purposes of this section, "feasible" means capable of being accomplished in a successful manner within a reasonable period, taking into account economic, environmental, legal, social, and technological factors" (14 CCR Section).

While CARB, by its certified regulatory program, is exempt from Chapters 3 and 4 of CEQA and corresponding sections of the CEQA Guidelines, the Guidelines nevertheless provide 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 program requirements.

The range of alternatives is governed by the "rule of reason," which requires evaluation of only those alternatives "necessary to permit a reasoned choice" (14 CCR Section 15126.6 subd. (f)). Further, an agency "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (14 CCR Section 15126.6 subd. (f)(3)). 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.

CARB has identified three alternatives that represent a reasonable range of alternatives that will allow the public and the Board to understand the differences between different types or combination of approaches.

B. Selection of Range of Alternatives

This chapter evaluates a range of alternatives to the Proposed Project that could reduce or eliminate significant effects on the environment, while still meeting basic project objectives (Title 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 Supplemental EA (Title 17 CCR section 60004.2(a)(5)).

As noted above, CARB has identified three alternatives that allow the public and Board to contemplate the differences between different approaches. Additionally, CARB has identified 6 additional alternatives (Alternative 4-9 below) that were considered but rejected from further analysis. CARB has made a good faith effort to identify potentially all feasible project alternatives.

For the purposes of this analysis, the following nine alternatives are considered:

- 1 Alternative 1 (No Project Alternative)
- 2 Alternative 2 (Less Stringent ZEV Purchase Requirement)
- 3 Alternative 3 (Best Available Control Technology [BACT] Concept)
- 4 Alternative 4 (Focus ZEV Requirements on Return to Base Concept)
- 5 Alternative 5 (Match ACT and ACF ZEV Deployments Exactly)
- 6 Alternative 6 (Exempt Small Fleets and Interstate Truckers)
- 7 Alternative 7 (Extend the Timeline for Group 1 Vehicles and Exclude All Other Vehicles)
- 8 Alternative 8 (Credit for ZEV or Natural Gas Vehicle)
- 9 Alternative 9 (Exempt Refuse Fleets Subject to SB 1383)

C. Project Objectives

Recognizing the requirements of Senate Bill (SB) 32 (Ch. 249, Stats. 2016, Pavley) and Executive Order S-3-05 to reduce greenhouse gas (GHG) emissions as well as the need for California to attain National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for criteria air pollutants and to reduce exposure to toxic air contaminants (TAC), the primary objectives of the Proposed Project include the following:

1. Accelerate the deployment of ZEVs that achieve the maximum emissions reduction possible from medium- and heavy-duty vehicles to assist in the attainment of NAAQS for criteria air pollutants (Health & Safety Code Sections 43000.5(b), 43018(a)).
2. Reduce the State's dependence on petroleum as an energy resource and support the use of diversified fuels in the State's transportation fleet (Health & Safety Code Section 43000(e), California Public Resources Code (PRC) Section 25000.5). In addition, petroleum use as an energy resource contributes substantially to the following public health and environmental problems: air pollution, acid rain, global warming, and the degradation of California's marine environment and fisheries (PRC Section 25000.5(b), (c)).
3. Decrease GHG emissions in support of statewide GHG reduction goals by adopting strategies to deploy medium- and heavy-duty ZEV in California to support the Scoping Plan, which was developed to reduce GHG emissions in California, as directed by SB 32. California's 2017 Climate Change Scoping Plan and 2020 Mobile Source Strategy aim to accelerate development and deployment of the cleanest feasible mobile source technologies and to improve access to clean transportation. Implementation of the Proposed Project would also provide further GHG reductions pursuant to AB 1493 (Ch. 200, Stats. of 2002, Pavley).
4. Develop a regulation that is consistent with and meets the goals of the SIP, providing necessary emissions reductions from vehicular sources for all of California's nonattainment areas to meet NAAQS (Health & Safety Code Sections 39002, 39003, 39602.5, 43000, 43000.5, 43013, 43018).
5. Maintain and continue reductions in emissions of GHGs beyond 2020, in accordance with SB 32 (Health & Safety Code Sections 38551(b), 38562, 38562.5, 38566); pursue measures that implement reduction strategies covering the State's GHG emissions in furtherance of California's mandate to reduce GHG emissions to the 1990 level by 2020 and 40 percent below the 1990 level by December 31, 2030. In addition, target and achieve carbon neutrality in California no later than 2045, pursuant to SB 100 (Ch. 312, Stats. of 2018, De León), and maintain net negative emissions thereafter in accordance with Executive Order B-55-18.
6. Lead the transition of California's medium- and heavy-duty transportation sector from internal combustion to all electric powertrains. Promote this development alongside the manufacturer sales requirements established in the ACT regulation to support ZEV sales and Executive Order N-79-20 setting a course to transition truck and bus fleets to zero-emission by 2045 with earlier targets for key segments including drayage operations to ZE by 2035.

7. 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 GHG emissions, criteria pollutants, petroleum-based transportation fuels, and TAC emissions.
8. Incentivize and support emerging zero-emission technology that will be needed to achieve CARB's SIP goals.
9. Achieve emission reductions that are real, permanent, quantifiable, verifiable, and enforceable (Health & Safety Code Sections 38560, 38562(d)(1)).
10. Provide market certainty for zero-emission technologies and fueling infrastructure to guide the acceleration of the development of environmentally superior medium- and heavy-duty vehicles that will continue to deliver performance, utility, and safety demanded by the market.
11. Take steps to ensure all Californians can live, work, and play in a healthful environment free from harmful exposure to air pollution. Protect and preserve public health and well-being, and prevent irritation to the senses, interference with visibility, and damage to vegetation and property (Health & Safety Code Section 43000(b)) in recognition that the emission of air pollutants from motor vehicles is the primary cause of air pollution in many parts of the State (Health & Safety Code Section 43000(a)).
12. Spur economic activity of zero-emission technologies in the medium- and heavy-duty vehicle sectors. Incentivize innovation that will transition California's economy into greater use of clean and sustainable zero-emission technologies and promote increased economic and employment benefits that will accompany this transition (AB 1493, Section 1(g); Health & Safety Code Section 38501(e)).

D. Description of Alternatives

Detailed descriptions of project alternatives are presented below. The analysis that follows the descriptions of the alternatives includes a discussion of the degree to which each alternative meets the basic project objectives, and the degree to which each alternative avoids a potentially significant impact identified in Chapter 4.

1. Alternative 1: No Project Alternative

a) Alternative 1 Description

Alternative 1, the No Project Alternative, is included to disclose environmental information that is important for considering the Proposed Project. The No Project Alternative is included only to assist in the analysis and consideration of this portion of

the Proposed Project and the action alternatives. 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 State 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” (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 Proposed Project would not occur. Existing conditions would continue, and truck sales would continue as they have been to date, and in line with the projected ZEV sales from the ACT regulation which would result in about 280,000 ZEVs by 2035.

b) Alternative 1 Discussion

i) Environmental Impacts

There would be no new environmental impacts under the No Project Alternative compared to 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 and, therefore, new hydrogen fueling stations would not be developed under the existing regulation. Thus, no impacts related to new or expanded facilities would occur under the No Project Alternative.

Beneficial impacts resulting from the Proposed Project would not occur under the No Project Alternative. This would include no reduction of criteria and GHG beyond what is required under existing regulations and no reduction in energy use and would not protect public health. In addition to failing to meet project objectives, this would put the No Project Alternative at a substantial environmental disadvantage, compared to the Proposed Project.

The No Project Alternative would fail to support the manufacture sales of ZEVs required in the ACT regulation and likewise, may fail to meet many of the project objectives listed in Chapter 2 (and reproduced above), because criteria pollutant and GHG reductions would not be accelerated in the manner necessary to achieve air quality standards and climate goals. Public and private fleets would lack the regulatory incentive to purchase ZEVs, which would delay the transition to a sustainable zero-emission truck market.

ii) Objectives

The No Project Alternative was rejected because it fails to meet the Proposed Project objectives 1 through 12 and would not result in any criteria pollutant nor GHG

emissions reductions beyond the baseline. This alternative would simply maintain business as usual and would not increase ZEV deployments.

2. Alternative 2: Less Stringent ZEV Purchase Requirement

a) Alternative 2 Description

Alternative 2 is a less stringent alternative to the Proposed Project. This alternative is one of several suggested by the California Council for Environmental and Economic Balance (CEEB) and applies to the same fleets as the Proposed Project. This alternative is structured as a cleaner combustion option that would count engines certified to the Heavy-Duty Omnibus regulation equivalent to a ZEV purchase for the same regulated fleets as the Proposed Project.⁷⁷ This alternative is structured as a cleaner combustion option that would count engines certified to the Heavy-Duty Omnibus regulation equivalent to a ZEV purchase for the same regulated fleets as the Proposed Project. Under this alternative, regulated fleets would have the option to meet compliance requirements by purchasing a combination of ZEVs or engines certified to the Heavy-Duty Omnibus regulation requirement starting in 2024.

All medium- and heavy-duty engines sold in California must be certified to strict emission standards regardless of fuel type. Starting in 2024, the Heavy-Duty Omnibus regulation requires engines certified in California to be certified to emissions standards that are 75 percent to 90 percent lower than U.S. EPA certified engines and to meet additional requirements that ensure real world emissions remain low for a longer period of time in all modes of operation through improved test procedures, lengthened warranty, strengthened durability demonstrations, and other emissions control requirements.⁷⁸ The new engine certification standards are expected to reduce real world NOx emissions by about 90 percent over the life of the vehicle when engines are newly purchased.

In this alternative, starting in 2024, the same fleets affected by the Proposed Project would be required to purchase either ZEVs or vehicles with engines certified to the California Heavy-Duty Omnibus engine standards. For State and local government fleets, this alternative is not expected to result in any changes from the baseline because these fleets already buy new vehicles with California certified engines. For drayage trucks and high priority and federal fleets, the proposed alternative would result in accelerated emissions benefits and increased costs when compared to the baseline, as some of the fleets that would have otherwise normally purchased used

⁷⁷ California Council for Economic and Environmental Balance, [Re:Comments on Advanced Clean Fleets Proposed Regulation and Alternatives for the Environmental Analysis](https://www.arb.ca.gov/lists/com-attach/29-acf-comments-ws-UDNUMVUxUGZWMIcl.pdf), 2021 (web link: <https://www.arb.ca.gov/lists/com-attach/29-acf-comments-ws-UDNUMVUxUGZWMIcl.pdf>, last accessed August 2022).

⁷⁸ California Air Resources Board, [Heavy-Duty Omnibus: Appendix D – Emissions Inventory and Results for the Proposed Amendments](https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2020/hdomnibuslownox/appd.pdf), 2020 (web link: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2020/hdomnibuslownox/appd.pdf>, last accessed August 2021).

engines would now be assumed to purchase new California Omnibus certified engines and would not purchase any more ZEVs. For drayage fleets, pre-2024 MY trucks would continue to be removed from the CARB drayage online reporting system at the end of their useful life. Under this alternative, the number of ZEVs would not be expected to increase beyond the baseline from the ACT regulation.

When compared to the Proposed Project, this alternative would result in approximately 641,000 fewer ZEVs deployed by 2050, lower criteria emissions benefits, lower health benefits, and lower climate emissions reductions benefits as discussed in the following sections.

b) Alternative 2 Discussion

i) Environmental Impacts

Alternative 2 would result in no additional ZEV sales when compared to the baseline and significantly lower ZEV sales than the Proposed Project and would therefore have no environmental impacts related to ZEV manufacturing and deployment. As a result, when compared to the Proposed Project, there would be no environmental impacts related to ZEV infrastructure installations and no construction-related impacts to biological resources, geology and soil, cultural resources, and hydrology and water quality, associated with installation of electric vehicle charging/refueling infrastructure.

Alternative 2 would increase deployments of California certified engines instead of federal certified engines. All engines, regardless of certification levels, are generally expected to be manufactured in the same facilities and the small differences between federal and California engines is expected to result in minimal environmental impacts. This alternative has the potential to result in modifications or expansions to existing engine manufacturing plants, and an associated increase in construction-related impacts to biological resources, geology and soil, cultural resources, and hydrology and water quality. Therefore, Alternative 2 would result in no new environmental impacts associated with the elimination of required ZEV sales because compliance responses would remain unchanged and may result in construction-related impacts from the expansion of engine manufacturing facilities.

Beneficial impacts resulting from Alternative 2 would be slight and significantly less than the Proposed Project. Alternative 2 would include some NO_x criteria pollutant reductions, minimal toxic air contaminant reductions, and no GHG benefits when compared to the baseline and would provide minimal benefits to protect public health. In addition to failing to meet many project objectives, this would put Alternative 2 at a substantial environmental disadvantage, compared to the Proposed Project.

Similar to the No Project Alternative, Alternative 2 would fail to support the manufacturer sales requirements of ZEVs in the ACT regulation and other related programs and would fail to meet most of the project objectives listed in Chapter 2

(and reproduced above), because there would be minimal to no progress towards achieving air quality standards and climate objectives. Therefore, the primary goals of the Proposed Project would not be achieved using Alternative 2.

ii) Objectives

This alternative was rejected because it fails to meet the primary ZEV-related objectives 1, 6, 8, 10, and 12. These objectives seek to accelerate deployment of ZEVs, transition the medium-and heavy-duty transportation sector to electric powertrains, incentive, provide market certainty, and spur economic activity for zero emission technologies. The less-stringent alternative would result in no ZEV deployments, no ZEV-related economic activity, and no ZEV infrastructure build-out. Additionally, this alternative fails to meet goals outlined in Executive Orders N-79-20 and B-55-18 and does not support emerging zero-emission technology needed to achieve CARB's SIP goals. Furthermore, this alternative was rejected because it fails to meet California's climate goals and GHG-related objectives 3, 5, and 9 because the less stringent alternative provides no GHG benefits. Also, this alternative is less effective at meeting criteria pollutant and TAC emissions reductions program objectives 4, and 7. Emissions reductions achieved under this alternative would result in less NOx benefits (44 percent less) and minimal PM benefits (94 percent less) when compared to the Proposed Project. Finally, this alternative was rejected because it is less effective in meeting program objectives 2 and 11 compared to the Proposed Project.

Analyses of the estimated air quality and climate benefits, and anticipated health benefits for this alternative are found in the ISOR.

3. Alternative 3: Best Available Control Technology (BACT) Concept

a) Alternative 3 Description

This alternative is a modification to the Proposed Project and would allow for the use of the best available control technology for compliance. The order of BACT would be a ZEV, then NZEV, then the cleanest certified engine. This alternative was suggested by the California Natural Gas Vehicle Coalition (CNGVC) and proposes to expand what is considered to be ZEVs that are not available based on costs, availability of reliable infrastructure, and if ZEVs are not able to be a one-to-one replacement for existing ICEVs and many of these are undefined or are already included in the Proposed Project. For simplicity, this analysis focuses on the core effect of the suggested alternative when ZEVs are not available. This concept builds on the Heavy-Duty Omnibus regulation that sets new NOx engine standards and other emission control requirements. The Heavy-Duty Omnibus regulation also includes optional certification standard and a credit average, banking and trading system.

For drayage trucks, this alternative would potentially result in fewer ZEVs and more ICEVs because the Proposed Project only allows for ZEVs. For high priority and federal fleets, the alternative could result in more ZEVs assuming the fleet owner would

otherwise purchase a NZEV when a suitable ZEV was available because the Proposed project treats ZEVs and NZEVs equally. It could increase the number of cleaner combustion engines if ZEVs and NZEV are not available assuming engines certified to the HD Omnibus optional standards become available. For state and local government fleets there would be no change except when ZEV and NZEVs are not available because the Proposed Project already requires them to purchase ZEVs before NZEVs. If either is not available, the alternative could increase the number of engines certified to the Heavy-Duty Omnibus optional standards assuming they become available.

The proposed concept could result in cleaner engines in some fleets but would not achieve new NOx reductions overall because engine manufacturers can average their emissions to comply with the Heavy-Duty Omnibus regulation for all model years. If CNG engines are certified to the optional standards, the proposed project could require the purchase of some CNG engines along with ZEVs. This would likely result in the need for CNG infrastructure for small number of vehicles and potentially result in poorly utilized fueling and maintenance infrastructure and concerns about stranded assets for fleets that are not already using CNG.

Overall, this alternative could result in some emission benefits from increasing ZEVs in high priority fleets that would otherwise purchase NZEVs, but could reduce the number of ZEVs in drayage. It would not achieve any new benefits from cleaner combustion engines compared to the Proposed Project because manufacturers can average their emissions to comply in the HD Omnibus regulation.

This alternative is rejected because it adds administrative burden to account for cleaner engines that are already accounted for in the HD Omnibus regulation and will not achieve any new reductions by including them in the Proposed Project.

This alternative also suggests that using renewable fuels such as renewable natural gas (RNG) and renewable diesel (RD) will achieve additional GHG benefits. However, any requirement to use renewable fuels would not result in additional GHG benefits because low carbon fuels like RNG and RD are accounted for under California's Low Carbon Fuel Standard (LCFS) program and the federal Renewable Fuel Standard (RFS).

The number of class 2b-8 CNG vehicles projected for 2025 is already relatively small at approximately one percent of California's statewide heavy-duty vehicles. Allowing a narrow exemption for an extremely small percentage of California's heavy-duty vehicles could result in unnecessary financial risk and the potential for stranded assets as ZEV technology improves and ZEV infrastructure expands. Staff is also concerned that the cost to operate existing CNG fueling stations and maintenance shops will grow with declining usage.

b) Alternative 3 Discussion

i) Environmental Impacts

Alternative 3 would result in lower overall ZEV sales than the proposed project and would therefore have reduced environmental impacts related to ZEV manufacturing and deployment. Decreased environmental impacts would be related to fewer ZEV infrastructure installations needed with the smaller scope reducing construction related activities and therefore lessening short-term construction-related impacts to biological resources, geology and soil, cultural resources, and hydrology and water quality, associated with installation of electric vehicle charging/refueling infrastructure.

Alternative 3 would produce fewer operational impacts as compared to the Proposed Project because of the reduced number of ZEVs deployed. However, it would be expected that although such impacts would be less, potentially significant and unavoidable impacts to aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation and traffic, and utility and service systems from implementation of Alternative 3 could still occur. This is because the compliance responses to a less stringent ZEV requirement would still require similar infrastructure and facility development to serve the introduction of ZEVs into the marketplace from the Proposed Project. Therefore, this alternative would not avoid the impacts associated with the Proposed Project nor serve many of the objectives of the Proposed Project.

Alternative 3 would also increase deployments of California certified engines instead of ZEVs and NZEVs. All engines, regardless of certification levels, are generally expected to be manufactured in the same facilities and the small differences between federal and California engines is expected to result in minimal environmental impacts. Alternative 3 also has the potential to increase deployments for a small number of CNG vehicles which may result in additional CNG infrastructure. Any environmental impacts would be related to increases in construction-related activities associated with installation of CNG refueling infrastructure and an increase in the potential or intensity of those significant adverse impacts identified for the Proposed ACF Regulation in Chapter 4, Impact Analysis and Mitigation.

Beneficial air quality, climate, and energy effects would be anticipated to be less than those that would occur with implementation of the Proposed Project because more California certified and CNG engines would be introduced while fewer ZEVs would be deployed. No NO_x reductions would occur beyond what is already expected from the HD Omnibus regulation. GHG benefits would be less than the Proposed Project and any GHG benefits achieved from the use of RNG or RD would be attributed to LCFS and RFS. Therefore, the primary goals of this Proposed Project would not be achieved using this alternative.

ii) Objectives

This alternative is rejected because it would be less effective than the Proposed Project at meeting ZEV-related project objectives 1, 6, 8, 10, and 12 and result in fewer ZEVs, less ZEV infrastructure build-out, less ZEV innovation, and less ZEV-related economic activity. This alternative is also less effective at meeting GHG-related goals described in project objectives 3, 5, and 9. This alternative may be more effective at meeting project objective 4 when compared to the Proposed Project because it forces fleets to purchase vehicles compliant with the optional 0.010 NOx standard beginning in 2027 rather than purchasing any ICEV. Finally, Alternative 3 would be less effective than the Proposed Project at meeting objectives 2, 7, and 11.

E. Alternatives Considered but Rejected

Additional alternatives were considered during development of the alternatives to the Proposed Project. 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. Alternative 4: Focus ZEV Requirements on Return to Base Concept

This alternative was based on a comment proposed by California Council for Environmental and Economic Balance (CCEEB) with four concepts. The first concept proposed by CCEEB, the “clean combustion” concept, is already described in detail as Alternative 2. The second concept was described as changing the private and federal fleet requirements to a purchase mandate similar to the requirements for state and local government fleets. This concept is now the primary compliance requirement for high priority and federal fleets in the Proposed Project and was not evaluated as an alternative since it is substantially similar to the Proposed Project. The third concept was to include an alternative that would exempt certain ICEV that are more challenging to transition to ZEV by 2045 if they utilize low-carbon liquid fuels. This concept was not evaluated as an alternative because the Proposed Project now includes built in exemptions to allow ICEV purchases if ZEVs are not available or do not meet daily usage needs, and low carbon fuels are already part of the LCFS regulation and would not result in new emission benefits than is already expected from the baseline. The fourth concept was described as a return-to-base concept that would exempt all fleets from the regulation except those that can rely wholly on depot charging. This fourth concept is evaluated here as Alternative 4.

Alternative 4 is less stringent than the Proposed Project because it would limit ZEV deployments to fleets that utilize centralized depot charging as the primary BEV charging strategy and would not apply to other fleets. As such, this alternative would apply to a subset of fleets subject to the Proposed Project but would be infeasible to implement because the concept is based on fleet usage and it would be difficult to

ascertain which fleets are affected each year and would present issues with assessing whether operational changes are for legitimate business reasons or as a loophole to be excluded from the rule and would be impossible to enforce. In addition to being infeasible, this alternative would likely result in fewer ZEV purchases than the Proposed Project, therefore it would achieve fewer emission reductions. Also, because this alternative also would not apply to most regional or long-haul applications, it would not provide the market certainty to spur development of a regional network of charging and hydrogen fueling stations. This alternative has the potential to create a market imbalance for fleets that compete in the same markets with different business models and would create an incentive for fleet owners to change their operating characteristics to be excluded from the requirements.

This alternative was rejected because it is infeasible, and it would be less effective than the Proposed project at meeting the project objectives. This alternative fails to meet objectives 10 and 12 of the Proposed Project, as it does not provide market certainty or spur innovation for zero-emission technologies and fueling infrastructure. In addition, this alternative would be less effective at meeting climate and air quality goals described in objectives 1, 3, 4, 5, 7, 9, and 11. Furthermore, this alternative would not be as effective as the Proposed Project at achieving 2, 6, and 8.

2. Alternative 5: Match ACT and ACF ZEV Deployments Exactly

This alternative, proposed by the Truck and Engine Manufacturers Association (EMA), would require fleets to purchase the same types of commercial ZEVs and in the same quantities as those produced by the manufacturers subject to the ACT rule. Note that EMA also submitted other comments relating to the ACT regulation that are outside the scope of this regulation and are not evaluated as alternatives to the Proposed Project or are evaluated in other alternatives.

This alternative would apply to both high priority and federal fleets, as well as state and local government agency fleets to various degrees. The basic concept would require fleets to purchase ZEVs on a schedule that matches the number of ZEV sales required by the ACT regulation starting with the 2024 model year. This alternative would shift where ZEV sales occur but would result in no more ZEVs nor NZEVs than the baseline nor what would otherwise be expected under the No Project Alternative. This alternative would increase administrative burden to implement the fleet requirements and would primarily distribute costs between manufacturers and regulated fleets without increasing ZEV and without achieving any new emissions reductions.

This alternative is rejected because it would fail to meet all objectives (1 through 12).

3. Alternative 6: Exempt Small Fleets and Interstate Truckers

This alternative is based on a suggestion by the Owner-Operator Independent Drivers Association (OOIDA) as a modification to the Proposed Project. The alternative would exempt independent owner-operators and small-business motor carriers operating in California that are managed by, or dispatched by, a “controlling party” from the regulation. This alternative would also exempt any interstate truck owner or operator that drives fewer than 7,500 miles in California in any compliance year. This alternative would be a modification of the requirements for high priority fleets.

This alternative would effectively exempt all trucks operated less than 7500 miles per year in California and would exclude all small business motor carriers that operate under common ownership and control by major fleet operators and motor carriers regardless of annual mileage. This alternative would result in fewer ZEVs than the Proposed Project and would be less stringent for major fleets that operate under a business model using common ownership and control compared to the fleets who own and operate their own trucks. This would likely result in more fleets shifting their business models to reduce the number of regulated trucks which would in turn result in fewer overall ZEVs and fewer emission benefits in disproportionately affected communities with high truck traffic.

This alternative was rejected because it is less effective at meeting objectives 1 through 12 when compared to the proposed project.

4. Alternative 7: Extend the Timeline for Group 1 Vehicles and Exclude All Other Vehicles

This alternative would modify the high priority and federal fleet requirements of the Proposed Project and is based on an alternative suggested by the California Trucking Association (CTA). This alternative would extend the compliance schedule for Group 1 vehicles (light-duty package delivery vehicles, box trucks, vans, buses with two axles, and yard tractors) by 6 years and would exclude all Group 2 and Group 3 vehicles (tractors and all other trucks and buses). The alternative does not apply to state and local government fleets nor to drayage fleets.

This proposal is less stringent than the Proposed Project because it excludes most vehicles in high priority fleets and significantly extends the compliance schedule for Group 1 vehicles. This alternative would not increase the number of ZEVs beyond what manufacturers needed to produce to comply with the ACT regulation. The ACT regulation is already reflected in the Baseline. This alternative would primarily shift their sales to Group 1 vehicles (like passenger vans, delivery vans and box trucks) and drayage tractors and away from work trucks and truck tractors used outside of drayage service. Therefore, this alternative is expected to provide no NOx, PM, nor GHG emission benefits compared to the baseline.

This alternative also undermines objectives to reduce emissions in disproportionately affected communities with high truck traffic and is rejected because it fails to meet all project objectives 1 through 12.

5. Alternative 8: Credit for ZEV or Natural Gas Vehicle

This alternative would give credit to count natural gas trucks the same as ZEV until the final fleet compliance date or until 2040 when the ZEV sales requirements begin. This concept is based on comments from the Western States Trucking Association (WSTA) and CleanFleets.net indicating that a fleet owner should receive a “one to one” credit for the purchase of any weight class ZEV or a natural gas truck and the benefits of natural gas engines should be evaluated at least through 2030. The commenter suggests that the concept of early credit is similar to that included in the Truck and Bus regulation where the diesel PM reductions from the early purchase of alternative fueled engines or diesel engines already equipped with PM filters were recognized.

We interpret this alternative as a modification of the Proposed Project where a fleet owner could count the purchase of an ICEV that uses natural gas in place of a ZEV on the same schedules and that one fewer ZEV would be deployed for every natural gas ICEV added to the fleet through 2040 until the 100 percent ZEV sales requirements begin.

The Truck and Bus regulation was approved in 2008 and requires all diesel engines to upgrade to 2010 model year or newer engines by January 1, 2023, primarily to achieve NOx and PM reductions. The 2010 engine standard was the cleanest at the time. The purchase of an alternative fueled engine is an expected compliance response to the Truck and Bus regulation, or other existing CARB and South Coast fleet rules (such as rule 1196) and are reflected in the baseline. The Proposed Project already recognizes the benefits of adding ZEVs early, but a natural gas engine cannot be a one-to-one equivalent because CNG engines cannot eliminate NOx, PM nor GHG emissions and only those certified to the optional standard prior to 2024 would reduce NOx compared to other combustion engines.

Starting 2024, all engines sold in California must be certified to the Heavy-Duty Omnibus requirements and the emissions from diesel and natural gas engines will be essentially the same. The Heavy-Duty Omnibus regulation also allows engine manufacturers to average their engine emissions to meet the standards so there would be no new NOx reductions from purchasing combustion engines than is already expected in the baseline due to the Heavy-Duty Omnibus regulation. ICEV purchases would only result in NOx emissions reductions relative to the baseline if purchased earlier than normal but would not reduce GHG emissions but would still result in fewer benefits than upgrading to a ZEV. Relative to the Proposed Project each purchase of a natural gas ICEV instead of a ZEV would increase NOx, PM and GHG emissions.

In general, this alternative would result in fewer ZEVs and associated infrastructure than the Proposed Project and could result in no increase in ZEVs prior to 2040 when compared to the baseline depending on the compliance response. The alternative would also shift combustion engine purchases from diesel and gasoline to natural gas. The business-as-usual replacement of ICEVs to natural gas engines and the associated infrastructure would increase costs without providing any benefits relative to the baseline. This alternative would be business-as-usual for fleets that already purchase CNG trucks (about 1 percent of the trucks) and would not achieve any benefits from these fleets compared to the baseline. This alternative would still require an accelerated transition to ZEVs starting in 2040 and could result in stranded assets for natural gas infrastructure installed to convert a fleet to CNG starting in 2024 and then to ZEVs starting in 2040.

If assuming the compliance response was to comply with natural gas the following would be the outcome. State and Local Government Fleets would have no criteria pollutant nor GHG emission reductions compared to the baseline prior to 2040. Drayage fleets, Federal and High Priority fleets would have some NOx reductions in the first 10 years because of accelerate replacements but would not get any GHG reductions when compared to the baseline. Those vehicles would be able to operate for their useful life (13 to 18 years) well past 2050 where there would be little to no benefits compared to the baseline because most engines would be 2024 model year engines by then. When compared to the Proposed Project, this alternative would result substantially fewer ZEVs, and significantly lower NOx, PM and GHG benefits.

This alternative was rejected because it either fails to meet or makes little progress toward meeting project objectives 1, 3, 5, 6, 10, 11, and 12, and would result in fewer ZEVs, less market certainty for ZEV technologies and infrastructure build-out, less ZEV innovation, and less ZEV-related economic activity. This alternative is also less effective in meeting project objectives 2, 4, 7, 8, 9 when compared to the Proposed Project.

6. Alternative 9: Exempt Refuse Fleets Subject to SB 1383

This alternative proposes to exempt a solid waste fleet owner until at least 2040 from ZEV requirements if they meet all of the following criteria: the fleet must be located in-state, owned by or contracted with municipalities implementing SB1383, collecting and processing in-state organic waste into RNG or working in partnership with a facility producing in-state RNG from their organic waste, and using RNG in their own solid waste collection vehicles. This alternative is based on comments submitted by CR&R Incorporated and Coalition of Waste Management Providers. This alternative is less stringent because it will exempt a small class of fleet owners and qualifying vehicles, resulting in more emissions than the Proposed Project.

Currently, about half of the refuse trucks that operate in California are fueled by natural gas and the other half are fueled by diesel.⁷⁹ Based on this distribution, refuse fleets would be impacted unequally under this alternative and refuse fleets that qualify for this exemption would be granted additional time to purchase and deploy ZEVs. However, refuse fleets that operate diesel fueled vehicles would not be eligible to delay ZEV deployments. Additionally, refuse vehicles operate in and around neighborhoods with a duty cycle and usage pattern conducive to using a zero-emission powertrain, e.g., low speed, frequent breaking, and returning to base at night. This alternative would delay the transition to a zero-emission transportation system and would simply prolong the business-as-usual conditions for these fleets.

Natural gas engine NOx emissions are no different than diesel starting in 2024 because of the Heavy-Duty Omnibus regulation as previously described. In addition, natural gas vehicles are not expected to achieve any GHG reductions and generally have a 15 to 20 percent lower fuel economy than their diesel counterparts⁸⁰ and, after factoring in upstream methane emissions, are more harmful to the climate than diesel trucks.⁸¹ Any benefits and costs associated with the use of RNG and other low carbon transportation fuels are already reflected in the baseline due to the LCFS regulation and would not be new reductions.

Supporters of this alternative have stated that transitioning to ZEV technologies and infrastructure would result in stranded assets because the RNG recovered from the SB1383 mandated conversion of organic waste would diminish their ability to use this RNG in their collection vehicles. However, staff believes that the Proposed Project does not conflict with the organic waste product procurement targets established by enacting SB1383 since the recovered organic waste product procurement targets for jurisdictions does not require them to purchase RNG as a transportation fuel. In fact, a recent CPUC decision that implements SB1440⁸² creates a viable alternative to CARB's LCFS for RNG purchased by utilities and are used in the residential sector. Additionally, LCFS credits have a 10-year guarantee after a digester project is operational and CNG trucks have an average vehicle lifetime of 15 years and would not be required to be replaced in less than 18 year. Therefore, staff does not foresee the Proposed Project ZEV purchase mandate as a barrier for refuse fleets recovering

⁷⁹ California Air Resources Board, [EMFAC 2021 Database](https://arb.ca.gov/emfac/), 2021 (web link: <https://arb.ca.gov/emfac/>, last accessed August 2022).

⁸⁰ California Energy Commission, [Energy Almanac – Transportation Natural Gas in California](https://ww2.energy.ca.gov/almanac/transportation_data/cng-lng.html), 2019 (web link: https://ww2.energy.ca.gov/almanac/transportation_data/cng-lng.html, last accessed August 2022).

⁸¹ International Council on Clean Transportation, [A comparison of NOx emissions from heavy-duty diesel, natural gas, and electric vehicles](https://theicct.org/sites/default/files/publications/low-nox-hdvs-compared-sept21.pdf), 2021 (web link: <https://theicct.org/sites/default/files/publications/low-nox-hdvs-compared-sept21.pdf>, last accessed August 2022).

⁸² California Public Utilities Commission, [Decision 22-02-025 Implementing SB 1440 Biomethane Procurement Program](https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M454/K335/454335009.PDF), 2022 (web link: <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M454/K335/454335009.PDF>, last accessed August 2022).

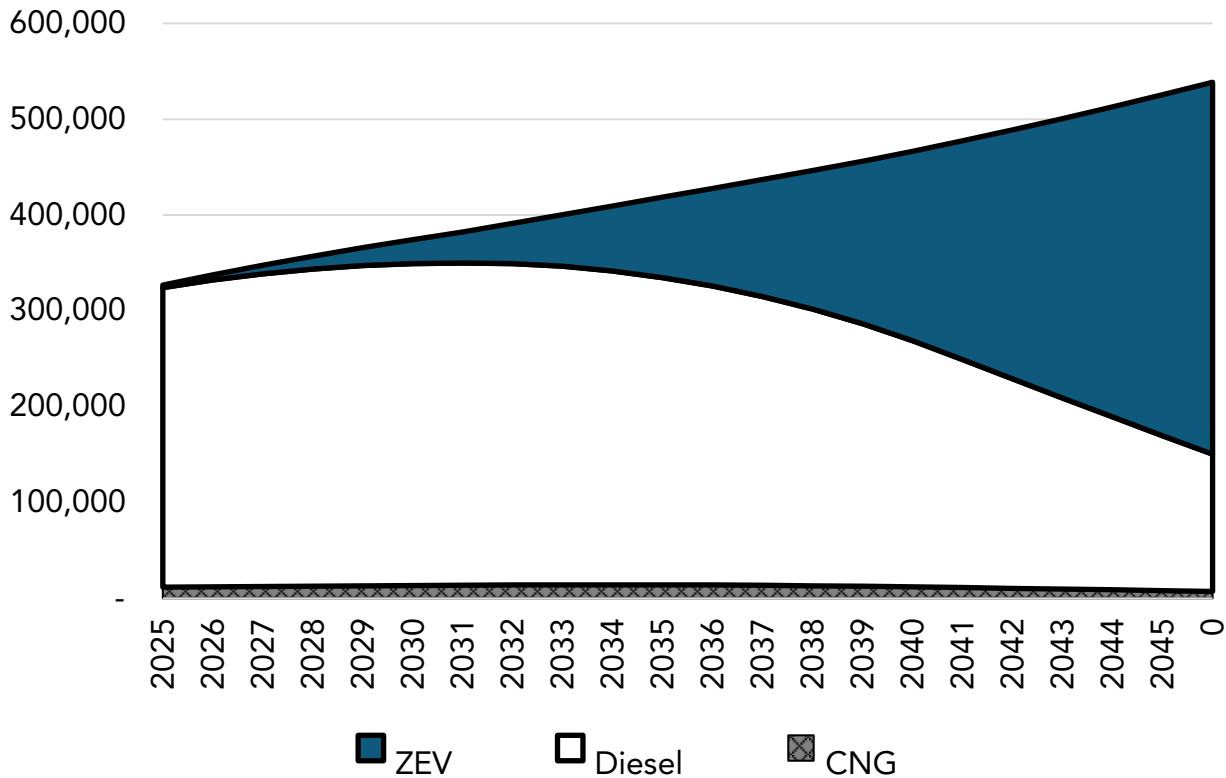
investments in their existing CNG vehicles, or even for new vehicles purchased up until the ZEV mandates take effect. In addition to directing RNG away from the transportation sector, SB1440 creates RNG procurement targets for the investor-owned utilities and prohibits them from procuring biomethane from organic diversion facilities that do not commit to exclusively purchasing and/or leasing class 8 NZEVs or ZEVs. CPUC's "Renewable Gas Standard" (RGS) will be re-evaluated in 2025 and this review includes limiting RNG procurement contracts to facilities that commit to purchasing or leasing exclusively class 8 ZEVs.

Finally, California has the potential to produce a limited amount of RNG from dairy, landfill, municipal solid waste, and wastewater treatment facility sources.⁸³ This alternative would prolong CNG vehicle use that is increasingly competing with other, harder-to-decarbonize sectors than transportation. CARB's AB 32 Scoping Plan⁸⁴ scenario #3 (Figure 4) predicts CNG vehicle growth rate to be relatively flat and insignificant overall, which should be a clear indication of the need to utilize RNG in other, harder-to-decarbonize sectors than transportation, or as a feedstock for energy and materials.

⁸³ Institute of Transportation Studies, [The Feasibility of Renewable Natural Gas as a Large-Scale, Low Carbon Substitute](https://www2.arb.ca.gov/sites/default/files/classic/research/apr/past/13-307.pdf), 2016 (web link: <https://www2.arb.ca.gov/sites/default/files/classic/research/apr/past/13-307.pdf>, last accessed August 2022).

⁸⁴ California Air Resources Board, [The AB 32 Scoping Plan \(draft\)](https://www2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents), 2022 (web link: <https://www2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>, last accessed August 2022).

Figure 4: Stacked area chart depicting heavy-duty vehicle stocks for compressed natural gas, diesel, and zero emission vehicles projected out from 2025 to 2045 as predicted by alternative 3.



Therefore, this alternative is rejected because it would be less effective than the Proposed Project at meeting ZEV-related project objectives 1, 6, 8, 10, and 12 as it would result in fewer ZEVs, less ZEV infrastructure build-out, less ZEV innovation and less ZEV-related economic activity. This alternative also fails to meet 100 percent ZEV targets for refuse trucks by 2040 established in CARB Resolution 20-19.⁸⁵ In addition, this alternative is also less effective at meeting GHG-related goals described in project objectives 3, 5, and 9. Furthermore, this alternative would be less effective than the Proposed Project at meeting objectives 2, 4, 7, and 11.

⁸⁵ California Air Resources Board, [Public Hearing to Consider The Proposed Advanced Clean Trucks Regulation Resolution 20-19](https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2020/res20-19.pdf), 2020 (web link: <https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2020/res20-19.pdf>, last accessed August 2022).

8.0 REFERENCES

1. As defined in SB 1 (2017), the useful life of a vehicle shall be 800,000 vehicle miles traveled or 18 years from the model year the engine and emission control system are first certified for use in self-propelled commercial motor vehicles by the state board or other applicable state and federal agencies.
2. Per CCR Section 1963, Title 13, an NZEV is a hybrid electric vehicle that is capable of a minimum all-electric range of equal to or exceeding criteria specified in 17 CCR Section 95663(d) (through the 2029 model year) and 75 miles (starting with the 2030 model year) electric energy stored on-board the vehicle.
3. California Air Resources Board, [Sustainable Freight Action Plan](https://ww2.arb.ca.gov/sites/default/files/2019-10/CSFAP_FINAL_07272016.pdf), 2016 (web link: https://ww2.arb.ca.gov/sites/default/files/2019-10/CSFAP_FINAL_07272016.pdf, last accessed August 2022).
4. California Air Resources Board, [Mobile Source Strategy](https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf), 2016. (web link: <https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf>, last accessed August 2022).
5. California Air Resources Board, [ZEV Action Plan Update](https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf), 2018 (web link: <https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf>, last accessed August 2022).
6. Governor Brown, [Governor's letter to Chair Nichols Signed by Edmund G. \(Jerry\) Brown Jr.](https://www.arb.ca.gov/msprog/zero_emission_fleet_letter_080118.pdf?utm_medium=email&utm_source=govdelivery), 2018 (web link: https://www.arb.ca.gov/msprog/zero_emission_fleet_letter_080118.pdf?utm_medium=email&utm_source=govdelivery, last accessed August 2022).
7. U.S. Environmental Protection Agency. 2016. [Final Rule for Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles - Phase 2. Final Rule](https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf), 2016 (web link: <https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf>, last accessed August 2022).
8. California Air Resources Board, [Advanced Clean Cars Rulemaking Package](https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program), 2012 (web link: <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program>, last accessed August 2022).
9. California Air Resources Board, [2018 ZEV Action Plan Update](https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf), 2018 (web link: <https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf>, last accessed August 2022).
10. California Legislature, [Assembly Bill No. 2061](https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB2061), 2022 (web link: https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB2061, last accessed August 2022).
11. California Public Utilities Commission, [General Rulemaking Proceeding for Developing Regulations, Guidelines, and Policies for Implementing SB 350 and AB 802](https://www.energy.ca.gov/rules-and-regulations/energy-suppliers-reporting/clean-energy-and-pollution-reduction-act-sb-350#:~:text=What%20Does%20SB%20350%20Do,%2C%20biomass%2C%20geothermal%20and%20others), 2017 (web link: <https://www.energy.ca.gov/rules-and-regulations/energy-suppliers-reporting/clean-energy-and-pollution-reduction-act-sb-350#:~:text=What%20Does%20SB%20350%20Do,%2C%20biomass%2C%20geothermal%20and%20others>, last accessed August 2022).

12. "Near-zero-emissions vehicle" or "NZEV" means a vehicle as defined in title 13, CCR section 1963(c)(16) that is capable of operating like a ZEV using electricity stored on-board the vehicle for a minimum number of miles, or "all-electric range," as specified and tested in accordance with section 1037.150p(2)(ii) of "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," as last amended September 9, 2021.
13. "Near-zero-emissions vehicle" or "NZEV" means a vehicle as defined in title 13, CCR section 1963(c)(16) that is capable of operating like a ZEV using electricity stored on-board the vehicle for a minimum number of miles, or "all-electric range," as specified and tested in accordance with section 1037.150p(2)(ii) of "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," as last amended September 9, 2021.
14. BYD, [Buy America](https://en.byd.com/news/buy-america/), 2022 (web link: <https://en.byd.com/news/buy-america/>, last accessed August 2022).
15. California Energy Commission, [Assembly Bill 2127 – Electric Vehicle Charging Infrastructure Assessment](https://efiling.energy.ca.gov/getdocument.aspx?tn=238853), 2021 (web link: <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>, last accessed August 2022).
16. California Fuel Cell Partnership, [A Vision for Freight Movement in California and Beyond](https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%9494Today%2C%20the,by%20200%20heavy%2Dduty%20truck), 2021 (web link: <https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%9494Today%2C%20the,by%20200%20heavy%2Dduty%20truck>, <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>, last accessed August 2022).
17. California Fuel Cell Partnership, [A Vision for Freight Movement in California and Beyond](https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%9494Today%2C%20the,by%20200%20heavy%2Dduty%20truck), 2021 (web link: <https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%9494Today%2C%20the,by%20200%20heavy%2Dduty%20truck>, last accessed August 2022).
18. Separate from the CEQA baseline discussed in this paragraph and used throughout this EA, a second baseline analysis was also evaluated by CARB to determine differences in the analysis and results if the Heavy-Duty Inspection and Maintenance (HD I/M) regulation is approved. This analysis is in the Modified Baseline Analysis Appendix of the ACF ISOR, Appendix I and presents a scenario that anticipates the HD I/M regulation being finalized prior to implementation of the proposed regulation. Only NOx and PM exhaust emissions are incrementally affected under the Modified Baseline because HD I/M is expected to have minimal impact on PM brake wear and GHG emissions. As such, the analysis presented within this EA is considered reasonably conservative and appropriate for the purposes of evaluating the potential physical environmental impacts of the Proposed Project. The HD I/M regulation is considered as part of the cumulative impact analysis provided in Section K of this EA.
19. U.S. Geological Survey. n.d, [Mineral Commodity Summaries Lithium](https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb1-2017-lithi.pdf), 2017 (web link: <https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb1-2017-lithi.pdf>, last accessed August 2022).
20. Mineral Education Coalition. n.d, [Periodic Table of Elements, Platinum](https://mineralseducationcoalition.org/elements/platinum/), 2022 (web link: <https://mineralseducationcoalition.org/elements/platinum/>, last accessed August 2022).

21. Glaister, B and Mudd, G, [The environmental costs of platinum – PGM mining and sustainability: Is the glass half-full or half-empty](#), 2010 (web link: <https://www.sciencedirect.com/science/article/abs/pii/S0892687509003045>, last accessed August 2022).
22. California Energy Commission, [Assembly Bill 2127 – Electric Vehicle Charging Infrastructure Assessment](#), 2021 (web link: <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>, last accessed August 2022).
23. California Air Resources Board, [2022 State Strategy for the State Implementation Plan \(2022 State SIP Strategy\)](#), 2022 (web link: <https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy>, last accessed August 2022).
24. California Fuel Cell Partnership, [A Vision for Freight Movement in California and Beyond](#), 2021 (web link: <https://cafcp.org/blog/california-fuel-cell-partnership-envisions-70000-heavy-duty-fuel-cell-electric-trucks-supported#:~:text=Sacramento%2C%20California%E2%80%94Today%2C%20the,by%20200%20heavy%2Dduty%20truck>, last accessed August 2022).
25. Arnold and Porter, [Hydrogen Fuel Stations in California: A Practical Guide to Permitting and CEQA Review](#), 2015, (web link: https://www.arnoldporter.com/en/perspectives/publications/2015/04/~/_media/7457d6dc9bd7491f8aff1289ab4457e0.ashx, last accessed August 2022).
26. California Air Resources Board, [2022 State Strategy for the State Implementation Plan \(2022 State SIP Strategy\)](#), 2022 (web link: <https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy>, last accessed August 2022).
27. As noted earlier, grid demand response strategies and rate price signals can mitigate some of the new electricity generation needed to serve increased demand for plug-in electric vehicles.
28. California Energy Commission, [Renewables Portfolio Standard- Verification and Compliance](#), 2022 (web link: <https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard>, last accessed August 2022).
29. California Legislature, [Senate Bill No. 100, California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases](#), 2018 (web link: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100, last accessed August 2022).
30. California Energy Commission, [Tracking Progress](#), 2020 (web link: https://www.energy.ca.gov/sites/default/files/2019-12/renewable_ada.pdf, last accessed August 2022).
31. California Air Resources Board, [EMFAC 2021 Database](#), 2021 (web link: <https://arb.ca.gov/emfac/>, last accessed August 2022).
32. The total cumulative emissions reductions for PM_{2.5} and NO_x are converted from tpd into years and assumes 312 operational days per year. Due to rounding errors, the 2024-2050 cumulative totals differ very slightly when compared to the sum values listed.

33. Society of Vertebrate Paleontology, [Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources](https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf), 2010 (web link: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf, last accessed August 2022).
34. California Energy Commission, [Assembly Bill 2127 – Electric Vehicle Charging Infrastructure Assessment](https://efiling.energy.ca.gov/getdocument.aspx?tn=238853), 2021 (web link: <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>, last accessed August 2022).
35. California Energy Commission, [Medium and Heavy -Duty Vehicle Load Shapes](https://www.energy.ca.gov/sites/default/files/2021-09/5%20LBNL-FTD-EAD-HEVI-LOAD%20Medium-%20and%20Heavy-Duty%20Load%20Shapes_ADA.pdf), 2021 (web link: https://www.energy.ca.gov/sites/default/files/2021-09/5%20LBNL-FTD-EAD-HEVI-LOAD%20Medium-%20and%20Heavy-Duty%20Load%20Shapes_ADA.pdf, last accessed August 2022).
36. Tyler H. Ruggles, Jacqueline A. Dowling, Nathan S. Lewis, Ken Caldeira, [Opportunities for flexible electricity loads such as hydrogen production from curtailed generation](https://doi.org/10.1016/j.adapen.2021.100051), *Advances in Applied Energy, Volume 3, 2021, 100051, ISSN 2666-7924*, 2021 (web link: <https://doi.org/10.1016/j.adapen.2021.100051>, last accessed August 2022).
37. European Parliament, [Impact of Shale Gas and Shale Oil Extraction on the Environmental and Human Health](http://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf), 2012 (web link: <http://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf>, last accessed August 2022).
38. Kinhal, Vijayalaxmi, [How Does Mining Affect the Environment](https://greenliving.lovetoknow.com/How_Does_Mining_Affect_the_Environment), 2017 (web link: https://greenliving.lovetoknow.com/How_Does_Mining_Affect_the_Environment, last accessed August 2022).
39. California Environmental Protection Agency, [Lithium-Ion Car Battery Recycling Advisory Group Final Report](https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022_AB-2832_Lithium-Ion-Car-Battery-Recycling-Advisory-Goup-Final-Report.pdf), 2022 (web link: https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022_AB-2832_Lithium-Ion-Car-Battery-Recycling-Advisory-Goup-Final-Report.pdf, last accessed August 2022).
40. Nissan, [Nissan Gives EV Batteries a Second Life](https://global.nissanstories.com/en/releases/4r), 2021 (web link: <https://global.nissanstories.com/en/releases/4r>, last accessed August 2022).
41. South Coast Air Quality Management District, [Draft Guidance Document – Interim CEQA Greenhouse Gas \(GHG\) Significance Threshold](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf), 2008 (web link: [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/ghgattachmente.pdf](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf), last accessed August 2022).
42. As noted earlier, grid demand response strategies and rate price signals can mitigate some of the new electricity generation needed to serve increased demand for plug-in electric vehicles.
43. Sepadi, Maasago M., Martha Chadyiwa, and Vusumuzi Nkosi, [Platinum Mine Workers' Exposure to Dust Particles Emitted at Mine Waste Rock Crusher Plants in Limpopo, South Africa](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7014327/), 2020 (web link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7014327/>, last accessed August 2022).
44. Zeng, Xianlai, Jinhui Li, and Lili Liu, [Solving Spent Lithium-ion Battery Problems in China: Opportunities and Challenges](https://ideas.repec.org/a/eee/rensus/v52y2015icp1759-1767.html), *Renewable and Sustainable Energy Reviews*, 52, 1759-1767, 2015 (web link: <https://ideas.repec.org/a/eee/rensus/v52y2015icp1759-1767.html>, last accessed August 2022).

45. Battery University, ["BU-304a: Safety Concerns with Li-Ion,"](http://batteryuniversity.com/learn/article/safety_concerns_with_li_ion) 2018 (web link: http://batteryuniversity.com/learn/article/safety_concerns_with_li_ion, last accessed August 2022).
46. Health and Safety Executive, [Fuel Cells: Understand the Hazards, Control the Risks](https://www.thenbs.com/PublicationIndex/documents/details?Pub=HSE&DocID=278597), 2004 (web link: <https://www.thenbs.com/PublicationIndex/documents/details?Pub=HSE&DocID=278597>, last accessed August 2022).
47. Jacoby, M, [It's Time to Get Serious About Recycling Lithium-Ion Batteries](https://cen.acs.org/materials/energy-storage/time-serious-recycling-lithium/97/i28). [Chemical & Engineering News](https://cen.acs.org/materials/energy-storage/time-serious-recycling-lithium/97/i28), 2019 (web link: <https://cen.acs.org/materials/energy-storage/time-serious-recycling-lithium/97/i28>, last accessed August 2022).
48. Arnold and Porter, [Hydrogen Fuel Stations in California: A Practical Guide to Permitting and CEQA Review](https://www.arnoldporter.com/en/perspectives/publications/2015/04/~-/media/7457d6dc9bd7491f8aff1289ab4457e0.ashx), 2015 (web link: <https://www.arnoldporter.com/en/perspectives/publications/2015/04/~-/media/7457d6dc9bd7491f8aff1289ab4457e0.ashx>, last accessed August 2022).
49. Health and Safety Executive, [Fuel Cells: Understand the Hazards, Control the Risks](https://www.thenbs.com/PublicationIndex/documents/details?Pub=HSE&DocID=278597), 2004 (web link: <https://www.thenbs.com/PublicationIndex/documents/details?Pub=HSE&DocID=278597>, last accessed August 2022).
50. European Parliament, [Impact of Shale Gas and Shale Oil Extraction on the Environmental and Human Health](http://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf), 2012 (web link: <http://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf>, last accessed August 2022).
51. Environmental Health Perspectives, [Salting the Earth, The Environmental Impact of Oil and Gas Wastewater Spills](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132645/). Environmental Health Perspectives. 124 (12): pp. A230-A235, 2016. (web link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132645/>, last accessed August 2022).
52. Environmental Health Perspectives, [Salting the Earth, The Environmental Impact of Oil and Gas Wastewater Spills](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132645/). Environmental Health Perspectives. 124 (12): pp. A230-A235, 2016. (web link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132645/>, last accessed August 2022).
53. Friends of the Earth, [Lithium](https://www.foeeurope.org/sites/default/files/publications/13_factsheet-lithium-gb.pdf), 2013 (web link: https://www.foeeurope.org/sites/default/files/publications/13_factsheet-lithium-gb.pdf, last accessed August 2022).
54. Nissan, [Nissan Gives EV Batteries a Second Life](https://global.nissanstories.com/en/releases/4r), 2021 (web link: <https://global.nissanstories.com/en/releases/4r>, last accessed August 2022).
55. Ambrose, Hanjiro, [The Second Life of Used EV Batteries](https://blog.ucsusa.org/hanjiro-ambrose/the-second-life-of-used-ev-batteries/), 2020 (web link: <https://blog.ucsusa.org/hanjiro-ambrose/the-second-life-of-used-ev-batteries/>, last accessed August 2022).
56. Ibid
57. Wentworth, Adam, [Amsterdam Arena installs major new battery storage](https://www.climateaction.org/news/amsterdam-arena-installs-major-new-battery-storage), 2018 (web link: <https://www.climateaction.org/news/amsterdam-arena-installs-major-new-battery-storage>, last accessed August 2022).
58. Engle H., Hertzke P., and G. Siccardo, [Second-life EV batteries: The newest value pool in energy storage](https://www.mckinsey.com/industries/automotive-and-assembly/our-second-life-ev-batteries), 2019 (web link: [https://www.mckinsey.com/industries/automotive-and-assembly/our-](https://www.mckinsey.com/industries/automotive-and-assembly/our-second-life-ev-batteries)

- insights/second-life-ev-batteries-the-newest-value-pool-in-energy-storage#, last accessed August 2022).
59. Lluç Canals Casals et al, [Second life batteries lifespan: Rest of useful life and environmental analysis](#), 2018 (web link: <https://www.sciencedirect.com/science/article/pii/S0301479718313124>, last accessed August 2022).
 60. U.S. Geological Survey, Mineral Commodity Summaries: Lithium 2021 (web link: <https://www.usgs.gov/centers/nmic/lithium-statistics-and-information>, last accessed August 2022).
 61. Jaskula, B. W., [U.S. Geological Survey Mineral Commodity Summaries: Lithium. U.S. Geological Survey](#), 2020 (web link: <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-lithium.pdf>, last accessed August 2022).
 62. Biden, J. R., [Executive Order 14017 of February 24, 2021: America's Supply Chains. Federal Register 86\(38\):11849–11854](#), 2021 (web link: <https://www.govinfo.gov/content/pkg/FR-2021-03-01/pdf/2021-04280.pdf>, last accessed August 2022).
 63. Schulte, R. F., [U.S. Geological Survey Mineral Commodity Summaries: Chromium. U.S. Geological Survey](#), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf>, last accessed August 2022).
 64. Schulte, R. F., [U.S. Geological Survey Mineral Commodity Summaries: Chromium. U.S. Geological Survey](#), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf>, last accessed August 2022).
 65. Petrova, M., ["Here's Why Battery Manufacturers Like Samsung and Panasonic and Car Makers Like Tesla Are Embracing Cobalt-Free Batteries,"](#) 2017 (web link: <https://www.cnbc.com/2021/11/17/samsung-panasonic-and-tesla-embracing-cobalt-free-batteries-.html>, last accessed August 2022).
 66. Shedd, K. B., [U.S. Geological Survey Mineral Commodity Summaries: Cobalt. U.S. Geological Survey](#), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-cobalt.pdf>, last accessed August 2022).
 67. McRae, M. E., [U.S. Geological Survey Mineral Commodity Summaries: Nickel. U.S. Geological Survey](#), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nickel.pdf>, last accessed August 2022).
 68. Schnebele, E. K., [U.S. Geological Survey Mineral Commodity Summaries: Manganese. U.S. Geological Survey](#), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-manganese.pdf>, last accessed August 2022).
 69. Schulte, R. F., [U.S. Geological Survey Mineral Commodity Summaries: Chromium. U.S. Geological Survey](#), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf>, last accessed August 2022).
 70. Tolcin, A. C., [U.S. Geological Survey Mineral Commodity Summaries: Zinc. U.S. Geological Survey](#), 2022 (web link: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-zinc.pdf>, last accessed August 2022).

71. Altoona Bus Research and Testing Center, [BYD Electric Bus](https://www.altoonabustest.psu.edu/bus-details.aspx?BN=1307), 2014 (web link: <https://www.altoonabustest.psu.edu/bus-details.aspx?BN=1307>, last accessed August 2022).
72. Altoona Bus Research and Testing Center, [New Flyer of America Model D40 LF](https://www.altoonabustest.psu.edu/bus-list.aspx), 2006 (web link: <https://www.altoonabustest.psu.edu/bus-list.aspx>, last accessed August 2022).
73. Altoona Bus Research and Testing Center, [New Flyer of America C40LF](https://www.altoonabustest.psu.edu/bus-list.aspx), June 2012 (web link: <https://www.altoonabustest.psu.edu/bus-list.aspx>, last accessed August 2022).
74. California Air Resources Board, [Final Environmental Analysis for The Strategy for Achieving California's 2030 Greenhouse Gas Target](https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appf_finalea.pdf), 2017 (web link: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appf_finalea.pdf, last accessed August 2022).
75. California Air Resources Board, [Community Air Protection Blueprint](https://ww2.arb.ca.gov/capp-blueprint), 2018 (web link: <https://ww2.arb.ca.gov/capp-blueprint>, last accessed August 2022).
76. California Air Resources Board, [Community Air Protection Blueprint](https://ww2.arb.ca.gov/capp-blueprint), 2018 (web link: <https://ww2.arb.ca.gov/capp-blueprint>, last accessed August 2022).
77. California Council for Economic and Environmental Balance, [Re:Comments on Advanced Clean Fleets Proposed Regulation and Alternatives for the Environmental Analysis](https://www.arb.ca.gov/lists/com-attach/29-acf-comments-ws-UDNUMVUxUGZWMIcl.pdf), 2021 (web link: <https://www.arb.ca.gov/lists/com-attach/29-acf-comments-ws-UDNUMVUxUGZWMIcl.pdf>, last accessed August 2022).
78. California Air Resources Board, [Heavy-Duty Omnibus: Appendix D – Emissions Inventory and Results for the Proposed Amendments](https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2020/hdomnibuslownox/appd.pdf), 2020 (web link: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2020/hdomnibuslownox/appd.pdf>, last accessed August 2021).
79. California Air Resources Board, [EMFAC 2021 Database](https://arb.ca.gov/emfac/), 2021 (web link: <https://arb.ca.gov/emfac/>, last accessed August 2022).
80. California Energy Commission, [Energy Almanac – Transportation Natural Gas in California](https://ww2.energy.ca.gov/almanac/transportation_data/cng-lng.html), 2019 (web link: https://ww2.energy.ca.gov/almanac/transportation_data/cng-lng.html, last accessed August 2022).
81. International Council on Clean Transportation, [A comparison of NOx emissions from heavy-duty diesel, natural gas, and electric vehicles](https://theicct.org/sites/default/files/publications/low-nox-hdvs-compared-sept21.pdf), 2021 (web link: <https://theicct.org/sites/default/files/publications/low-nox-hdvs-compared-sept21.pdf>, last accessed August 2022).
82. California Public Utilities Commission, [Decision 22-02-025 Implementing SB 1440 Biomethane Procurement Program](https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M454/K335/454335009.PDF), 2022 (web link: <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M454/K335/454335009.PDF>, last accessed August 2022).
83. Institute of Transportation Studies, [The Feasibility of Renewable Natural Gas as a Large-Scale, Low Carbon Substitute](https://ww2.arb.ca.gov/sites/default/files/classic/research/apr/past/13-307.pdf), 2016 (web link: <https://ww2.arb.ca.gov/sites/default/files/classic/research/apr/past/13-307.pdf>, last accessed August 2022).

84. California Air Resources Board, [The AB 32 Scoping Plan \(draft\)](https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents), 2022 (web link: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>, last accessed August 2022).
85. California Air Resources Board, [Public Hearing to Consider The Proposed Advanced Clean Trucks Regulation Resolution 20-19](https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2020/res20-19.pdf), 2020 (web link: <https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2020/res20-19.pdf>, last accessed August 2022).