Final Environmental Impact Analysis

For the Proposed

Zero Emission Forklift Regulation

California Air Resources Board

1001 I Street

Sacramento, CA 95814

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List of Abbreviations

2022 Scoping Plan	2022 Scoping Plan for Achieving Carbon Neutrality
AB	Assembly Bill
BAU	business-as-usual
BLM	U.S. Bureau of Land Management
Board	California Air Resources Board
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CI	carbon intensity
CO_2	carbon dioxide
CPUC	California Public Utilities Commission
dB	decibel
dBA	A-weighted decibels
Draft EIA	Draft Environmental Impact Analysis
EF	emission factor
EO	Executive Order
EV	electric vehicle
Final EIA	Final Environmental Analysis
FTA	Federal Transit Administration

GHG	greenhouse gas
in/sec	inch per second
ISOR	Initial Statement of Reasons
kW	kilowatts
kWh	kilowatt-hour
LCFS	Low Carbon Fuel Standard
LED	low-emission diesel
L_{eq}	equivalent level measurements
L_{max}	maximum sound level
LSI	large-spark ignition
MMT	million metric tons
$MTCO_2e$	metric tons of carbon dioxide equivalent
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PM	particulate matter
$PM_{2.5}$	fine particulate matter of a diameter less than 2.5 microns
$PM_{2.5}$	particulate matter of a diameter less than 2.5 microns
PPV	peak particle velocity
ROG	reactive organic gases
ROG	reactive organic gases
RPS	Renewable Portfolio Standard

SB	Senate Bill
SIP	State Implementation Plan
Staff Report	Initial Statement of Reasons
State SIP Strategy	State Strategy for the State Implementation Plan
SWPPP	stormwater pollution prevention plan
TAC	toxic air contaminant
TCR	tribal cultural resource
tpd	tons per day
TRU	transport refrigeration unit
TTW	tank-to-wheel
US EPA	U.S. Environmental Protection Agency
VdB	vibration decibels
VMT	vehicle miles traveled
WTT	well-to-tank
WTW	well-to-wheel
ZE	zero-emission
ZEF	zero-emission forklift
ZEV	zero emission vehicle

Preface

The California Air Resources Board (CARB or Board) released a Draft Environmental Impact Analysis (Draft EIA) for the Zero-Emission Forklift Regulation, herein referred to as the Proposed Regulation (i.e., the proposed project under the California Environmental Quality Act [CEQA]) on November 10, 2023, for a 45-day public review and comment period that concluded December 26, 2023. During the public comment period for the Proposed Program, a total of 337 comments were submitted electronically on or before December 26, 2023, to the comment docket created for the Proposed Regulation and its appendices, including the Draft EIA.

On May 21, 2024, CARB released a notice with modified regulatory language and supporting documentation for a review and comment period as required under the Administrative Procedure Act (APA). The review and comment period commenced on May 21, 2024, and ended on June 5, 2024. A total of 16 comments were submitted electronically on or before June 5, 2024. One additional late comment was received, after the close of the comment period, via email on June 7, 2024.

Out of the 354 total written comments received, 317 comment letters were determined to include comments related to the Draft EIA or raising significant environmental concern. Responses to these comments have been provided in compliance with CARB's certified regulatory program and CEQA.

CARB staff made minor modifications to the Draft EIA based on updates made to the Proposed Regulation. To facilitate identifying modifications to the document, modified text is presented with ~~strike-through~~ for deletions and underline for additions. None of the modifications to the proposed Draft EIA alter any of the conclusions reached in the EIA or provide new information of substantial importance relative to the EIA. As a result, these minor revisions do not require recirculation of the document pursuant to the CEQA Guidelines, California Code of Regulations, title 14, section 15088.5, before consideration by the Board.

I. Introduction and Background

A. Introduction

This FinalDraft environmental impact analysis (FinalDraft EIA) is a program environmental document prepared to cover the Proposed Zero-Emission Forklift Regulation (Proposed Regulation). It is included as Appendix C of the California Air Resources Board (CARB or Board) Initial Statement of Reasons (ISOR or Staff Report)[1] that will be presented to the Board for considerationThe Final EIA will be presented to the Board for consideration along with other rulemaking documents associated with the Proposed Regulation.

The "Project Description" section of this FinalDraft EIA presents a summary of the Proposed Regulation, as defined under the California Environmental Quality Act (CEQA). A detailed description of the Proposed Regulation is included in *Staff Report:* Initial Statement of Reasons for the Proposed Zero Emission Forklift Regulation (date of release: November 7, 2023), which is hereby incorporated by reference.

This FinalDraft EIA is intended to identify and disclose the Proposed Regulation's potential significant impacts on the environment and identify potential feasible mitigation measures and alternatives to lessen or avoid those significant environmental impacts. The Proposed Regulation is intended to create environmental benefits related to greenhouse gas (GHG) reductions and air quality improvements. However, in some cases, as described in Chapter IV of this FinalDraft EIA, potentially significant effects on environmental resources may occur with implementation of compliance responses associated with the Proposed Regulation. It is expected that many of these potentially significant impacts would be feasibly avoided or mitigated to a less-than-significant level, as described in each resource area discussion, because project-specific environmental review processes would be associated with compliance responses and compliance with local and State laws and regulations would be required. This FinalDraft EIA 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 despite all feasible mitigation measures.

B. Scope of Analysis and Assumptions

The degree of specificity required in a CEQA document corresponds to the degree of specificity inherent in the underlying activity it evaluates. An EIA for broad programs cannot be as detailed as it can be for specific projects (Title 14 California Code of Regulations [CCR]

[2] California Global Warming Solutions Act, Assembly Bill 32, Chapter 488. Statutes of 2006 (weblink: *https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32*, last accessed May 2023).

Section 15146). For example, the assessment of a construction project would be naturally more detailed than one concerning the adoption of a local general plan because construction-related effects can be predicted with more accuracy (Title 14 CCR Section 15146[a]). Because this analysis addresses a broad regulatory program, a general level of detail is appropriate. However, this Final~~Draft~~ EIA 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 Regulation, and it contains as much information about those impacts as is currently available, without being unduly speculative.

The scope of analysis in this Final~~Draft~~ EIA is intended to help focus public review and comments on the Proposed Regulation and ultimately to inform the Board of the environmental benefits and adverse impacts of the Proposed Regulation. This analysis specifically focuses on potentially significant adverse and beneficial impacts on the physical environment resulting from reasonably foreseeable compliance responses related to implementation of the Proposed Regulation.

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

1. The analysis addresses the potentially significant adverse environmental impacts resulting from implementation of the Proposed Regulation compared to existing conditions.

2. The analysis of environmental impacts and determinations of significance are based on reasonably foreseeable compliance responses taken in response to implementation of the Proposed Regulation.

3. The analysis addresses environmental impacts within and outside California 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 Regulation is programmatic. Decisions by the regulated entities regarding compliance options and the precise locations of the many components covered in the Proposed Regulation are unknown. Furthermore, predicting decisions by entities regarding the specific location and design of infrastructure made in response to implementation of the Proposed Regulation would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty regarding the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Final~~Draft~~ EIA. Consequently, this Final~~Draft~~ EIA takes the conservative approach in its post mitigation significance conclusions (i.e., tending to overstate the potential that feasible mitigation may not be implemented by the agency with authority to do so or may not be sufficient) and discloses, for CEQA compliance

purposes, that potentially significant environmental impacts may be unavoidable, where appropriate, even with feasible mitigation. It is also possible that the amount of mitigation necessary to reduce environmental impacts to a less-than-significant level may be less than disclosed in this Final~~Draft~~ EIA on a case-by-case basis. Specific actions undertaken to implement the Proposed Regulation would undergo project-level environmental review and compliance processes as required at the time they are proposed. It is expected that many individual development projects would be able to feasibly avoid potentially significant impacts or mitigate them to a less-than-significant level.

5. This Final~~Draft~~ EIA generally does not analyze site-specific impacts when determinations regarding changes in the location of future facilities or other infrastructure would be speculative. However, this Final~~Draft~~ EIA does examine regional (e.g., local air district and/or air basin) and local issues to the degree feasible where appropriate. As a result, the impact conclusions in the resource-oriented sections of Section IV, "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 Regulation.

C. Background Information on Proposed Zero Emission Forklift Regulation

To date, California has made significant progress towards meeting federal air quality attainment standards and has achieved the Assembly Bill (AB) 32[2] goal 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, the State Implementation Plan (SIP), and other established State goals. Key State goals are:

- Federal health-based ambient air quality standards (with key milestones in 2031 and 2037),
- 40-percent reduction in GHG emissions from the 1990 levels by 2030,
- 80-percent reduction in GHG emissions below 1990 levels by 2050,
- 50-percent petroleum reduction target by 2030,
- 100-percent zero-emission (ZE) from off-road vehicles and equipment operations by 2035, and

[2] California Global Warming Solutions Act, Assembly Bill 32, Chapter 488. Statutes of 2006 (weblink: *https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32*, last accessed May 2023).

- 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 forklifts (ZEFs) 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 Regulation would require forklift fleets to transition most spark-ignited forklifts (e.g., propane and gasoline forklifts) to ZE technology. Starting in 2026, the measure would both restrict the sale and purchase of applicable new forklifts in California and require fleets to phase out applicable in-use forklifts over time. CARB is proposing this measure because many forklift applications are well-suited for ZE technology, and because transitioning spark-ignited forklifts to ZEFs would reduce emissions that contribute to unhealthy regional ozone and particulate matter and to climate change.

The State Strategy for the State Implementation Plan (State SIP Strategy) is California's roadmap toward achieving federal health-based standards. The Proposed Regulation was identified in the Revised Proposed 2016 State SIP Strategy[3] as one of several measures to accelerate the deployment of ZE technology in off-road equipment. In addition, the Proposed Regulation was also included in the 2016 Mobile Source Strategy[4] and 2020 Mobile Source Strategy[5], which introduced and updated, respectively, California's comprehensive strategy to reduce emissions from mobile sources to meet critical air quality

[3] CARB, Revised Proposed 2016 State Strategy for the State Implementation Plan, March 2017 (web link: *https://ww2.arb.ca.gov/sites/default/files/classic/planning/sip/2016sip/rev2016statesip.pdf*).[4] CARB, Mobile Source Strategy, May 2016 (web link: *https://ww2.arb.ca.gov/sites/default/files/classic/planning/sip/2016sip/2016mobsrc.pdf*).

[4] CARB, Mobile Source Strategy, May 2016 (web link: *https://ww2.arb.ca.gov/sites/default/files/classic/planning/sip/2016sip/2016mobsrc.pdf*).

[5] CARB, 2020 Mobile Source Strategy, October 2021. (web link: *https://ww2.arb.ca.gov/sites/default/files/2021-12/2020_Mobile_Source_Strategy.pdf*).

and climate goals. Furthermore, the Proposed Regulation was included in the Sustainable Freight Action Plan[6] and ZEV Action Plan[7].

The Proposed Regulation would support the goals of the 2016 State SIP Strategy by reducing pollutants linked to multiple adverse health effects identified by the California Ambient Air Quality Standards (CAAQS). These pollutants are oxides of nitrogen (NO_X) and reactive organic gases (ROG), key ingredients in the formation of ozone and other 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 Regulation would also support California's climate goals by reducing GHG emissions. CARB's 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) also identified ZEFs as part of the state's strategy for achieving success in combating climate change.[8] Forklifts, part of a category of off-road mobile equipment referred to by the federal Occupational Safety and Health Administration (OSHA) as "powered industrial trucks," are designed to lift and move objects by using a forked lift platform that is positioned under the object to be moved. A forklift can use either an internal combustion engine, which can be spark-ignited (e.g., gasoline or propane) or compression-ignited (e.g., diesel), or an electric motor for propulsion and to power its lifting mechanism. Forklifts are used in various applications resulting in the availability of numerous commercial designs. The different designs have led to a seven-bin classification system developed by OSHA to further differentiate powered industrial trucks for the purposes of implementing occupational safety standards.[9] Classes I and II represent electric-motor forklifts, which are considered ZEFs; Class III represents powered pallet jacks; and Classes IV, V, and VII represent various types of internal-combustion forklifts. Class VI represents industrial tow tractors, an equipment type that is not a forklift but included in OSHA's powered industrial truck classification system.

Internal-combustion forklifts emit harmful pollutants and are used at warehouse and distribution centers, industrial facilities, and other locations that are commonly near schools, hospitals, elder care facilities, and residential neighborhoods. Furthermore, these operating

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[6] Governor of the State of California, California Sustainable Freight Action Plan, July 2016 (web link: *https://ww2.arb.ca.gov/sites/default/files/2019-10/CSFAP_FINAL_07272016.pdf*).

[7] Governor's Interagency Working Group on Zero-Emission Vehicles, 2018 ZEV Action Plan: Priorities Update, September 2018 (web link: *https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf*).

[8] See CARB, 2022 Scoping Plan for Achieving Carbon Neutrality, pages 187–189, December 2022 (web link: *https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf*).

[9] Occupational Safety and Health Administration, Powered Industrial Trucks (Forklifts) eTool, (weblink: *https://www.osha.gov/etools/powered-industrial-trucks/types-fundamentals/types/classes*, last accessed October 2023).

locations are prevalent in low-income communities and communities of color. The accelerated deployment of ZEFs would reduce emissions in such communities, decrease petroleum use, reduce energy consumption, and help California achieve its equity, air quality, and climate protection goals.

The Proposed Regulation complements recently adopted ZE regulatory requirements for transport refrigeration units (TRUs) and small off-road engines, which are spark-ignition engines rated at or below 19 kilowatts. For TRUs, regulatory amendments were approved for adoption in September 2021 and established new requirements to transition diesel-powered truck TRUs to ZE technology, reduce PM emissions from newly manufactured TRU engines in the remaining categories, and mandate the use of lower-global warming potential refrigerant. For small off-road engines, regulatory amendments were approved for adoption in December 2021, which transitions equipment that use such engines to ZE technology.

D. Environmental Review Process: Requirements under CARB's Certified Regulatory Program

CARB is the lead agency for the Proposed Regulation and has prepared this Final~~Draft~~ EIA pursuant to its regulatory program certified by the Secretary of the Natural Resources Agency (Title 14 CCR Section 15251[d]; Title 17 CCR Sections 60000–60008). In accordance with Public Resources Code (PRC) Section 21080.5, public agencies with certified programs are exempt from certain CEQA requirements, including but not limited to preparing environmental impact reports, negative declarations, and initial studies (Title 14 CCR Section 15250). CARB has prepared this Final~~Draft~~ EIA to assess the potential for significant adverse and beneficial environmental impacts associated with the Proposed Regulation, as required by CARB's certified regulatory program (Title 17 CCR Section 60005[b]). The resource areas from the CEQA Guidelines Environmental Checklist were used as a framework for assessing the potential for significant impacts (Title 17 CCR Section 60005[b]).

If comments received during the public review period raise significant environmental issues, staff will summarize and respond to the comments in the Response to Environmental Comments prepared for the Proposed Regulation. If the Proposed Regulation is adopted, a notice of decision will be filed with the Secretary of the Natural Resources Agency for public inspection (Title 17 CCR Section 60007[b]) and posted on CARB's website.

E. Final~~Draft~~ EIA Organization

This Final~~Draft~~ EIA is organized into the following chapters to assist the reader in obtaining information about the Proposed Regulation and its specific environmental issues.

- **Chapter I, "Introduction and Background,"** provides a project overview and background information, and other introductory material.
- **Chapter II, "Project Description,"** summarizes the Proposed Regulation, the potential reasonably foreseeable compliance responses taken in response to the Proposed Regulation, and implementation assumptions.
- **Chapter III, "Environmental and Regulatory Setting,"** contains the environmental and regulatory setting relevant to the environmental analysis of the Proposed Regulation.
- **Chapter IV, "Impact Analysis and Mitigation Measures,"** identifies the potential environmental impacts associated with the Proposed Regulation and mitigation measures for each resource impact area.
- **Chapter V, "Cumulative and Growth-Inducing Impacts,"** analyzes the potential for cumulative effects of implementing the Proposed Regulation against a backdrop of past, present, and reasonably foreseeable future projects.
- **Chapter VI, "Mandatory Findings of Significance,"** discusses the potential for adverse impacts on human beings, cumulatively considerable environmental impacts, and whether the Proposed Regulation would have the potential to degrade the quality of the environment.
- **Chapter VII, "Alternatives Analysis,"** discusses a reasonable range of potentially feasible alternatives that could reduce or eliminate adverse environmental impacts associated with the Proposed Regulation.

F. Public Review Process for the Environmental Analysis

On March 7, 2023, CARB issued a notice of preparation for the Proposed Regulation, announcing that it would prepare an EIA. At public meetings held on October 7, 2020, August 17, 2021, February 22, 2022, January 24, 2023, and March 22, 2023, staff discussed proposed regulatory concepts for the Proposed Regulation. At the public workshop held on March 22, 2023, staff described plans to prepare a Draft EIA for the Proposed Regulation and invited public feedback on the scope of environmental analysis.

In accordance with CARB's certified regulatory program, and consistent with CARB's commitment to public review and input on regulatory actions, thethis Draft EIA wasis subject to a public review process. The Staff Report, which includeds thethis Draft EIA, wasis posted for a public review period that beganbegins on November 10, 2023, and endedends on December 26, 2023. This period complies with requirements for a minimum of 45 days of public review (Title 17 CCR Section 60004.2[b][2]).

At the conclusion of the public review period, staff determined that modifications to the Proposed Regulation were warranted. On May 21, 2024, CARB released a notice with modified regulatory language and supporting documentation for a review and comment period as required under the Administrative Procedure Act (APA). The review and comment period commenced on May 21, 2024, and ended on June 5, 2024. At the conclusion of the

public review period, staff may determine that modifications to the Proposed Regulation are warranted. If so, staff would address any proposed changes in a notice that would be issued with modified regulatory language and supporting documentation for one or more 15-day review and comment periods as required under the Administrative Procedure Act.

At the conclusion of all review periods, staff will compiled public comments and responses, including comments on thethis Draft EIA made during the noticed 45-day comment period and subsequent 15-day comment period(or during any further comment period if CARB determines recirculation of this Draft EIA is necessary), and prepared a final hearing package, which includes the Final EIA and response to environmental comments on the Draft EIA, for the Proposed Regulation for the Board's consideration at a public hearing in SpringJune 2024. If the final Regulation is adopted by the Board at that time, a notice of decision will be filed with the Secretary of the Natural Resources Agency and will be posted on CARB's regulatory webpage. The Final Statement of Reasons for the final Regulation would be prepared by staff, and the completed regulatory package would be filed with the Office of Administrative Law.

II. Project Description

A. Objectives

Recognizing the requirements of Senate Bill (SB) 32 (Ch. 249, Stats. 2016, Pavley), Executive Order (EO) S-3-05, and AB 1279 (Muratsuchi, Chapter 337, Statutes of 2022) 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 Regulation include the following:

1. Accelerate the deployment of zero-emission forklifts (ZEF), which achieve the maximum emissions reduction possible to assist in the attainment of NAAQS for criteria air pollutants (Health and Safety Code Sections 43000.5[b], 43018[a]).

2. Decrease and eliminate emissions from petroleum and fossil-fuel use by forklifts by setting standards that eliminate exhaust emissions from forklifts. Emissions from petroleum use as an energy resource contribute substantially to the following public health and environmental problems, among others: air pollution and its associated health impacts, 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 ZEFs in California to support the Scoping Plan, which was developed to reduce GHG emissions in California, as directed by AB 32 (Nuñez, Chapter 488, Statutes of 2006). California's 2022 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.

4. Develop a regulation that is consistent with and meets the goals of the State Implementation Plan (SIP) and the 2016 State SIP Strategy, providing necessary emissions reductions for all of California's nonattainment areas to meet NAAQS (Health and 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 and Safety Code Sections 38551[b], 38562, 38562.5, 38566); and 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 as soon as possible, but no later than 2045, pursuant to SB 100 (Ch. 312, Stats. of 2018, De León) and

AB 1279, maintain net negative emissions thereafter in accordance with AB 1279 and EO B-55-18, and to ensure that by 2045, statewide anthropogenic greenhouse gas emissions are reduced to at least 85 percent below the 1990 levels, pursuant to ASB 1279.

6. Lead the transition of California's off-road sector from internal combustion to ZE technology. Support ZEF sales and EO N-79-20's goal to transition off-road operations to zero-emission 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 ZE technology that will be needed to achieve California Air Resources Board's (CARB's or Board's) SIP and Scoping Plan goals.

9. Achieve emission reductions that are real, permanent, quantifiable, verifiable, and enforceable (Health and Safety Code Sections 38560, 38562[d][1]).

10. Provide market certainty for ZE technologies and charging and hydrogen-fueling infrastructure to guide the acceleration of the development of environmentally superior ZEFs 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 and Safety Code Section 43000[b]).

12. Spur economic activity of ZE technologies in the off-road sectors. Incentivize innovation that will transition California's economy into greater use of clean and sustainable ZE technologies and promote increased economic and employment benefits that will accompany this transition (AB 1493, Section 1[g]; Health and Safety Code Section 38501[e]).

B. Description of the Proposed Regulation

The Proposed Regulation would require California fleets to phase out most Class IV and Class V large-spark ignition (LSI) forklifts over time. The Proposed Regulation includes two primary components: a restriction on the sale and acquisition of LSI forklifts starting on January 1, 2026, and phase-out requirements starting on January 1, 2028, for existing LSI

forklifts. The Proposed Regulation would also establish requirements for forklift manufacturers, forklift dealers, and forklift rental agencies. The following bullets provide more detailed information on each component of the Proposed Regulation.

1. Scope

- Applicable Forklifts would fall into two categories, Class IV and Class V, based on the powered industrial truck classification system developed by the Occupational Safety and Health Administration[10].
    - A Class IV forklift is one that uses an internal-combustion engine, has cushion tires, and is typically used indoors on smooth surfaces.
    - A Class V forklift is one that uses an internal-combustion engine, has pneumatic tires (air-filled, foam-filled, or solid), and is typically used outdoors on uneven surfaces.
- The Proposed Regulation would apply to Class IV and Class V forklifts that use LSI engines (hereinafter "Class IV LSI forklifts" and "Class V LSI forklifts," respectively). However, certain types of forklifts, such as rough-terrain forklifts, diesel forklifts, combat and tactical support equipment, and others would be excluded from the Proposed Regulation.
- The performance requirements of the Proposed Regulation (i.e., purchase restriction and phase-out requirements) would apply to Class IV LSI forklifts of any lift capacity and Class V LSI forklifts with a lift capacity of up to 12,000 pounds (hereinafter "Targeted Class IV forklifts" and "Targeted Class V forklifts," respectively, and collectively as "Targeted Forklifts"). Although the performance requirements of the Proposed Regulation would not apply to Class V LSI forklifts with a lift capacity greater than 12,000 pounds, reporting of said forklifts would be required.

2. Forklift Manufacturers

- ~~The Proposed Regulation would establish a new zero-emission standard for engines and powertrains used in zero-emission forklifts.~~
- Starting January 1, 2026, forklift m~~M~~anufacturers would no longer be allowed to produce for sale in California or offer for sale in California ~~new~~ Targeted Class IV

[10] Ibid.

forklifts unless the engines or powertrains qualify as Zero-Emission, except in very limited circumstances.as of January 1, 2026, and

- Starting January 1, 2029, forklift manufacturers would no longer be allowed to produce for sale in California or offer for sale in California new Targeted Class V forklifts with a lift capacity up to 12,000 pounds, unless the engine or powertrain qualifies as Zero-Emission as of January 1, 2029, except in very limited circumstances, unless the forklift engine meets the zero-emission standards set forth by the Proposed Regulation.
- Beginning January 1, 2026, manufacturers would be required to submit production and sales information to the Executive Officer annually for all LSI forklifts produced for sale or sold in California.
- These manufacturer production and sales restrictions do not apply to engines to be installed in forklifts that would be operated as dedicated emergency forklifts, forklifts being acquired to be solely operated on San Nicolas or San Clemente Island, forklifts that would qualify as in-field forklifts, and forklifts being acquired to replace existing Targeted Forklifts covered by Operational Extensions or Infrastructure Site Electrification Delay Extensions.

3. Forklift Dealers

Except in very limited circumstances, the following requirements would apply:

- Starting January 1, 2026, aA Dealer would not be allowed to possess the following:
    - 2026 and subsequent Model Year (MY) Targeted Class IV Forkliftsstarting January 1, 2026;
    - New 2024 and previous MY Targeted Class IV Forklifts starting January 1, 2026;
    - 2025 and previous MY Targeted Class IV Forklifts that have already been phased out in accordance with the phase-out schedule for Class IV Forklifts in Small Fleets and Crop Preparation Services FleetsAgricultural Operations, as shown in Table 1, below, starting January 1, 2026; or
    - 2025 andor previous MY Targeted Class V Forklifts that have already been phased out in accordance with the Class V Forklift phase-out schedule in Table 1, below., starting January 1, 2026;

- Starting January 1, 2027, Dealers shall not possess new 2025 MY Targeted Class IV Forklifts.

- Starting January 1, 2029, Dealers shall not possess any of the following:
    - 2026 and subsequent MY Targeted Class V Forklifts ~~starting January 1, 2029~~; and
    - New 2025 and previous MY Targeted Class V Forklifts.
- Starting January 1, 2038, Dealers shall not possess a Targeted Forklift.
    - ~~Any Targeted Forklift starting January 1, 2038.~~
- Starting January 1, 2026, a Dealer would not be able sell, lease, offer for sale, offer for lease, or deliver to a Fleet Operator in California:
    - A new 2024 or previous MY Targeted Forklift.
    - A ~~used~~ 2026 or subsequent MY Targeted Forklift.
    - A used 2025 or previous MY Targeted Forklift if the MY of said forklift has already been phased out in accordance with the applicable schedule in Table 1. For Targeted Class IV Forklifts, a dealer would use the phase-out schedule for Small Fleets and Crop Preparation Service Fleets~~Agricultural Operations~~ to determine whether or not a Forklift has been phased out.
- Starting January 1, 2027, a Dealer shall not sell, lease, offer for sale, offer for lease, or deliver to a Fleet Operator in California a new 2025 MY Targeted Forklift.
- Starting January 1, 2026, a Dealer would not be able to sell, lease, offer for sale, offer for lease, or deliver to a Rental Agency in California:
    - A new 2024 or previous MY Targeted Class IV Forklift.
    - A ~~used~~ 2026 or subsequent MY Targeted Class IV Forklift.
    - A used 2025 or previous MY Targeted Class IV Forklift if the MY of said forklift has already been phased out in accordance with the phase-out schedule for Class IV Forklifts in Small Fleets and Crop Preparation Services Fleets~~Agricultural Operations~~, as shown in Table 1.
    - A 2025 or previous MY Targeted Class V Forklift if the MY of said forklift has already been phased out in accordance with the Class V Forklift phase-out schedule in Table 1.

- Starting January 1, 2027, a Dealer would not be able to sell, lease, offer for sale, offer for lease, or deliver to a Rental Agency in California a new 2025 MY Targeted Class IV Forklift.
- Starting January 1, 2029, a Dealer would not be able to sell, lease, offer for sale, offer for lease, or deliver to a Rental Agency in California:
    - A new Targeted Class V Forklift.
    - A ~~used~~ 2026 or subsequent MY Targeted Class V Forklift.
- The Proposed Regulation would include exemptions for Dealers to sell and transport new Targeted Forklifts to out-of-state purchasers, ~~and~~ to Fleet Operators that would operate such forklifts as dedicated emergency forklifts, forklifts being acquired to be solely operated on San Nicolas or San Clemente Island, forklifts that would qualify as in-field forklifts, and forklifts being acquired to replace existing Targeted Forklifts covered by Operational Extensions or Infrastructure Site Electrification Delay Extensions.
- The Proposed Regulation includes recordkeeping requirements on LSI Forklift sale transactions starting January 1, 2026.

4. Forklift Rental Agencies

- Rental Agencies would be subject to the same MY phase-out schedules (see Table 1) as Fleet Operators.
- Unlike Fleet Operators, between January 1, 2026, and December 31, 2028, Rental Agencies would be allowed to acquire Targeted Class V Forklifts as forklifts they offer for rent. Such forklifts would be required to be phased out by January 1, 2038.
- The Proposed Regulation would allow a Rental Agency to delay the phase-out of one Targeted Forklift until January 1, 2038, for each Class V LSI Forklift with a lift capacity greater than 12,000 pounds replaced with an equivalent ZEF.
- The Proposed Regulation includes annual reporting and recordkeeping requirements starting January 1, 2026.
- By March 31, 2026, the Rental Agency would be required to contact the applicable electric utility provider to initiate discussions regarding potential electrical-service installation or upgrades for each separately metered building or operating location with LSI forklifts subject to the phase-out requirements.

5. Forklift Fleet Operators

Except in very limited circumstances, the following requirements would apply:

- Beginning on January 1, 2026, fleets would not be allowed to acquire or take possession of a new Targeted Forklift, with the exception of a new 2025 MY Targeted Forklift.
- Beginning on January 1, 2026, fleets would not be allowed to acquire or take possession of a used 2026 or subsequent ~~Model Year (~~MY~~)~~ Targeted Forklift.
- Beginning on January 1, 2027, fleets would not be allowed to acquire or take possession of a new 2025 MY Targeted Forklift.
- By March 31, 2026, the Fleet Operator would be required to contact the applicable electric utility provider to initiate discussions regarding potential electrical-service installation or upgrades for each separately metered building or operating location with LSI forklifts subject to the phase-out requirements.
- MY Phase-Out Schedule: Beginning January 1, 2028, Targeted Forklifts in operation prior to January 1, 2026, would be required to be phased out of the California fleet in accordance with the MY schedule set forth in Table 1.
- ~~Forklift fleets would be expected to replace phased-out Targeted Forklifts with ZEFs, either battery-electric or fuel-cell electric.~~
- Until January 1, 2038, forklift fleets would still be able to purchase, lease, or rent used 2025 and previous MY Targeted Forklifts for use in California so long as said forklifts have not yet phased out according to the applicable MY Phase-Out Schedule set forth in Table 1.
- Until January 1, 2038, forklift fleets would be able to rent 2026, 2027, and 2028 MY Targeted Class V Forklifts for use in California.
- The Proposed Regulation would include compliance exemptions for low usage, emergency operations, ~~and~~ temporary storage of Targeted Forklifts to be removed from the fleet, forklifts to be operated solely on San Nicolas or San Clemente Islands, forklifts that qualify as in-field forklifts, as well as compliance extensions for infrastructure construction delays, infrastructure site electrification delays, ZEF delivery delays, and operational issues.~~as well as compliance extensions for infrastructure construction, ZEF delivery delays, and feasibility issues.~~

- The Proposed Regulation would allow a Fleet Operator to delay the phase-out of one Targeted Forklift until January 1, 2038, for each Class V LSI Forklift with a lift capacity greater than 12,000 pounds replaced with an equivalent ZEF.
- The Proposed Regulation includes annual reporting and recordkeeping requirements starting January 1, 2026, and labeling requirements in certain situations.
- Staff's proposal includes amendments to the LSI Engine Fleet Requirements Regulation (LSI Fleet Regulation), found in Title 13, California Code of Regulations, Sections 2775, 2775.1, and 2775.2. The revisions would simplify that regulation's reporting requirements which would reduce the compliance burden for operators as well as increase clarity of the annual reporting requirements, since many of the operators that would be subject to the Proposed Regulation are currently subject to the LSI Fleet Regulation.
- Beginning January 1, 2026, a commercial or governmental entity that hires a Fleet Operator would also be responsible for the operation of an LSI Forklift that does not comply with the provisions in the Proposed Regulation.
- For more details on these requirements and provisions, see Appendix E, of the ISOR, "Purpose and Rationale~~.~~" and the "Notice of Public Availability of Modified Text and Availability of Additional Documents and Information" that was released on May 21, 2024.

Table 1: Targeted Forklift Phase-Out Schedule

Compliance Date	MY Phase-Out Schedule for Class IV Forklifts with a Lift Capacity of 12,000 Pounds or Less in Large Fleets (26 or More Forklifts)	MY Phase Out Schedule for Class IV Forklifts with a Lift Capacity of 12,000 Pounds or Less in Small Fleets (Fewer Than 26 Forklifts) and Crop Preparation Services Fleets~~Agricultural Operations~~	MY Phase Out Schedule for Class IV Forklifts with a Lift Capacity Greater Than 12,000 Pounds in Large Fleets (26 or More Forklifts)	MY Phase Out Schedule for Class IV Forklifts with a Lift Capacity Greater Than 12,000 Pounds in Small Fleets (Fewer Than 26 Forklifts) and Crop Preparation Services Fleets~~Agricultural Operations~~	MY Phase Out Schedule for Class V Forklifts in All Fleets
1/1/2028	2018 MY and older[1]				
1/1/2029		2016 MY and older[1]			
1/1/2030					2017 MY and older[1]

1/1/2031	2019 - 2021 MY				
1/1/2032		2017 - 2019 MY			
1/1/2033	2022 and 2023 MY				2018 - 2020 MY
1/1/2034		2020 and 2021 MY			
1/1/2035	2024 and 2025 MY		2025 MY and older		2021 and 2022 MY
1/1/2036		2022 and 2023 MY			
1/1/2037					
1/1/2038		2024 and 2025 MY		2025 MY and older	2023 – 2028 MY~~*~~[2]

[1]A phase-out percentage cap of 50% may be optionally applied to Large Fleets, and a phase-out percentage cap of 25% may be optionally applied to Small Fleets and Crop Preparation Services Fleets.

[2.] 2026, 2027, and 2028 MY Class V Forklifts rented by a Fleet Operator would also be required to be phased out on January 1, 2038, along with 2023, 2024, and 2025 MY Class V Forklifts operated by the fleet.

~~* 2026, 2027, and 2028 MY Class V Forklifts rented by a Fleet Operator would also be required to be phased out by January 1, 2038, along with 2023, 2024, and 2025 MY Class V Forklifts operated by the fleet.~~

C. Reasonably Foreseeable Compliance Responses

At the time this FinalDraft EIA was prepared, the most likely reasonably foreseeable compliance responses include the purchase and manufacturing of new ZEFs, installation of battery-electric and hydrogen fueling infrastructure, increased electricity and hydrogen fuel production, increased battery production and recycling, and recycling and disposal of LSI forklifts. Additionally, while not as likely as the compliance responses listed above, the following compliance responses could also occur: use of portable or stationary generators to charge ZEFs, process changes made at facilities to eliminate the need for forklifts, and potential replacement of LSI forklifts with diesel forklifts. Only the compliance responses that could have significant environmental impacts are discussed in this FinalDraft EIA.

1. Purchase and Manufacturing of ZEFs

Reasonably foreseeable compliance responses under the Proposed Regulation would include a net increase in the purchase of ZEFs and a corresponding decrease in Targeted Forklift purchases (i.e., in purchases of spark-ignition forklifts). Any net increase in ZEF sales would correspond to an increase in the manufacturing of new ZEFs or ZEF drivetrains, which could include the construction of new manufacturing facilities or an increase in the intensity of ZEF-component manufacturing at existing facilities. Staff expects that the Proposed Regulation would increase the expected number of ZEFs in California (beyond existing regulations) from about 79,000 ZEFs existing in 2023; to about 111,000 ZEFs by 2032; 141,000 ZEFs by 2037; and 168,000 ZEFs by 2038; all of these numbers are in comparison to a "business-as-usual" scenario that takes into consideration all existing laws (including future implementation of existing laws).

Currently, there are dozens of manufacturers that serve the forklift market worldwide, and roughly half of the new forklifts sold in California today are already electric. Ninety percent of the total United States forklift market is supplied by the top 15 to 20 forklift manufacturers. In the ZEF sector, the battery packs (and their chargers) and fuel cells used in battery-electric forklifts and fuel-cell forklifts, respectively, are typically manufactured by third-party manufacturers. Historically, forklift manufacturers themselves have not typically manufactured the battery packs, chargers, and fuel cells for their own ZEFs. Which battery pack or fuel cell is used in a particular ZEF, and which charger is used, if applicable, are typically decisions made by the customer in consultation with the dealer supplying the forklift chassis. There are several manufacturers that supply battery packs and chargers for battery-electric forklifts. In terms of fuel cells, there are far fewer manufacturers of such technology. Based on discussions with forklift manufacturers, it is possible that the manufacturing of ZEFs could become more vertically integrated over time, especially because many ZE replacements of Targeted Class V Forklifts are being designed with fully integrated power systems.

Staff estimates there are approximately 174,000 large-spark ignition (LSI) and ZEFs, combined, in California. Of that, staff estimates 95,000 are LSI forklifts. Under the Proposed Regulation, approximately 89,000 LSI forklifts would be turned over to ZEFs between 2026 and 2038.

Staff estimates that under the business-as-usual scenario, total California sales of LSI and ZEFs, combined, would range between 7,500 and 11,500 forklifts per year from 2026 through 2038, with ZEFs representing between 31 and 49 percent of total sales. Between 2026 and 2038, almost all LSI forklift purchases would be replaced by purchases of ZEFs. Additionally, given the MY phase-out schedule that would be established by the Proposed Regulation, forklift sales volume could almost double in certain years of the phase out, with the additional volume being attributed to new ZEF sales. In other years, sales volumes could decrease below business-as-usual sales volumes. Under the Proposed Regulation, staff estimates that approximately 95 percent of the combined California LSI plus ZEF fleet would be ZE by 2038. Staff projects that, of all ZEFs deployed due to the Proposed Regulation, 90 percent would be battery-electric and 10 percent would be fuel-cell electric. For battery-electric forklifts, staff assumes that the proportion of lithium-ion battery forklift sales relative to total battery-electric forklift sales would increase from 35 percent to 100 percent from 2026 to 2037, with lead-acid batteries making up the remainder.

Manufacturers may modify existing facilities to build ZEFs, open new facilities, repurpose or close facilities building internal-combustion forklifts and components, or potentially reopen currently closed plants. Many of these manufacturing changes are expected to occur outside California as the majority of forklifts sold in California are not built in the State.

2. Battery Electric Charging and Hydrogen Fuel Infrastructure

Enhanced efforts to support additional ZEF purchases would require the construction and operation of new infrastructure systems to support charging or refueling of ZEFs. Most ZEFs are expected to rely on infrastructure installed at the site of forklift operation. By contrast, zero-emission cars and trucks, which are inherently mobile, often rely on a combination of publicly available and home-based infrastructure. Depending on the ZEFs purchases to adhere to the requirements of the Proposed Regulation, such infrastructure could be constructed as battery-charging stations or hydrogen-fueling stations.

Battery Electric

Although charger sharing would be possible in some circumstances, staff assumes that one battery charger would be installed per battery-electric forklift deployed at the location of deployment. Therefore, approximately 80,000 new chargers would be installed as a result of the Proposed Regulation by 2038, and the number of chargers per facility would depend on the number of forklifts within the fleet. For lead-acid batteries, staff expects charging power levels of up to 10 kilowatts (kW). For lithium-ion batteries, charging power levels typically range from about 10 kW to 40 kW. However, chargers could be designed to provide power

levels greater than 40 kW. The output of the chargers used would depend on the time and opportunity available for forklifts to charge. For example, in a multi-shift operation where forklifts are heavily used, higher capacity chargers would likely be needed because of the more-demanding duty cycles and reduced downtime in those operations. Operators may need to install equipment such as new high voltage cable lines, power meters, and circuit breaker main cabinets to accommodate charging infrastructure. Operators that opt to use flooded lead-acid battery forklifts may also need to install equipment for the maintenance of such batteries (e.g., water replenishment equipment) and safety equipment to protect personnel in cases of battery-acid spills. Some forklift fleet operators using lead-acid batteries may need to add additional ventilation to the area where the forklifts are charged in order to avoid the buildup of hydrogen gas that is vented during the charging process.

In terms of the electrical power needed to charge ZEFs, some facilities would be expected, ~~in most cases~~, to request a service upgrade from their applicable electric utility provider. However, in some cases, facilities could choose to install solar panels and, if applicable, needed energy storage, instead, due to expected delays associated with the installation of additional service capacity or cost considerations. Additionally, as stated in the ISOR, CARB staff estimates that 98.5 percent of the companies that own forklifts meet the definition of a microbusiness and could be exempt from the proposed regulation if they have a low use forklift. Further, if the microbusiness had to replace their LSI forklift with a zero-emission battery electric forklift, it is highly unlikely their site would require significant electrical upgrades since most microbusinesses do not have a large fleet of forklifts.

Hydrogen Fuel

Hydrogen fueling would need to be installed for fuel-cell electric forklifts deployed due to the Proposed Regulation. Based on discussion with industry stakeholders, fuel-cell forklifts are only expected to be used in larger fleets of 50 forklifts or more. Staff estimates that roughly 9,000 fuel-cell forklifts would be deployed due to the Proposed Regulation. Assuming a 50-forklift fleet size, the Proposed Regulation could result in the installation of up to 180 new on-site hydrogen fueling facilities.

Electricity Generators

While internal-combustion electricity generators could be used to charge battery-powered zero-emission equipment when grid-supplied electricity is not available, staff believes such occurrences would be extremely rare. This is because the Proposed Regulation includes flexibility mechanisms that would provide compliance extensions in situations where electrical infrastructure is delayed for reasons beyond the fleet's control. Specifically, subject to certain conditions, these extensions would allow fleets to continue operating existing LSI forklifts until grid-supplied electricity is available ~~or January 1, 2038, whichever comes first~~.[11]

[11] California Air Resources Board, Proposed Zero Emission Forklift Regulation, Section 3006(b)(3)

Further, the Proposed Regulation would allow fleets to continue purchasing newer used LSI forklifts to replace those that have been phased out in accordance with the proposal.[12] Therefore, fleets would be able to maintain the size of their LSI forklift fleet and continue operations while the applicable electrical grid upgrades are being completed. Additionally, opting to purchase ZEFs and employ the use of an electricity generator for charging rather than requesting a compliance extension pursuant to the Proposed Regulation would likely result in higher costs to the fleet. This is because this compliance response would require fleets to incur the upfront costs of acquiring ZEFs without being able to benefit from the expected fuel savings typically associated with the operation of ZEFs. Ultimately, if a fleet chooses to use an electricity generator to charge ZEFs, staff expects that it would be for reasons beyond the requirements of the Proposed Regulation. It is uncertain how many facilities would encounter delays due to unavailable grid capacity, but CARB staff is working with utility providers, as well as the Governor's Office of Business and Economic Development (GO-Biz), California Energy Commission (CEC), California Public Utilities Commission (CPUC) and California Independent System Operator (CAISO), to encourage the development of sufficient infrastructure, identify infrastructure needs, and accelerate the work to further support widespread deployment of ZE technology.

Section IV.B.3-2 contains an analysis of the possible air quality impacts that could occur if fleet operators opt to utilize electricity generators.

3. Electricity and Hydrogen Fuel Production

Increased deployment of ZEFs would require an increase in the production of electricity and hydrogen fuel resulting in reduced rates of oil and gas extraction and distribution.

4. Battery and Fuel Cell Production and Recycling

Increased extraction of raw materials may be required to produced ZEFs such as lithium, platinum, lead, cobalt, and other elements, which is expected to occur both within and outside of California (including internationally). Efforts to address supply chains of mineral commodities have gained substantial interest from the State and federal government, both of which have sought to address mineral independence and security. Examples of efforts include California Assembly Bill 1657 (Garcia), Chapter 271, 2020 (AB 1657), which requires the California Energy Commission (CEC) to convene a Blue-Ribbon Commission on Lithium Extraction in California (Lithium Valley Commission). The Lithium Valley Commission is charged with reviewing, investigating, and analyzing issues and potential incentives regarding lithium extraction and use in California. At the federal level, EO 14017 directed federal agencies to perform a 100-day review of "supply chain risks" for four classes of products, including semiconductors, high-capacity batteries (including for electric vehicles

[12] Ibid, Section 3001(b)(1)

[EVs]), critical and strategic minerals (including rare earths), and pharmaceuticals.[13] (For detailed information regarding mineral extraction related compliance responses, see the "Mineral Resources" discussion below in Section IV.B.12.)

Increased demand for batteries and fuel cells would increase their production and manufacture, resulting in the likely expansion of and/or construction of new facilities. Expanded production of ZEFs 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 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, batteries have the potential to be refurbished and reused or recycled, and battery recycling is expected to increase over time as the stream of vehicle batteries nearing the end of their useful life increases. Fuel cells can also be refurbished or recycled. To meet an increased demand for refurbishing, reusing, or recycling batteries and fuel cells, it is reasonably foreseeable that new facilities or modifications to existing facilities would be required to accommodate an increase of such activities.

5. Sale, Disposal, and Recycling of LSI Forklifts

Increased ZEF purchases and deployments would also, over time, result in increased disposal of LSI forklifts and associated distribution and disposal of fluids and internal-combustion forklift-related components, such as engine oil, filters, exhaust catalysts, and other accessories. Existing LSI forklifts that are required to be replaced earlier than normal could be sold out-of-state, scrapped, or sold to a salvage yard to be dismantled. As described above, disposal of any of these forklifts and the conventional batteries would be required to comply with the applicable laws and regulations governing solid and hazardous waste.

6. Compliance Exemptions

In addition, the Proposed Regulation includes several provisions that can serve as guardrails for specific fleet situations. Fleet Operators would have compliance exemptions for low usage and emergency usage as well as extensions for infrastructure construction, ZEF delivery delays, and feasibility issues. Staff did not model the potential utilization of all these provisions since usage of these exemptions or extensions are expected to be rather low in comparison to all the LSI forklifts and use-cases affected by the Proposed Regulation.

[13] 86 Federal Register 11849 (March 1, 2021), Executive Order 14017 of February 24, 2021, America's Supply Chains (web link: *https://www.govinfo.gov/content/pkg/FR-2021-03-01/pdf/2021-04280.pdf*).

7. Site Operational Changes

Instead of fully transitioning LSI forklifts to ZEFs, certain facilities could make operational changes to reduce the need for forklifts altogether. For example, facilities could combine production lines; connect process steps through the use of conveyors or other mechanisms; or use other strategies that would allow for the reduction of the forklift fleet. It is anticipated that these operational changes would take place within the existing footprint of the facility.

8. Potential Selection of Diesel Forklifts

While fleets could potentially opt to replace phased-out Targeted Forklifts (e.g., gasoline or propane-fueled forklifts) with diesel-fueled forklifts, staff believes diesel replacements would be rare. For the applications in which LSI forklifts are used today, ZEFs are expected to be the most suitable option given multiple considerations affecting such a purchase decision. Indeed, according to the Industrial Trucks Association, ZEFs already represent roughly half of new forklift sales in the nation, demonstrating the compelling market-driven case for ZEFs.[14] There are several key disadvantages of diesel-fueled forklifts. For instance, diesel forklifts generally cannot be used indoors for extended periods of time due to the adverse health effects of emissions being circulated within enclosed areas and noise.[15] In addition, due to the lower cost of ownership of ZEFs, fleets that use ZEFs are expected to realize savings over the long term (see Chapter VIII of the ISOR, "Standardized Regulatory Impact Analysis"). Moreover, diesel forklifts are more expensive than LSI forklifts and could require the installation of on-site fuel storage[16], so any upfront cost advantage of staying with internal combustion technology would be diminished for a fleet that opts to convert from LSI to diesel. Lastly, while certain duty cycles have presented ZEFs with challenges in the past, current ZEF technology (e.g., lithium-ion batteries, fuel cells, advanced lead-acid batteries) addresses most, if not all, of those challenges (see Chapter I, Section E of the ISOR, "Technology Feasibility"). However, in the rare instances where a fleet may not be able to identify a suitable zero-emission option, the Proposed Regulation includes extension provisions for operational~~feasibility~~ issues that would allow the fleet to delay the phase-out of applicable LSI forklifts potentially up until suitable zero-emission options become available~~January 1, 2038~~. Additionally, the Proposed Regulation includes reporting provisions ~~that would limit the ability of fleets to add diesel forklifts to specific situations where the fleet is able to demonstrate~~ for LSI fleets that acquire ~~the~~ diesel forklift ~~is not~~

[14] Industrial Truck Association, United States Factory Shipments, 1997 through 2022, October 17, 2023 (web link: *https://www.indtrk.org/wp-content/uploads/2023/04/Factory-Shipments-Table-2023-Directory.pdf*).
[15] Toyota Material Handling, Forklift Fuel Options and Buying Considerations, March 28, 2023 (web link: *https://www.toyotaforklift.com/resource-library/blog/purchasing-decisions/forklift-fuel-options-and-buying-considerations*).
[16] Atlantic Forklift Services, Pros & Cons: Electric, Propane, and Diesel Forklifts (web link: *https://www.atlanticforkliftservices.com/pros-cons-electric-propane-diesel-forklifts/*, last accessed October 2023).

being acquired to replace an LSI forklift. That said, if such replacements do occur, any added diesel forklifts would be subject to the current "Adding Vehicle" requirements in CARB's In-Use Off-Road Diesel Fueled Fleet Regulation, which are aimed at ensuring only newer, cleaner diesel vehicles can be added to fleets.

Section IV.B.3-2 contains a sensitivity analysis of the possible air quality impacts that could occur if a segment of fleet operators switched from LSI forklifts to diesel powered forklifts.

D. Summary of Compliance Responses

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

III. Environmental and Regulatory Setting

California Environmental Quality Act (CEQA) Guidelines require an environmental impact report (EIR) to include an environmental setting section that discusses the current environmental conditions in the vicinity of the project. This environmental setting normally constitutes the baseline physical conditions against which an impact is compared to determine whether it is significant (Title 14 CCR Section 15125). For this Final~~Draft~~ EIA, CARB is using a 2023 baseline because that is the year in which the environmental analysis commenced (the notice of preparation was posted on March 7, 2023).

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

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IV. Impact Analysis and Mitigation Measures

A. Approach to the Environmental Impacts Analysis and Significance Determination

This chapter contains an analysis of environmental impacts and mitigation measures associated with the Proposed Regulation. The California Environmental Quality Act (CEQA) states the baseline for determining the significance of environmental impacts would normally be the existing conditions at the time the notice of preparation is published (Title 14 CCR Section 15125[a]). Therefore, significance determinations reflected in this Final~~Draft~~ EIA are based on a comparison of the potential environmental consequences of the Proposed Regulation with the regulatory setting and physical conditions in 2023 (see Attachment A). For the purpose of determining whether the Proposed Regulation may have a potential effect on the environment, CARB evaluated the potential physical changes to the environment that would result from the reasonably foreseeable compliance responses described in further detail in Chapter II of this Final~~Draft~~ EIA. A table summarizing all the potential impacts and proposed mitigation for each resource area discussed below is included in Attachment B to this document.

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

The analysis is based on reasonably foreseeable compliance responses that are based on a set of reasonable assumptions. While the compliance responses described in this Final~~Draft~~ EIA are not the only conceivable ones, they are the reasonably foreseeable ones; thus, they provide a credible basis for impact conclusions that are consistent with available evidence. In addition, as discussed in Chapter II of this Final~~Draft~~ EIA, the evaluation of certain compliance responses would be speculative under CEQA. CEQA does not require evaluation of speculative impacts (Title 14 CCR Section 15145). The analysis also includes actions that could likely occur under a broad range of the potential scenarios. The impact discussions reflect a conservative assessment to describe the type and magnitude of effects that may occur (i.e., the conclusions tend to overstate adverse effects) because the specific

location, extent, and design of potential new and/or modified facilities cannot be known at this time.

1. Adverse Environmental Impacts

The potentially significant adverse impacts on the environment discussed in this FinalDraft EIA, and the significance determinations for those effects, reflect the programmatic nature of the reasonably foreseeable compliance responses of the regulated entities. These reasonably foreseeable compliance responses are described in more detail in Chapter II of this FinalDraft EIA. This FinalDraft EIA addresses broadly defined types of impacts or actions that may be taken by others in the future as a result of implementation of the Proposed Regulation.

This FinalDraft EIA 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 Regulation and environmentally sensitive resources or conditions that may be affected. This conservative approach tends to overstate environmental impacts in light of these uncertainties and is intended to satisfy the good-faith, full-disclosure intention of CEQA. If and when specific projects are proposed and subjected to project-level environmental review, it is expected that many of the impacts recognized as potentially significant in this FinalDraft EIA would be avoided or reduced to a less-than-significant level.

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

2. Mitigation Measures

This FinalDraft EIA expresses a degree of uncertainty regarding implementation of feasible mitigation for potentially significant impacts. "'Feasible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (PRC Section 21061.1). While CARB is responsible for adopting the Proposed Regulation, it does not have authority over all the potential infrastructure and development projects that could be carried out in response to the Proposed Regulation. Other agencies are responsible for the review and approval, including any required environmental analysis, of any facilities and infrastructure that are reasonably foreseeable, including any definition and adoption of feasible, project-specific mitigation measures, and any monitoring of mitigation implementation. For example, local cities or counties must review and decide whether to approve proposals to

construct new facilities; CARB does not have jurisdiction over land use permitting of any potential development associated with the compliance responses (Cal. Const., Article XI, Section 7 ["A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws."]; *California Building Industry Assn. v. City of San Jose* [2015] 61 Cal.4th 435, 455; *Big Creek Lumber Co. v. County of Santa Cruz* [2006] 38 Cal.4th 1139, 1151–1152; Health and Safety Code Sections 39000–44474 [CARB's statutory authority provides no authority to regulate local land use permitting].). Additionally, State and/or federal permits may be needed for specific environmental resource impacts, such as take of endangered species, filling of wetlands, and streambed alteration.

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

Given the foregoing, and because of legal factors affecting the feasibility of CARB's proposed mitigation for several of the identified potential significant indirect impacts associated with the Proposed Regulation, CARB's implementation of the identified mitigation measures is infeasible, based on the following: (1) the lack of certainty of the scope, siting, and design details of compliance-response development projects prevents CARB from being able to determine the projects' significant environmental impacts; and (2) even if there were certainty with respect to compliance-response development projects and associated significant environmental impacts, CARB lacks the legal authority and jurisdiction to permit these projects, which, inherently, prevents CARB from legally imposing any enforceable mitigation measures on the projects. Therefore, CARB's implementation of the mitigation measures suggested, below, in this Final~~Draft~~ EIA are legally infeasible to implement and enforce.

Consequently, this Final~~Draft~~ EIA 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 a less-than-significant level may be far less than disclosed in this Final~~Draft~~ EIA on a case-by-case basis. It is expected that many potentially significant impacts of facility and infrastructure projects would be avoidable or mitigatable to a less-than-significant level as an outcome of their project-specific environmental review processes, conducted by the appropriate permitting agency with jurisdiction as the lead agency under CEQA.

B. Resource Area Impacts and Mitigation Measures

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

1. Aesthetics

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

Impact 1-1: Short-Term Construction-Related Impacts on Aesthetics

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

The construction of new forklift and battery/fuel cell manufacturing facilities and battery/fuel cell recycling and refurbishment facilities, and/or expansion of existing facilities could be performed within existing manufacturing and recycling centers that undergo internal retrofitting with minimal ground-disturbing activity. Additionally, operational changes to facilities to alleviate the need for forklift use could be performed with internal retrofitting and minimal ground-disturbing activity within the footprint of existing facilities. Because the outward appearance of such facilities would not be affected during their retrofit, these activities would not be expected to 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 or high visual quality. Heavy-duty equipment, such as dozers, cranes, and others, in addition to construction materials, could degrade the visual quality of a landscape. Construction could also involve pile-driving activities, which could introduce tall equipment onto various project sites.

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 the sensitivity of viewers, the size of the 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.

Reasonably foreseeable compliance responses to the Proposed Regulation could also include the installation of additional charging infrastructure for ZE technology and on-site hydrogen fueling stations. In response to the Proposed Regulation, energy providers could install new conduit from existing overhead poles or underground lines located adjacent to charging infrastructure, as well as hydrogen storage tanks, dispensers, hydrogen gas compressors, and supporting components where hydrogen fueling would occur at fleet locations. The installation of new charging infrastructure and hydrogen fueling facilities may include activities such as minor excavating and backfilling, trenching and installation of new power meters and circuit breaker main cabinets, and minor construction for the installation of above ground charging infrastructure and hydrogen fueling facilities, all of which would be installed on-site where forklift fleets are located. The visual impact of these activities would involve temporary and minor construction activities with small equipment. These construction activities would occur at facilities where ZEFs would be used, which are not expected to be within sensitive natural landscapes of high visual quality.

For the reasons discussed above, short-term construction-related aesthetic impacts associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 1-1

The regulatory setting in Attachment A includes applicable laws and regulations that relate to aesthetics. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to 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 on aesthetic resources include the following:

- Proponents of new or modified facilities or infrastructure constructed as a result of reasonably foreseeable compliance responses would coordinate with State or local land use agencies to seek entitlements for development and meet all necessary environmental review requirements (e.g., those under 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 scenic or aesthetic impacts of the project.
- The project proponent would color and finish the surfaces of all project structures and buildings visible to the public to: (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 would be areas that are already disturbed and/or are in locations of low visual sensitivity. Where feasible, construction staging and laydown areas for equipment, personal vehicles, and material storage would be sited to take advantage of natural screening opportunities provided by existing structures, topography, and/or vegetation. Temporary visual screens would be used where helpful if existing landscape features did not screen views of the areas.
- All construction, operation, and maintenance areas would be kept clean and tidy. Disturbed soil would be revegetated, and construction materials and equipment

would be screened from view and/or are generally not visible to the public, where feasible.
- Siting projects and their associated elements next to important scenic landscape features (or in a setting observed from State scenic highways), national historic sites, national trails, or cultural resources would be avoided to the greatest extent feasible.
- The project proponent would contact the lead agency to discuss the documentation required in a lighting mitigation plan, submit to the lead agency a plan describing the measures that demonstrate compliance with lighting requirements, and notify the lead agency that the lighting has been completed and is ready for inspection.

Because the authority to determine project-level impacts and require project-level mitigation lies with local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this FinalDraft EIA, which does not allow project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if it approves these potential projects.

Consequently, while impacts could likely be reduced to a less-than-significant level with mitigation conditions imposed by land use and/or permitting agency acting as lead agencies under CEQA, if and when a project applicant seeks a permit for a compliance-response-related project, this FinalDraft EIA takes the conservative approach in its post mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related impacts on aesthetics associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

Impact 1-2: Long-Term Operation-Related Impacts on Aesthetics

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a

related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Forklift production is anticipated to occur largely at existing manufacturing facilities. However, the increased production could require the expansion of existing facilities, or introduction of new facilities into the environment. Similarly, the Proposed Regulation could lead to increased production at battery and fuel cell facilities. The increased production could require the expansion of existing battery and fuel cell facilities, or introduction of new facilities into the environment.

These facilities are most often contained within large warehouse shed-type buildings and are often located within industrial areas that have industrial visual character. However, there is uncertainty as to the exact location or character of new facilities or modification of existing facilities, and their relation to viewers. It is possible that these facilities could be located in areas that support landscapes of high visual character. Where forklift production could be performed within existing manufacturing centers, these activities would not be expected to 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, the introduction of new buildings and facilities could degrade the visual quality of a landscape. The addition of these elements could adversely affect aesthetics, including 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 the sensitivity of viewers, the size of the facilities, viewer distance and angle of view, visual absorption capacities, and structures placement in the landscape. Thus, the Proposed Regulation could introduce new structural elements into a highly sensitive and natural area, which could substantially degrade the area's visual quality.

The introduction of new charging infrastructure for ZE technology and on-site hydrogen fueling stations would result in nominal above-ground equipment and features, such as charging stations, storage tanks, fueling dispensers, compressors, and other appurtenant facilities, located within the confines of existing industrial facilities (i.e., warehouses and industrial yards). The visual character of these facilities and equipment would be consistent with the industrial character of the underlying operations and are not expected to be within sensitive natural landscapes of high visual quality. Therefore, impacts from operations of these components are considered less than significant.

Increased demand for batteries and fuel cells could also produce additional demand for mining activities. Hard rock and open pit mining requires the use of heavy-duty equipment (e.g., crushers, rigs, loaders, cutting equipment, cranes) and could result in harmful visual changes to the natural environment, such as hillside erosion, contamination of surface waters, artificial drainage patterns, subsidence, nighttime lighting, and deforestation. In contrast, brine extraction, involves vertical pumping of brine, which evaporates to form brown and white cones of salt minerals. It is reasonably foreseeable that increased demand for batteries and fuel cells could cause additional mineral extraction resulting in these types of adverse visual effects in areas where hard rock mining and brine extraction activities occur domestically and internationally. (For detailed information regarding mineral extraction, see the "Mineral Resources" discussion below in Section IV.B.12.) Therefore, operation-related impacts associated with brine extraction could be potentially significant.

For the reasons discussed above, long-term operation-related aesthetics effects could be potentially significant.

Mitigation Measure 1-2

The regulatory setting in Attachment A includes applicable laws and regulations that relate to aesthetics. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to 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 on aesthetic resources include the following:

- Proponents of new or modified facilities or infrastructure constructed as a result of reasonably foreseeable compliance responses would coordinate with State or local land use agencies to seek entitlements for development and meet all necessary environmental review requirements (e.g., those under 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 scenic or aesthetic impacts of the project.
- The project proponent would color and finish the surfaces of all project structures and buildings visible to the public to: (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 would be areas that are already disturbed and/or are in locations of low visual sensitivity. Where feasible, construction staging and laydown areas for equipment, personal vehicles, and material storage would be sited to take advantage of natural screening opportunities provided by existing structures, topography, and/or vegetation. Temporary visual screens would be used where needed if existing landscape features did not screen views of the areas.
- All construction, operation, and maintenance areas would be kept clean and tidy. Disturbed soil would be revegetated, and construction materials and equipment would be screened from view and/or are generally not visible to the public, where feasible.
- Siting projects and their associated elements next to important scenic landscape features (or in a setting observed from State scenic highways), national historic sites, national trails, or cultural resources would be avoided to the greatest extent feasible.
- The project proponent would contact the lead agency to discuss the documentation required in a lighting mitigation plan, submit to the lead agency a plan describing the measures that demonstrate compliance with lighting requirements, and notify the lead agency that the lighting has been completed and is ready for inspection.

Because the authority to determine project-level impacts and require project-level mitigation lies with local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not allow project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

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 applicant seeks a permit for a compliance-response-related project, this Final~~Draft~~ EIA takes the conservative approach in its post mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operation-related impacts on aesthetics associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

2. Agriculture and Forestry Resources

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Forklift production is anticipated to occur largely at existing manufacturing facilities. However, the increased production could require the expansion of existing facilities or construction of new facilities. Similarly, the increase in the use of batteries and fuel cells could increase the construction and operation of new or expanded manufacturing facilities as well as recycling and refurbishment facilities across the state. While these facilities are most often located in areas zoned for industrial uses, which are environments that are developed and disturbed and are unlikely to contain agriculture and forestry resources, it is possible that they could be located on agricultural or forest lands.

There is uncertainty as to the exact locations of these new and modified facilities. While it is reasonable to anticipate that land use policies controlling the location of new facilities would generally avoid conversion of important agricultural land, the potential of impacts to these areas cannot be entirely dismissed. Thus, Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Williamson Act conservation contract lands, and forest land or timberlands could potentially be converted to industrial uses. Some of the conversion could

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 industrial facilities. 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 conversion of agricultural and forest land. As a result, this impact could be potentially significant if a substantial amount of land is converted to nonagricultural or non-forest use.

Increased demand for lithium-ion batteries could place additional demand on lithium ore extraction internationally. Lithium ore derived from brines is typically found within desert areas, which are generally not 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 if resources are identified on land used for agriculture or forestry. Similar to an increase in demand for lithium-ion batteries, an increase in demand for fuel cells could result in platinum mining and exports from source countries or other states and increase recycling, refurbishment, or disposal of hydrogen fuel cells. If these activities occur within agricultural or forest lands, they could result in loss of these lands. Therefore, short-term construction-related and long-term operation-related agriculture and forestry resources impacts on ports and other lands associated with implementation of the Proposed Regulation could be potentially significant.

Mitigation Measure 2-1

The regulatory setting in Attachment A includes applicable laws and regulations that relate to agriculture and forestry resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities or infrastructure that would be approved by State or local jurisdictions or jurisdictions outside of California. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to 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 on agriculture and forestry resources include the following:

- Proponents of new or modified facilities or infrastructure constructed as a result of reasonably foreseeable compliance responses to the Proposed Regulation would coordinate with State or local land use agencies to seek entitlements for development and meet all necessary environmental review requirements (e.g., those under 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 identified in the environmental document to reduce or substantially lessen the significant environmental impacts of the project on agriculture and forestry resources because CARB has no land use authority, thus mitigation is not within its purview to reduce potentially significant impacts to a less-than-significant level. Any mitigation specifically required for a new or modified facility or infrastructure would be determined by the State or local lead agency and future environmental documents prepared by State or local lead agencies should include 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 nonagricultural 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 forest land 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 or infrastructure construction or modification should be completed prior to the issuance of a grading or building permit by providing the permitting agency with written evidence of completion of the mitigation. Mitigation may include but is not limited to:
        - Restore agricultural land to productive use through removal of equipment or structures or other means, such that the land can be designated as Farmland.
        - If restoration is not feasible, permanently preserve off-site Important Farmland of equal or better agricultural quality, at a ratio of at least 1:1. Preservation may include the purchase of agricultural conservation easement(s); purchase of credits from an established agricultural farmland mitigation bank; contribution of agricultural land or equivalent funding to an organization that provides for the preservation of Important Farmland.
        - Participate in any agricultural land mitigation program, including local government maintained or administered, that provides equal or more effective mitigation than the measures listed.

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

Because the authority to determine project-level impacts and require project-level mitigation lies with State or local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not contain project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

Consequently, while impacts would 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, it cannot be determined with certainty that impacts would be reduced to less than significant given that the authority to require these measures is within the responsibility and jurisdiction of another agency and not CARB. Therefore, this Final~~Draft~~ EIA takes the conservative approach in its post mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a project applicant seeks a permit for compliance-response-related project, short-term construction-related and long-term operation-related impacts on agriculture and forestry resources associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

3. Air Quality

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require

the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Implementation of the Proposed Regulation would include construction of new or modifications of existing ZEF manufacturing facilities, battery and fuel cell recycling and refurbishment facilities, and supporting charging and fueling infrastructure. Additionally, operational changes may take place at existing facilities to alleviate the need for forklifts during daily operations. Any proposed modifications to facilities resulting from any of the compliance responses under the Proposed Regulation would require approvals from the applicable local or State land use authority prior to their implementation. Part of the development review and approval process for projects located in California requires environmental review consistent with California environmental laws (e.g., CEQA) and other applicable local requirements (e.g., local air quality district rules and regulations). The environmental review process would include an assessment of whether implementation of such projects could result in short-term construction-related air quality impacts.

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

Generally, it is expected that during the construction phase for any facilities, criteria air pollutants and toxic air contaminants 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 could generate fugitive particulate matter (PM) dust emissions, which is the primary pollutant of concern during construction. Fugitive PM dust emissions (e.g., respirable particulate matter

[PM_{10}] and fine particulate matter [$PM_{2.5}$]) vary as a function of several parameters, such as soil silt content and moisture, wind speed, acreage of disturbance area, and the intensity of activity performed with construction equipment. Exhaust emissions from off-road construction equipment, material delivery trips, and construction worker-commute trips could also contribute to short-term increases in PM emissions, but to a lesser extent. It is probable that transport of light equipment and personnel for construction activities would take place using light-duty trucks, while transport of heavy equipment or bulk materials would be hauled in heavy-duty trucks. Exhaust emissions from construction-related mobile sources also include reactive organic gases and oxides of nitrogen (NO_X). These emission types and associated levels fluctuate greatly depending on the type, number, and duration of usage for the different pieces of equipment. CARB implements several regulations with the purpose of reducing PM and NO_X emissions and imposing limits on idling from in-use vehicles and equipment, including the Truck and Bus Regulation, the In-Use Off-Road Diesel-Fueled Fleets Regulation, and the Portable Engine Airborne Toxic Control Measure. Much of the equipment used during the construction phase would be subject to these regulations.

The site preparation phase of construction typically generates the most substantial emission levels because of the on-site equipment and ground-disturbing activities associated with grading, compacting, and excavation. Site preparation equipment and activities typically include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Although detailed construction information is not available at this time, based on the types of activities that could be conducted, it would be expected that the primary sources of construction-related emissions would include soil disturbance- and equipment-related activities (e.g., use of backhoes, bulldozers, excavators, and other related equipment). Based on typical emission rates and other parameters for the above-mentioned equipment and activities, construction activities could result in hundreds of pounds of daily PM and NO_X emissions (amount generated from two to four pieces of heavy-duty equipment working 8 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 result in levels that conflict with applicable air quality plans, exceed or contribute substantially to an existing or projected exceedance of California or National Ambient Air Quality Standards, or expose sensitive receptors to substantial pollutant concentrations.

As discussed below, because the Proposed Regulation is a programmatic-level statewide regulatory proposal that would not result in known specific changes to any particular location, CARB cannot predict with any certainty where the compliance responses would occur in California or beyond. Because of the programmatic level of information known about the Proposed Regulation, it would be infeasible to model with any degree of accuracy the exact location and magnitude of specific health impacts that could occur as a result of project-level construction-related emissions in specific air basins.

CARB estimates premature death and other health effects related to PM and NO_X exposure based on a peer-reviewed methodology developed by the U.S. Environmental Protection Agency (US EPA) and quantifies health benefits of regulations and programs using an incidence-per-ton methodology. This modeling requires characterizing a change in air quality occurring under a policy or other change. There is substantial uncertainty regarding the construction details about compliance responses that would be needed to evaluate health effects related to construction emissions. For example, it is not known if certain kinds of compliance responses would be clustered in one area or another, what degree of grading would be needed for each project (which affects PM emissions), or what kind of construction equipment would be used (which affects PM and NO_X emissions); therefore, it would not be possible to determine a total amount of emissions across the state and to use that figure in the incidence-per-ton methodology. As a result, it is not feasible to associate specific health impacts with compliance response construction emissions for the Proposed Regulation. The construction emissions are highly variable in location, duration, and intensity. This contrasts with operational emissions, which represent the air quality benefits of the Proposed Regulation. These benefits are known, as they are the basis for developing the Proposed Regulation. The net emissions reductions resulting from the operational compliance responses can be modeled and demonstrate a net decrease in emissions, as discussed under Impact 3-2; therefore, conclusions about operational health benefits can be and are made on a broader scale.

Once an applicant develops the proposed plans for the project development, the local lead agency will have adequate information from which it can determine project-specific, short-term construction-related impacts on air quality associated with these potential compliance-response development projects. Once the lead agency identifies these project impacts, it can likely reduce them to a less-than-significant level by adopting feasible mitigation at the time of project approval. Notwithstanding the uncertainty of the impacts related to the equally uncertain nature and scope of potential compliance-response development projects, for the sake of full transparency, CARB identified mitigation options, noted below, that lead agencies can and should consider for mitigation of any short-term construction-related impacts on air quality from these future projects. Since implementation and enforcement of mitigation measures are beyond the authority of CARB, however, CARB finds it legally infeasible to adopt and implement these measures on its own.

As a result, short-term construction-related air quality impacts associated with some of the Proposed Regulation measures could be potentially significant.

Mitigation Measure 3-1

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to air quality. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land

use approval and/or permitting authority. New or modified facilities in California would typically qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the lead agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to air quality include the following:

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

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 Final~~Draft~~ EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty regarding the degree of mitigation that may ultimately be implemented to reduce potentially significant

impacts. Although it is unlikely, even after implementation of Mitigation Measure 3-1, significant impacts on air quality resources could occur.

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

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

Despite the dramatic emission reductions and air quality improvements achieved to date, certain areas of California, including the South Coast Air Basin in Southern California and the San Joaquin Valley, continue to exceed the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) for PM_{10}, $PM_{2.5}$, and ozone. The Proposed Regulation would introduce new ZEF requirements that would directly reduce tailpipe emissions.

The main purpose of the Proposed Regulation is to reduce mobile source emissions of criteria air pollutants and toxic air contaminants to improve air quality, as well as to reduce GHG to combat climate change. The Proposed Regulation is an action in addition to existing commitments in the State Implementation Plan that would help further CARB's federal obligations to attain the NAAQS.

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal.

The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in a small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck.

Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories.

Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. If an LSI forklift is replaced with a ZEF that is charged with an internal-combustion generator, the exact emission impact would depend on the fuel (propane, gasoline, diesel), model year, emission standard, and horsepower of both the original LSI forklift and the generator. Generators have different emission standards based on model year, horsepower range, and whether they were certified to the stationary or mobile (portable) standards. The cleanest portable natural gas generators are generally those meeting the 2010 engine standards and over 100 horsepower (see Appendix D to the ISOR for emission factors). The cleanest diesel generators are ones meeting the Tier 4 Final emission standard, which took effect in 2016, and between 75 and 750 horsepower. Each Air District in California is responsible for permitting stationary generator use in their region, with various program requirements and stringency depending on the application. Portable generators are permitted either by the CARB Portable Equipment Registration Program (PERP) or the Air District program.

The cleanest portable propane generators have the exact same emission standards and rates as LSI forklifts. Therefore, if a newer LSI forklift is replaced with a ZEF charged using a propane generator meeting the cleanest standard, the resultant emissions per horsepower-hour would be similar but in some cases could be higher, again depending on the exact generator used and the exact propane forklift being replaced by an electric forklift. Additional factors that would need to be considered when determining emissions impacts include the Energy Economy Ratio-related efficiency gains (per CARB's Low Carbon Fuel Standard [LCFS] Program) due to the forklift transitioning to electric, the generator's efficiency in converting fuel to electric power, and the charging efficiency of the forklift.

For diesel generators, the most recent 2023 model year engines in the 75 to 100 horsepower range have slightly over twice the NOx emissions per brake horsepower-hour[17] compared to the cleanest propane engines meeting the 2010 and later emission standard, or 0.73 grams per brake-horsepower hour for diesel and 0.31 grams per brake-horsepower-hour for propane. For particulate matter of 10 microns and under (PM10), the diesel generator emissions are 10 percent higher than propane, or 0.065 grams per brake-horsepower-hour for diesel compared to 0.06 grams per brake-horsepower-hour for propane. Note that older diesel generators have significantly higher emissions than 2023

[17] CARB, 2017 Off-Road Diesel Emission Factor Update for NOx and PM, October 17, 2023 (web link: *https://ww2.arb.ca.gov/sites/default/files/classic/msei/ordiesel/ordas_ef_fcf_2017.pdf*).

engines. The most common portable diesel generator model year in use currently is 2012, which has 4 times higher NOx and 3 times higher PM emissions compared to a 2023 model year generator. Additionally, all diesel generators produce diesel particulate matter, which is linked to increased health impacts[18].

In sum, as discussed in Section II.C.2.iii above, most forklifts are powered by grid-supplied energy rather than on-site generated energy. Where on-site generation is required (for example, due to grid capacity or infrastructure delays), it can be generated in several ways, including solar, fuel cell, or generators powered by propane, natural gas, or diesel. Because the Proposed Regulation would allow, subject to certain conditions, fleets to continue operating their existing LSI forklifts when infrastructure delays are encountered, CARB staff anticipates that use of diesel-powered generators to power ZE forklifts would be uncommon, although it is not possible to determine which power supply method a given operator may ultimately select, and for how long. Nevertheless, replacing a propane forklift with a zero-emission forklift charged by a diesel generator could increase emissions for that specific case, and could therefore reduce the emission benefits assessed in the regulation.

As discussed previously, fleets could replace LSI forklifts with diesel forklifts instead of zero-emission forklifts in response to the Proposed Regulation. CARB staff expects that diesel forklift purchases will be rare, due to multiple factors set forth in greater detail in Section II.C.8 above (e.g., diesel forklifts generally cannot be used indoors for extended periods of time due to the toxicity of the emissions in an enclosed area and noise; ZE forklifts involve lower lifetime ownership costs; flexibilities built into the ZE Forklifts regulation; etc.). Nevertheless, in an abundance of caution, CARB staff performed a sensitivity analysis to estimate the potential emissions impact of such a compliance response. As discussed in the ISOR, staff's emissions analysis for the Proposed Regulation assumes that for Class V LSI forklifts with a lift capacity between 8,000 and 12,000 pounds, fleets would choose to replace 40 percent of said forklifts with LSI forklifts with a lift capacity just over 12,000 pounds in order to avoid the proposed regulatory requirements. This assumption, referred to as "slippage," was based on similar behavior observed in CARB's regulation for trailer Transport Refrigeration Units (TRUs), where approximately 40 percent of California TRU owners purchased TRUs with reduced or rerated horsepower, which allowed the TRUs to meet significantly less-stringent emission standards[19]. Details on staff's slippage assessment for the Proposed Regulation are provided in Chapter VIII, Section B.2 of the ISOR. For the

[18] CARB, Overview: Diesel Exhaust & Health (web link: *https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health*, last accessed October 2023).

[19] CARB, Appendix H of the Staff Report for the Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate (Approved for Adoption on February 24, 2022): 2021 Update to Emissions Inventory for Transport Reirrigation Units, July 2021 (web link: *https://ww2.arb.ca.gov/sites/default/files/barcu/board/rulemaking/tru2021/apph.pdf*).

purposes of this sensitivity analysis, CARB staff also conservatively assumed that half of the LSI forklifts that would have been replaced with LSI forklifts with a lift capacity greater than 12,000 pounds (i.e., 20 percent of total LSI forklifts between 8,000 and 12,000 pound lift capacity being replaced) would instead be replaced with equivalent diesel forklifts. If this were to occur, statewide NOx emissions in 2028 would be slightly higher than estimated for the Proposed Regulation, by less than 0.1 tpd. Under this scenario the NOx emissions would still be well below the CEQA existing conditions baseline. The difference between the Proposed Regulation scenario and the diesel forklift sensitivity analysis scenario would decline over time such that NOx emissions of the diesel forklift sensitivity analysis scenario would be at parity with the Proposed Regulation by 2038.Similarly, PM emissions under this scenario would be slightly higher in 2028 compared to the Proposed Regulation, by less than 0.01 tpd. Under this scenario the PM emissions would still be well below the CEQA existing conditions baseline. PM emissions would ramp down over time such that there would be a slight decrease compared to the Proposed Regulation by 2038 (by less than 0.01 tpd).

Increased demand for batteries could increase the need for battery manufacturing, refurbishing, and recycling facilities domestically and abroad, which may require modifications to or construction of new facilities. Increased use of batteries (e.g., lead acid and lithium-ion) could also increase lead, lithium, nickel, and cobalt mining and exports from countries with raw mineral supplies. Some lead and lithium demand may be met domestically; additionally, as discussed under Section IV.B.12-1, "Short-Term Construction-Related and Long-Term Operation-Related Effects to Mineral Resources," some nickel demand could be met domestically; however, most nickel is mined outside of the United States. Additionally, most cobalt is mined outside of the United States. (See Mineral Resources section for more information.) The Proposed Regulation would also result in increased battery disposal, as well as increased demand for fuel cells, resulting in increased demand for refurbishing, reusing, and recycling of batteries and fuel cells, for which new facilities may be constructed or modifications to existing facilities may occur.

It is possible that compliance responses may contribute at some level to demand for hydrogen 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 lead, lithium, nickel, cobalt, platinum, and other minerals and materials domestically and worldwide would generate emissions from vehicle and vessel movement involved in shipping and distributing resources to global manufacturing facilities. Additionally, mining these resources would require the use of heavy equipment, which would likely be powered by diesel fuel. However, using these materials to construct ZE forklifts would ultimately offset the combustion of propane and gasoline, thereby reducing associated emissions during the operational life phase of the equipment.

Beyond batteries and fuel cells, disposal of LSI forklifts would increase scrapping, salvage, recycling, and disposal of the forklifts and of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories.

Increased deployment of ZEFs 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. ZEFs would be mostly battery-electric (excepting ZEFs powered by hydrogen fuel cells). The electricity needed to power ZEFs can be provided by California's electrical grid or a compliant distributed generation power source.[20] Air pollutant emissions associated with producing electricity for ZEFs would vary depending on the relative shares of zero- and 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 energy sources will change over time (and even vary hour-to-hour depending on electricity demand and time of day).

Zero-emission vehicles (ZEVs), including ZEFs, have a unique electric load profile and offer potential advantages compared to other types of load. In most circumstances, electric vehicles do not draw energy at the same time they are operating, and charging time is usually much shorter than vehicle dwell time. This provides flexibility to charge at times that are less impactful to the grid and at times of abundant renewable generation availability.[21] Electric vehicles are also able to take advantage of grid friendly vehicle-grid integration strategies, such as rate design, to encourage specific vehicle charging behaviors. Additionally, more advanced strategies, such as on-site and local software and hardware solutions, can shift a large portion of charging loads to hours that are less impactful to the grid, or to charge with renewable generation.

There are significant efforts underway to help shape the load profile from vehicle charging, whether by use of electricity pricing incentives, actively managed or smart charging, or onboard programming of charging times. These would have the effect of moving the load to off-peak times. Modeling results from the CEC's AB2127 report suggest that with some residential charging management strategies, a large amount of charging load will align with daytime solar generation. Furthermore, demand for DC fast charging, as well as public and work Level 2 charging occurs mostly during the day. However, more than half of total charging energy demand still occurs outside solar generation hours (9 a.m. to 5 p.m.) and

[20] Potential compliant distributed generation power sources include solar photovoltaic systems, solar thermal systems, fuel cell systems, and microturbines.
[21] See Fowlie, M., California's Duck-Belly Blues. Energy Institute at Haas, March 2023. (web link: *https://energyathaas.wordpress.com/2023/03/13/californias-duck-belly-blues/*).

the sudden spike in charging load at midnight due to the simultaneous response to off-peak time-of-use rates may overload distribution equipment and affect power quality.[22]

Many ZEFs charging at once can affect utility generation and transmission assets. The potential stresses on the electric grid can be mitigated or avoided through asset management, system design practices, and managed charging to shift a significant amount of the load away from system peak. 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. At current ZEV adoption rates, the electric system is likely able to accommodate increasing EV loads in the short term.[23] However, depending on near-term adoption rates and longer-term growth, local distribution system impacts and transmission level constraints, particularly when accounting for electrification across multiple vehicle classes, may occur and need to be planned for now. Traditional system planning and investments can be combined with new strategies, such as managed/smart charging.[24] Further, storage could manage peak loads from charging in California, and models suggest that EV charging can reduce renewables curtailment anywhere from 25 to 90 percent.[25]

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 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.[26]

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[22] Alexander M. et al., Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment: Analyzing Charging Needs to Support Zero-Emission Vehicles in 2030 (Commission Report), California Energy Commission, July 2021, California Energy Commission Publication Number: CEC-600-2021-001-CMR. (web link: *https://efiling.energy.ca.gov/getdocument.aspx?tn=238853*).

[23] Picon, A., Renewable Energy: Why Electric Vehicles Won't Break the Grid, E&E News, Scientific American, September 2022 (web link *https://www.scientificamerican.com/article/why-electric-vehicles-wont-break-the-grid/*).

[24] Kintner-Meyer, M. et al., Electric Vehicles at Scale – Phase I Analysis: High EV Adoption Impacts on the Western U.S. Power Grid, Pacific Northwest National Laboratory, July 2020 (web link: *https://www.pnnl.gov/sites/default/files/media/file/EV-AT-SCALE_1_IMPACTS_final.pdf*).

[25] Ibid.

[26] California Energy Commission, Renewables Portfolio Standard- Verification and Compliance (web link: *https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard*, last accessed October 2023).

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.[27]

According to the California Energy Commission, in 2020, 36 percent of all California consumed electricity was sourced from renewable power.[28] As grid power electricity becomes cleaner over time to meet the RPS targets, emissions benefits from use of electricity compared to internal-combustion engines will increase accordingly. Therefore, the shift to ZEFs from fossil-fuel internal combustion engines would yield increasing operational air quality benefits over time as the State's electrical grid becomes more renewable pursuant to the RPS.

In conducting its Air Quality and GHG analyses, CARB staff analyzed both "well-to-tank" (WTT)[29] and "tank-to-wheel" (TTW) emissions,[30] to provide a more complete sense of the "well-to-wheel" (WTW) emissions implications of the Proposed Regulation. This EIA provides an overview of these estimated WTT and TTW emissions. The estimated WTT NOx, PM, and GHG emissions for propane and electricity presented below are also presented in greater detail in Chapter I, Section H of the ISOR; that discussion is incorporated here by reference.

As described in Sections III and IV.A, above, this Final~~Draft~~ EIA uses an "existing conditions" baseline for CEQA purposes. This is the standard baseline used in CEQA analyses.[31] For this Final~~Draft~~ EIA, CARB is using an existing conditions baseline set in 2023 because that is the year in which the environmental analysis commenced (the notice of preparation was posted on March 7, 2023). Additionally, to provide further context for the emissions consequences of the Proposed Regulation, CARB has also evaluated the future projected emission impacts of the Proposed Regulation against the "business-as-usual" (BAU) scenario each year for the analysis period from 2023 to 2043. The BAU scenario includes the implementation of all existing State and federal laws and regulations on the forklifts the Proposed Regulation would affect.

Staff used CARB's 2022 California LSI Emissions Inventory Model (LSI Inventory Model), described in Appendix D to the ISOR, to assess the Baseline and BAU forklift inventory

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[27] 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).
[28] California Energy Commission, Tracking Progress (Renewable Energy), February 2020. (weblink: *https://www.energy.ca.gov/sites/default/files/2019-12/renewable_ada.pdf*).
[29] WTT emissions are associated with the extraction, processing, and delivery of fuel or with the generation, transmission, and distribution of electrical energy.
[30] TTW emissions are commonly referred to as "tailpipe emissions".
[31] See 14 C.C.R. § 15125.

scenarios, including forklift sales and population assumptions, for all Class IV and Class V forklifts using electricity, propane, and gasoline. The LSI Inventory Model includes the effects of CARB's large spark-ignition engine and fleet regulations, and compliance with CARB's Low Carbon Fuel Standard (LCFS) program. It is important to note that the benefits of renewable propane (a low-carbon fuel in LCFS) are already included in the BAU scenario, given that LCFS is an existing regulatory program. Therefore, the economic and environmental impacts and benefits attributable to the Proposed Regulation are solely attributable to new regulatory actions beyond those already expected. When compared to the BAU scenario, the Proposed Regulation would increase the expected number of ZEFs (beyond existing regulations) from about 79,000 ZEFs existing in 2023;[32] to about 111,000 ZEFs by 2032; 141,000 ZEFs by 2037; and 168,000 ZEFs by 2038.

Well-To-Tank (WTT) Emissions Analysis

CARB staff reviewed emissions related to the production of propane and the California grid that is used to charge electric forklifts to evaluate the Proposed Regulation's impact on total well-to-wheel (WTW) emissions. Using the CA-GREET3.0 model,[33] CARB staff evaluated the difference in NOx and PM emissions between the production of California liquid propane gas (LPG or propane) and in-state California electricity generation emissions.[34] This portion of the analysis reflects WTT criteria emissions only; combined TTW and WTT emissions together constitute total WTW emissions. As detailed further below, CARB staff found that WTT NOx and PM emissions relating to electric forklifts are ultimately markedly lower than for comparable propane forklifts, as are WTW GHG emissions – particularly when considering the energy efficiency benefits of electric powertrains.

In 2022, California propane-as-fuel production had a NOx emission value of 15.9 grams per million Btu (MMBtu) and PM emission value of 1.4 grams per MMBtu, which is equivalent to 54.3 grams of NOx and 4.9 grams of PM per Megawatt-hour (MWh) of propane production. To determine the criteria emissions for in-state electricity generation for 2021, which is the most recent year the data is currently available, staff used the California energy production listed by CEC of 194,000 gigawatts.[35] In 2021, the average emission rate for in-state

[32] Since 2023 is also the CEQA Baseline year, this number would also serve as the "baseline" number of in-service ZEFs.
[33] CARB, CA-Greet 3.0 Model, Effective January 4, 2019 (web link: https://www.arb.ca.gov/fuels/lcfs/ca-greet/ca-greet30-corrected.xlsm) available from CARB's LCFS Life Cycle Analysis Models and Documentation website (web link: *https://ww2.arb.ca.gov/resources/documents/lcfs-life-cycle-analysis-models-and-documentation*, last accessed October 2023).
[34] Reactive Organic Gases (ROG) upstream emissions were not included in this analysis due to the lack of upstream ROG emissions data in the GREET model and other sources CARB staff reviewed.
[35] California Energy Commission, 2021 Total System Electric Generation (web link:, *https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation*, last accessed October 2023).

electricity generation was 27.1 tpd of NOx and 6.7 tpd of PM, which was determined by using the CARB CEPAM database[36] for 2021, which includes cogeneration emissions. This is equivalent to 46.2 grams of NOx per MWh and 11.4 grams of PM per MWh.

While the analysis shows that the grid has higher PM per MWh produced than does propane, the electric forklift upstream emissions are lower when you include the Energy Economy Ratio (EER)[37] per CARB's LCFS Guidelines.[38] The EER for an electric forklift is 3.8 whereas the EER for a propane forklift is 0.9. The EER reflects that electric forklifts are expected to perform roughly four times as much work as a propane forklift using the same amount of energy.

As an example, consider a baseline diesel forklift that uses 100 kWh of energy during a day of work. A propane forklift is assumed to use 111 kWh (100 kWh divided by 0.9) of energy to do the same amount of work. On the other hand, an electric forklift could achieve the same work using just 26 kWh (100 kWh divided by 3.8) of electrical energy. Assuming a charging efficiency of 85 percent[39], it would take approximately 31 kWh from the grid to recharge that forklift.

As shown in Table 2, the upstream emissions from the propane used by the forklift would amount to 111 kW multiplied by the emission rates for propane, or 6 grams of NOx and 0.54 grams of PM. The upstream emissions from the electricity needed to recharge an electric forklift completing the same work would be 31 kW multiplied by the grid emission rates, or 1.2 grams of NOx and 0.30 grams of PM, significantly lower than the emissions from the propane forklift.

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[36] CARB, CEPAM Database, CEPAM2019v1.03 - Standard Emission Tool (web link: *https://ww2.arb.ca.gov/applications/cepam2019v103-standard-emission-tool*, last accessed October 2023)
[37] The EER is a dimensionless value that represents the efficiency of a fuel as used in a powertrain as compared to a reference fuel (in this case, diesel) used in the same powertrain.
[38] CARB, Low Carbon Fuel Standard (LCFS) Guidance 20-04: Requesting EER-Adjusted Carbon Intensity Using a Tier 2 Pathway Application, April 2020 (web link: *https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lcfsguidance_20-04.pdf*).
[39] Pacific Gas and Electric Company, Emerging Technologies Fact Sheet: Efficient Forklift Battery Charger, November 2009 (web link: *https://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/moneybacksolutions/grocery/fb_ib/forklift_battery_charger_fs.pdf*).

Table 2: Well-To-Tank Emissions Comparison - Propane vs. Electric Forklift

Energy Source	NOx (g/MWh) not adjusted for EER	PM (g/MWh) not adjusted for EER	NOx adjusted for EER (in g per day of work)	PM adjusted for EER (in g per day of work)
Propane	54.3	4.9	**6.0**	**0.54**
California Grid	46.2	11.4	**1.2**	**0.30**

Please note that this analysis does not account for reduced electricity supply-related emissions over time, even though the state and its utilities are constantly working to increase the proportion of renewable resources in the energy portfolio (see the discussion regarding RPS targets above). Incorporating the state's ongoing transition to renewables into the analysis would only serve to further demonstrate the criteria pollutant and GHG emissions benefits from electric forklifts powered from the grid WTT emission benefits were not accounted for in the ISOR's emissions and health benefits calculations. The ISOR analysis focused solely on tailpipe emission benefits (i.e., tank-to-wheel), and did not consider the broader environmental or health benefits associated with WTT emissions. Although the WTT emissions are estimated in the ISOR, they were not included in the emission benefits analysis because it is not known where the propane is produced, and therefore it is uncertain precisely where the benefits relating to decreased fuel production would occur as fleets transition to ZE forklifts. Incorporating the criteria emissions stemming from upstream fuel production into the analysis would yield supplementary emission benefits for the Proposed Regulation.

ROG upstream emissions were not included in this analysis due to the lack of upstream ROG emissions in the GREET model and other sources CARB staff reviewed. The analysis also does not attempt to quantify the full life-cycle emissions from certain upstream and downstream activities such as mineral extraction and processing, manufacturing, and disposal. These aspects of a vehicle's life cycle are inherently speculative, since they involve global commodities and supply chains (and thus could take place in any number of locations around the world). Their effects are also highly indirect compared to fuel generation and consumption, which is primarily what the Proposed Regulation is designed to address. However, some studies have been undertaken to attempt to demonstrate that

even taking into account the material extraction and manufacturing type activities, ZE vehicles remain highly beneficial from an emissions perspective.[40, 41, 42, 43, 44]

For more detail on well-to-tank emissions implications of the Proposed Regulation, please see the "Well-To-Tank Criteria Emissions" subsection that can be found in Chapter I. Section H of the ISOR, which is incorporated here by reference.

Tank-To-Wheel (TTW) Emissions Analysis

The Proposed Regulation would reduce NO_X, $PM_{2.5}$, ROG, and CO_2 emissions from forklifts relative to both Baseline (existing conditions) and the BAU scenario conditions. As described in Section II above, the Proposed Regulation would result in the transition of LSI forklifts to ZE technology from 2026 to 2038. The projected statewide emission reductions of the Proposed Regulation from 2023 through 2043 are identified in Table 3 and Table 4:4, respectively. The emissions presented are tank-to-wheel (TTW) (i.e., tailpipe) emissions reductions; these TTW emissions are equivalent to tailpipe emissions. Criteria pollutant emissions are expressed in tpd and CO_2 emissions are expressed in million metric tons (MMT) per year.

[40] Kelly, J.C. et al., "Energy, Greenhouse Gas, and Water Life Cycle Analysis of Lithium Carbonate and Lithium Hydroxide Monohydrate from Brine and Ore Resources and Their Use in Lithium Ion Battery Cathodes and Lithium Ion Batteries," Resources, Conservation and Recycling, 174 (2021): 105762. (web link: *https://doi.org/10.1016/j.resconrec.2021.105762*).

[41] Ambrose, H. and Kendall, A., Life Cycle Modeling of Technologies and Strategies for a Sustainable Freight System in California, National Center for Sustainable Transportation, November 2019 (web link: *https://rosap.ntl.bts.gov/view/dot/53769/dot_53769_DS1.pdf*).

[42] Ricardo Inc., Life Cycle Analysis Comparison: Electric and Internal Combustion Engine Vehicles, Fuels Institute, January 2022. (weblink: *https://transportationenergy.org/wp-content/uploads/2022/10/FI_Report_Lifecycle_FINAL.pdf*)

[43] Kelly, J.C. et al., Globally Regional Life Cycle Analysis of Automotive Lithium-Ion Nickel Manganese Cobalt Batteries, Mitigation and Adaptation Strategies for Global Change, corrected publication May 2020. (web link: *https://link.springer.com/content/pdf/10.1007/s11027-019-09869-2.pdf*).

[44] Earl, T. et al., Analysis of Long Haul Battery Electric Trucks in EU: Marketplace and Technology, Economic, Environmental, and Policy Perspectives, amended paper August 2018 (web link: *https://www.transportenvironment.org/wp-content/uploads/2021/07/20180725_T&E_Battery_Electric_Trucks_EU_FINAL.pdf*).

Table 3: Statewide TTW Business-As-Usual Emissions of NO_x, $PM_{2.5}$, ROG, and CO_2 from LSI Forklifts

Calendar Year	NO_x (tpd)	$PM_{2.5}$ (tpd)	ROG (tpd)	CO_2 (MMT/year)
2023 (CEQA Baseline)	10.37	0.64	1.93	1.06
2024	9.67	0.64	1.81	1.06
2025	9.11	0.64	1.75	1.06
2026	8.75	0.64	1.75	1.06
2027	8.22	0.64	1.72	1.06
2028	7.78	0.64	1.69	1.06
2029	7.41	0.64	1.64	1.06
2030	7.16	0.64	1.63	1.06
2031	6.91	0.64	1.63	1.06
2032	6.71	0.64	1.60	1.06
2033	6.64	0.64	1.58	1.06
2034	6.45	0.64	1.56	1.06
2035	6.30	0.64	1.56	1.06
2036	6.08	0.64	1.54	1.06
2037	6.00	0.64	1.50	1.06
2038	5.80	0.64	1.45	1.06
2039	5.79	0.64	1.45	1.06
2040	5.71	0.64	1.46	1.06
2041	5.76	0.64	1.48	1.06
2042	5.68	0.64	1.42	1.06
2043	5.67	0.64	1.42	1.06

Table 4: Statewide TTW NO_x, $PM_{2.5}$, ROG, and CO_2 Benefits of the Proposed Regulation Relative to Business-As-Usual

Calendar Year	NO_x (tpd)	$PM_{2.5}$ (tpd)	ROG (tpd)	CO_2 (MMT/year)
2023 (CEQA Baseline)	0.00[45]	0.00	0.00	0.00
2024	0.00	0.00	0.00	0.00
2025	0.00	0.00	0.00	0.00
2026	0.00	0.00	0.00	0.00
2027	0.00	0.00	0.00	0.00
2028	0.90	0.05	0.20	0.08
2029	0.58	0.05	0.14	0.09
2030	1.89	0.11	0.37	0.18
2031	2.01	0.17	0.46	0.28
2032	1.91	0.19	0.48	0.30
2033	2.53	0.26	0.72	0.44
2034	2.42	0.27	0.71	0.45
2035	3.45	0.38	0.99	0.62
2036	3.34	0.39	0.98	0.64
2037	3.26	0.38	0.95	0.64
2038	4.90	0.57	1.28	0.95
2039	4.88	0.57	1.28	0.95
2040	4.81	0.57	1.29	0.95
2041	4.86	0.58	1.31	0.95
2042	4.78	0.57	1.24	0.95
2043	4.78	0.57	1.24	0.95

Emissions benefits increase from 2023 (CEQA Baseline year) as older, dirtier LSI Forklifts are replaced with newer, cleaner LSI forklifts from 2023 through 2025 due to natural turnover and as the ZEF fleet requirements phase in and the population of ZEFs increases from 2026 due to the Proposed Regulation. Cumulative total emission reductions from 2023 to 2043 are estimated to result in 44,223 tons reduction of NOx; 2,101 tons reduction of PM2.5;

[45] Note that the emission reductions show as 0.00 for the first several years because the Proposed Regulation phases in over time. See discussion below following this table.

7,513 tons reduction of ROG; and 9.4 MMT reduction of CO_2 relative to the CEQA Baseline levels (2023). Of those, 18,724 tons reduction of NOx; 2,075 tons reduction of PM2.5; 4,973 tons reduction of ROG; and 9.4 MMT reduction of CO_2 would be attributable to the Proposed Regulation (as determined by subtracting emissions reductions under the BAU scenario from the total future emissions reductions including those caused by the Proposed Regulation).

The statewide NO_x, $PM_{2.5}$, ROG, and CO_2 emissions impacts of the Proposed Regulation are presented in the following four figures. Figure 1 depicts estimated NO_x reductions from 2023 through 2043 of the Proposed Regulation relative to both the Baseline and the BAU scenarios. Beginning in 2023 (the Baseline year), NO_x emissions would continue to decline until 2038 when emissions begin to stabilize. This decline would be attributable to the expected natural turnover of pre-2010 MY LSI forklifts to newer, cleaner 2010 MY and subsequent LSI forklifts. In the BAU scenario, NO_x emissions are projected to decline from 10.4 tpd in 2023 to 5.7 tpd in 2043.

Under the Proposed Regulation, NO_x emissions are projected to decline from 10.4 tpd in 2023 to 0.9 tpd in 2038. The first wave of phase-outs would begin in 2028 starting with 2018 MY and older Targeted Class IV Forklifts in large fleets. Then, in 2029, small fleets and agricultural operations would begin phasing out their Targeted Class IV Forklifts starting with 2016 MY and older units. For Targeted Class V Forklifts, the phase-out would begin in 2030 for all fleets starting with 2017 MY and older forklifts.

The first three years of the phase-out schedule, from 2028 through 2030, would be characterized by a decrease in NO_x emissions of 1.9 tpd. This projected decline is primarily attributed to the fact that the subset of Targeted Forklifts that would be phased out by the first compliance date in each forklift category would include forklifts equipped with dirtier pre-2010 LSI engines.

Because the phase-out schedule would be staggered by forklift category (i.e., Targeted Class IV Forklifts in large fleets, Targeted Class IV Forklifts in small fleets and agricultural operations, and Targeted Class V Forklifts) and grouped model years, NO_x reductions would consistently decline until the last phase-out date in 2038. Class V LSI forklifts with a lift capacity greater than 12,000 pounds would remain, along with low-use LSI forklifts at microbusinesses. These forklifts are responsible for the 0.9 tpd NO_X in 2038.

Figure 1. Projected Statewide NO_x TTW Emissions Changes: Comparing Existing Conditions (CEQA) Baseline, BAU Scenario, and Proposed Regulation

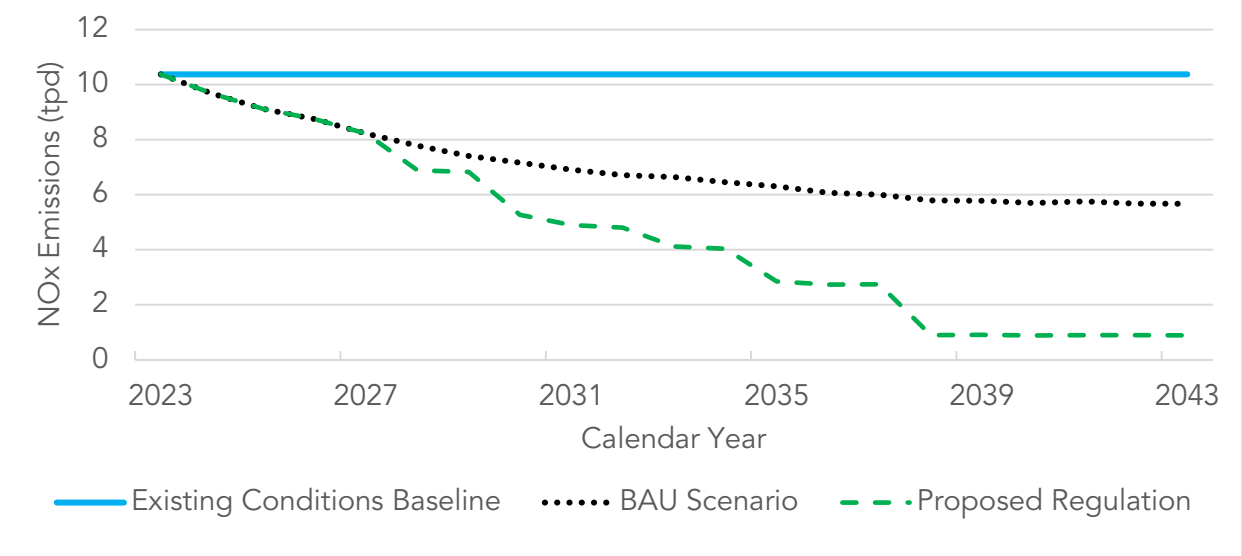


Figure 2 depicts estimated $PM_{2.5}$ emission reductions from 2023 through 2043 of the Proposed Regulation relative to the CEQA Baseline and BAU scenarios. Particulate matter emissions from LSI engines under the BAU scenario are projected to remain relatively stable over the regulatory horizon. LSI engines are not subject to PM emission standards, and the LSI Inventory Model uses the latest available PM emission factors for propane and gasoline equipment, consistent with the OFFROAD2021 model and the US EPA MOVES model. Based on those emission factors, there is no significant difference in PM emissions by equipment model year. Therefore, in the BAU scenario, estimated $PM_{2.5}$ emissions remain relatively flat from 2023 through 2043 at approximately 0.64 tpd. With the Proposed Regulation, $PM_{2.5}$ emissions are projected to decline from 0.64 tpd in 2026 to 0.07 tpd in 2038 as Targeted Class IV and Class V Forklifts are phased out.

Figure 2. Projected Statewide PM2.5 TTW Emissions Changes:

Comparing Existing Conditions (CEQA) Baseline, BAU Scenario, and Proposed Regulation

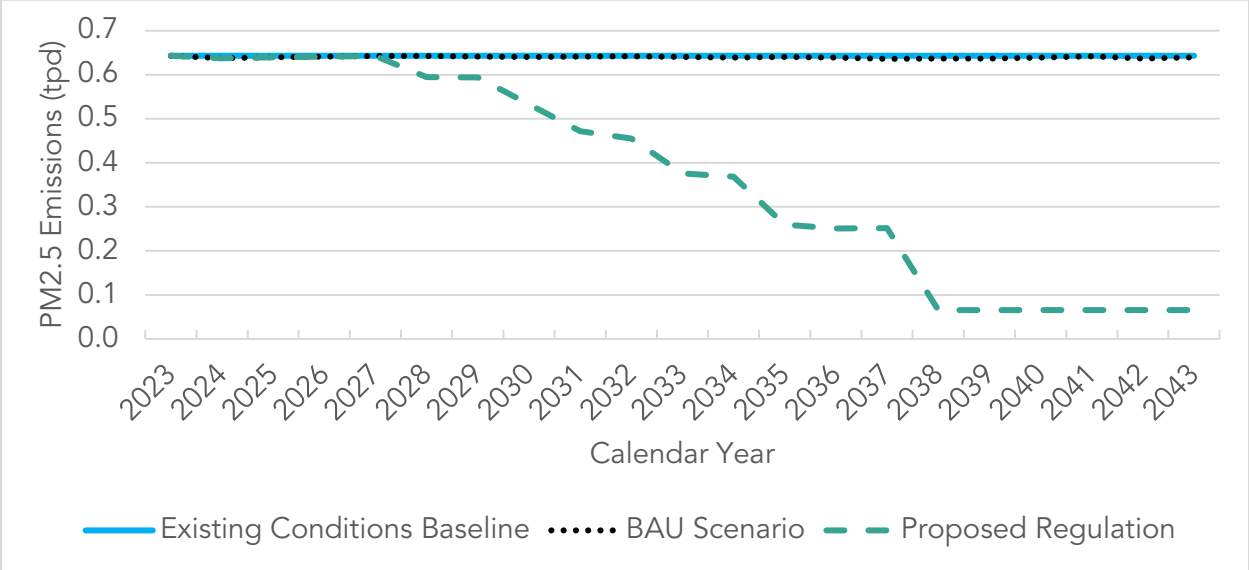
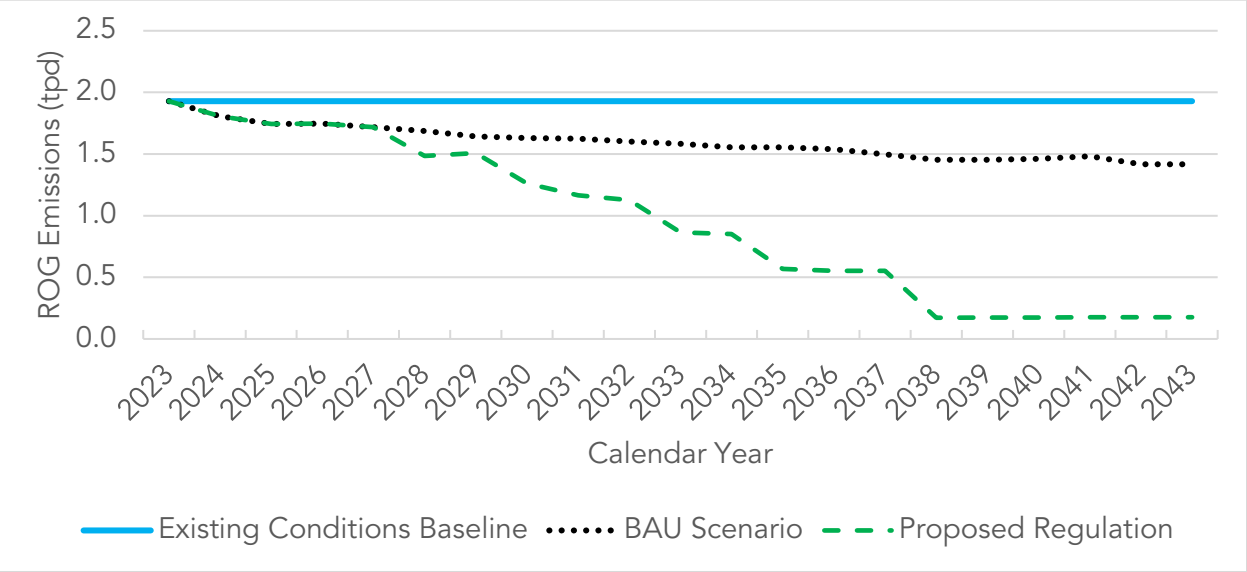


Figure 3 depicts estimated ROG emission reductions from 2023 through 2043 of the Proposed Regulation relative to the CEQA Baseline and BAU scenarios. Beginning in 2023, in the BAU scenario, ROG emissions gradually decline until 2042 when emissions begin to stabilize. This decline is attributable to the expected natural turnover of pre-2010 MY LSI forklifts to newer, cleaner 2010 MY and subsequent LSI forklifts. In the BAU scenario, ROG emissions are projected to decline from 1.93 tpd in 2023 to 1.42 tpd in 2043. With the Proposed Regulation, ROG emissions are expected to drop from 1.93 tpd in 2023 to 0.17 tpd in 2038.

Figure 3. Projected Statewide ROG TTW Emissions, Comparing Baseline, BAU Scenario, and Proposed Regulation



For more details regarding quantified emission reductions from the operations associated with the Proposed Regulation, see Appendix D of the ISOR. Overall, the Proposed Regulation is expected to considerably reduce emissions across the state, as set forth in detail in the ISOR and in this Final~~Draft~~ EIA. These emissions reductions would lead to substantial net improved health outcomes across the state, as described in the ISOR.

Implementation of the Proposed Regulation would minimize emissions from forklifts and would assist the State in meeting the NAAQS and CAAQS both regionally and statewide. As discussed in detail in the ISOR, emission reductions resulting from the implementation of the Proposed Regulation 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 Regulation. For these reasons, long-term operational-related air quality impacts would be **beneficial.**

Impact 3-3: Short-Term Construction-Related and Long-Term Operational Impacts from Odors

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new

facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Construction of projects may generate short-term odors from the use of diesel-powered construction equipment; however, the duration of these emissions would 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.

The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they can be unpleasant and lead to distress among the public and generate citizen complaints to local governments and regulatory agencies. Land uses commonly considered to be potential sources of odorous emissions include wastewater treatment plants, sanitary landfills, food processing facilities, chemical manufacturing plants, rendering plants, paint/coating operations, and agricultural feedlots and dairies. Implementation of the Proposed Regulation would not include activities or processes that are associated with these types of major odor sources.

The Proposed Regulation could result in the operation of industrial land uses, such as forklift manufacturing and battery/fuel cell recycling/refurbishment facilities, that could be a source of odors (for example, from foundries, paint booths, and metal furnaces). However, the actual uses that would be developed are not known at this time, as no specific development projects are currently proposed. For this reason, the degree of impact with respect to potential odors associated with future projects and their effects on adjacent receptors is uncertain. It would be expected that any future sources of odors would be governed by applicable nuisance rules by a local air district; however, CARB cannot ensure that these rules would be applied uniformly such that odor impacts would be avoided.

As a result, short-term construction-related and long-term operational odor impacts associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 3-3: Implement Mitigation Measure 3-1

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

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this FinalDraft EIA 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 odor effects resulting from compliance responses associated with the Proposed Regulation could be **potentially significant and unavoidable**.

4. Biological Resources

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational

changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

The Proposed Regulation could result in the construction of a variety of facilities to support forklift and battery/fuel cell manufacturing, battery/fuel cell recycling and refurbishment, and infrastructure to support charging and hydrogen fueling, each of which could potentially require ground-disturbing activities, such as excavation, grading, and site preparation. The specific design details, siting locations, and soil compaction details for manufacturing facilities are not known at this time. While these activities would primarily occur at existing facilities, they could require the expansion of existing facilities or construction of new facilities. Areas in which forklifts are built, batteries and fuel cells manufactured and recycled/refurbished, and infrastructure support facilities are developed at industrial sites generally do not support special-status species or sensitive habitats because they are maintained to facilitate industrial uses. However, there are some plant and animal species that occur in industrially developed areas. Construction of new facilities and supporting infrastructure could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching, and paving.

These ground disturbing activities could adversely affect biological resources. The biological resources affected would depend on the specific location of the compliance response. These impacts could occur from modifications to existing habitat, including the removal, degradation, and fragmentation of riparian systems, wetlands, and/or other sensitive natural wildlife habitats and plant communities; interference with wildlife movement or wildlife nursery sites; loss of special-status species; disturbance of protected nesting birds; and/or conflicts with the provisions of adopted habitat conservation plans, natural community conservation plans, or other conservation plans or policies to protect natural resources. Additionally, these activities could result in the direct mortality of individual plants and animals from destruction of dens, burrows, or nests through ground compaction, ground disturbance, placement of debris, or vegetation removal. Indirect impacts on 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 existing structures.

In summary, implementation and compliance with the Proposed Regulation could result in potentially significant impacts on biological resources. Depending on the regulatory status of the species (e.g., listed as endangered under the federal or California Endangered Species Act) and the nature of the habitat disturbance, compliance with permitting requirements under the National Environmental Policy Act, the federal or California Endangered Species Act, Migratory Bird Treaty Act, Clean Water Act Sections 404 and 401, or related State or local laws would be required. It is expected that potential impacts on special-status species and sensitive habitats would be minimized through compliance with the aforementioned protective regulations; however, the terms of permits obtained under

these regulations are unknown as are the precise locations at which construction work would occur. Moreover, it is beyond the authority of CARB to enforce such compliance. Therefore, short-term construction-related biological resources impacts could be potentially significant.

Mitigation Measure 4-1

The regulatory setting in Attachment A includes applicable laws and regulations that relate to biological resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities or infrastructure that would be approved by State or local jurisdictions or jurisdictions outside of California. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to 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 on biological resources include the following:

- Proponents of new or modified facilities or infrastructure constructed as a result of reasonably foreseeable compliance responses to the Proposed Regulation would coordinate with State or local land use agencies to seek entitlements for development and meet all necessary environmental review requirements (e.g., those under 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 identified in the environmental document to reduce or substantially lessen the significant environmental impacts of the project on biological resources. Any mitigation specifically required for a new or modified facility or infrastructure would be determined by the State or local lead agency.
- Actions required to mitigate potentially significant biological impacts may include the following:
    - Retain a qualified biologist to prepare a biological inventory of site resources prior to ground disturbance or construction. If protected species or their habitats are present, comply with the federal and California Endangered Species Acts and other applicable regulations. Construction and operational planning would require that project activities do not impair important fish or wildlife movement corridors or nursery sites.

- Retain a qualified biologist to prepare a wetland survey of on-site resources. This survey should be used to establish setbacks and prohibit disturbance of riparian habitats, streams, intermittent and ephemeral drainages, and other wetlands. Wetland delineation is required by Section 404 of the Clean Water Act and is administered by the U.S. Army Corps of Engineers.
- Prohibit construction activities during the rainy season with requirements for seasonal weatherization and implementation of erosion prevention practices.
- Prohibit construction activities in the vicinity of raptor nests during the nesting season, or establish protective buffers and provide monitoring, as needed, to address project activities that could cause an active nest to fail.
- Prepare site design and development plans that avoid or minimize disturbance of habitat and wildlife resources and prevent stormwater discharge that could contribute to sedimentation and degradation of local waterways. Depending on disturbance size and location, a National Pollutant Discharge Elimination System (NPDES) construction permit may be required from the State Water Resources Control Board.
- Prepare spill prevention and emergency response plans and hazardous waste disposal plans as appropriate to protect against the inadvertent release of potentially toxic materials.
- Plant replacement trees and establish permanently protected suitable habitat at ratios considered acceptable to comply with "no net loss" requirements.
- Contractor will keep the site and materials organized, and store materials in a way that discourages wildlife from using them as potential places to hide or nest (e.g., capping pipes, covering trash cans, and emptying trash receptacles consistently and promptly when full).

Because the authority to determine project-level impacts and require project-level mitigation lies with State or local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not contain project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

Consequently, while impacts would 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, it cannot be determined with certainty that impacts would be reduced to less than significant given that the authority to require these measures is within the responsibility and jurisdiction of another agency and not CARB.

Therefore, this Final~~Draft~~ EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a project applicant seeks a permit for compliance-response-related project, short-term construction-related impacts on biological resources associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

New ZEFs would operate the same as existing forklifts and therefore would not result in impacts on biological resources. Similarly, use of charging infrastructure would require occasional inspection and maintenance that is like existing inspection and maintenance activities. As a result, these activities would not result in operation-related biological resources impacts.

Implementation of the Proposed Regulation could require operation of battery and hydrogen fuel cell facilities and infrastructure, such as recycling or refurbishment facilities, as well as hydrogen generation facilities. Long-term operation of these facilities would often include the presence of workers; movement of automobiles, trucks, and heavy-duty equipment; and operation of stationary equipment. This environment would generally not be conducive to the presence of biological resources located on-site or nearby. For example, operation of a new facility could deter wildlife from using the surrounding habitat

or could impede wildlife movement through the area. As is already the case with these facilities, this impact would be substantial if there is not adequate habitat nearby. Vegetation management may be necessary to comply with fire codes and defensible space requirements, which may require tree trimming and other habitat modification that could, for example, result in species mortality or nest failure. Furthermore, operation of facilities could result in the accidental introduction of hazardous substances to the environment, which could adversely affect biological resources.

Increased demand for batteries and hydrogen fuel cells could result in an increase in mining-related activities, including hard rock and open pit mining and continental brine extraction. 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). 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 an increase in mining and exports from source countries or other states and increase recycling, refurbishment, or disposal of hydrogen fuel cells at existing facilities. If mining activities occur on or near biological resources, which is probable, they could result in loss or degradation of these resources. For example, brine extraction can result in a decline in populations of birds that use hypersaline lagoons.[46] In addition, noise disturbance may occur that may interfere with nesting birds, and the use of heavy equipment could result in loss of special-status species or conflicts with a habitat conservation plan or natural community conservation plan.

Therefore, long-term operation-related impacts on biological resources associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 4-2

The regulatory setting in Attachment A includes applicable laws and regulations that relate to biological resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities or infrastructure that would be approved by State or local jurisdictions or jurisdictions outside of California. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to CEQA, project-specific impacts and mitigation would be

[46] Fox, Kayla, Environmental Impacts of Lithium Extraction, November 6, 2020. (weblink: *https://storymaps.arcgis.com/stories/0898df4b1f7e475ab49a4ae23aaed426/print*, accessed May 2023).

identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts on biological resources include the following:

- Proponents of new or modified facilities or infrastructure constructed as a result of reasonably foreseeable compliance responses to the Proposed Regulation would coordinate with State or local land use agencies to seek entitlements for development and meet all necessary environmental review requirements (e.g., those under 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 identified in the environmental document to reduce or substantially lessen the significant environmental impacts of the project on biological resources. Any mitigation specifically required for a new or modified facility or infrastructure would be determined by the State or local lead agency. However, future environmental documents prepared by State or local lead agencies could include the following mitigation measures:
    - Prohibit vegetation management activities in the vicinity of raptor nests during the nesting season, or establish protective buffers and provide monitoring as needed to ensure that project activity does not cause an active nest to fail.
    - Maintain site design and development plan features that avoid or minimize disturbance of habitat and wildlife resources and prevent stormwater discharge that could contribute to sedimentation and degradation of local waterways during project operation.
    - Maintain and replace, as needed, trees and permanently protected suitable habitat identified during the construction phase of the project.

Because the authority to determine project-level impacts and require project-level mitigation lies with State or local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not contain project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

Consequently, while impacts would 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, it cannot be determined with certainty that impacts would be reduced to less than significant given that the authority to require

these measures is within the responsibility and jurisdiction of another agency and not CARB. Therefore, this FinalDraft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a project applicant seeks a permit for compliance-response-related project, long-term operation-related impacts on biological resources associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

5. Cultural Resources

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

The Proposed Regulation could result in the construction of or modification to a variety of facilities to support forklift and battery/fuel cell manufacturing, battery/fuel cell recycling and refurbishment, and infrastructure to support charging and hydrogen fueling, each of which could potentially require ground-disturbing activities, such as excavation, grading, and site preparation. However, it is not known what kinds of construction or modifications would occur, and whether ground disturbance would be needed because the specific design details, siting locations, and soil compaction details are not known at this time. As a result, there is uncertainty as to the presence of culturally, historically, archaeologically, and

paleontologically significant resources at future project sites. Therefore, it is foreseeable that undocumented cultural or paleontological resources could be unearthed or otherwise discovered during ground-disturbing and construction activities.

Unique archaeological or historical resources might include stone tools, tool-making debris, stone milling tools, shell or bone items, and fire-affected rock or soil darkened by cultural activities. Paleontological resources include fossils. Historic materials might include metal, glass, or ceramic artifacts. Ground disturbance, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of lots and roadway associated with the construction of new infrastructure and facilities, could damage cultural, prehistoric, and historic sites; tribal cultural resources; paleontological resources; historic buildings; and heritage landscapes. The reasonably foreseeable compliance responses that could entail demolition activity (e.g., the construction of new manufacturing facilities on sites that support existing structures) could result in the loss of a historically or culturally significant structure. Future new facilities could be located in a region where undocumented prehistoric or historic-era cultural resources may be found.

Following construction, operation of facilities or infrastructure associated with the compliance responses would not require ground disturbance in addition to that performed 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. The presence of new structures or infrastructure may, however, change the visual setting of the surrounding area, which could adversely affect historic resources and districts with an important visual component. For example, although it is unlikely such a facility would be sited in a historic district, a new structure or infrastructure may not be consistent with the visual character of a historic district. As a result, operation impacts could be potentially significant.

Moreover, the increased demand for lithium-ion battery storage and fuel cells could result in an increase in lithium and platinum mining at existing extraction facilities. Ground-disturbing activities from hard rock and continual brine mining activities could affect areas and artifacts of cultural, historical, and/or paleontological significance. Although these activities would most likely take place at existing extraction facilities, these facilities may be located in culturally sensitive areas.

Therefore, short-term construction-related and long-term operation-related impacts on cultural resources associated with implementation of the Proposed Regulation could be potentially significant.

Mitigation Measure 5-1

The regulatory setting in Attachment A includes applicable laws and regulations that relate to cultural resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities or infrastructure that would be approved by State or local jurisdictions or jurisdictions outside of California. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to 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 on cultural resources include the following:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the Proposed Regulation would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to avoid, reduce or substantially lessen the potentially significant impacts on cultural resources associated with the project.
- Actions required to mitigate potentially significant cultural resources impacts may include the following; however, any mitigation specifically required for a modified facility would be determined by the local lead agency.
    - Retain the services of cultural resources specialists with training and background that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61.
    - If cultural resources are discovered during project activities, all work in the immediate vicinity of the find shall cease and a qualified cultural resource specialist (e.g., archaeologist, architectural historian, depending on the resource identified) meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period.

- Seek guidance from the State and federal lead agencies, as appropriate, for coordination of nation-to-nation consultations with the Native American tribes.

- Regulated entities shall consult with lead agencies early in the planning process to identify the potential presence of cultural properties. The agencies shall provide the project developers with specific instruction on policies for compliance with the various laws and regulations governing cultural resources management, including coordination with regulatory agencies and Native American tribes.
- If a resource determined to be significant by the qualified archaeologist or architectural historian (i.e., because the find is determined to constitute either an historical resource, cultural resource, or a unique archaeological resource), the archaeologist shall work with the project proponent to avoid disturbance to the resource, and if complete avoidance is not possible, follow accepted professional standards in recording any find. Preservation in place is the preferred manner of mitigating impacts to archaeological sites. For historically significant structures, if avoidance is infeasible, an appropriate documentation plan (e.g., recordation consistent with Historic American Buildings Survey Guidelines) shall be required.
- Regulated entities shall define the area of potential effect (APE) for each project, which is the area where project construction and operation may directly or indirectly cause alterations in the character or use of historic properties. The APE shall include a reasonable construction buffer zone and laydown areas, access roads, and borrow areas, as well as a reasonable assessment of areas subject to effects from visual, auditory, or atmospheric impacts, or impacts from increased access.
- Regulated entities shall retain the services of a paleontological resources specialist with training and background that conforms with the minimum qualifications for a vertebrate paleontologist as described in Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures, Society of Vertebrate Paleontology.[47]
- Regulated entities shall conduct initial scoping assessments to determine whether proposed construction activities, if any, could disturb formations that may contain important paleontological resources. Whenever possible,

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

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.

Because the authority to determine project-level impacts and require project-level mitigation lies with State or local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not contain project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

Consequently, while impacts would 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, it cannot be determined with certainty

that impacts would be reduced to less than significant given that the authority to require these measures is within the responsibility and jurisdiction of another agency and not CARB. Therefore, this Final~~Draft~~ EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a project applicant seeks a permit for compliance-response-related project, short-term construction-related and long-term operation-related impacts on cultural resources associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

6. Energy

Impact 6-1: Short-Term Construction-Related Effects on Energy

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Short-term energy expenditures would be required to facilitate manufacturing of new or modification of existing forklifts, lithium-ion batteries, and hydrogen fuel cells. Energy would also be consumed to construct supportive land-based electrical power infrastructure to accommodate increases in charging stations, such as trenching for conduit lines, adding connection and electrical panels, and installing charging connectors, electrical cables, or other systems. An increase in demand for lithium-ion batteries and fuel cells could result in an increase in recycling, refurbishment, or disposal of lithium-ion batteries and hydrogen

fuel cells. Energy would be expended to construct new infrastructure to support fuel cells and hydrogen fueling infrastructure. Energy for these construction projects would be supplied by an appropriate utility service provider; however, this energy use would be inherently short term and would result in creating cleaner technologies, which would in turn increase efficiency and result in decreased emissions of criteria air pollutants and toxic air contaminants, thus minimizing potentially adverse environmental effects.

Construction of new facilities would temporarily increase demand for fuels (including diesel and gasoline), as well as natural gas and electricity. Typical earth-moving equipment that may be necessary for construction includes graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. Short-term construction-related activities associated with implementation of the Proposed Regulation would be similar to the construction and maintenance activities already occurring throughout the state. 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. As noted above, the ultimate goal of this energy use is to develop more energy-efficient and cleaner technologies.

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

Impact 6-2: Long-Term Operation-Related Impacts on Energy

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium,

lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

The Proposed Regulation would result in demand for electricity for various purposes, including manufacturing processes for new or modified forklifts, batteries and fuel cells, and battery and fuel cell recycling and disposal, as well as electricity needed for generating and transporting hydrogen fuels. Operation of ZEFs would also require electricity to charge the ZEFs, and would increase electrical demand and consumption compared to operation of LSI forklifts. The activities affected by the Proposed Regulation could increase local, regional, and statewide electricity use. The level of energy demand generated from these actions and the potential for a change in energy demand would be site-specific and dependent on the location and scale that would occur. Staff estimates that the increase in electricity demand statewide due to the increased use of ZEFs will be approximately 1.1 Terawatt~~Gigawatt~~ hours per year in 2038, as discussed in Appendix D of the ISOR, "2023 LSI Forklift Emission Inventory".[48] Utility service providers would provide the electricity to meet the demand generated from the various measures under the Proposed Regulation, including those that would displace energy derived from fossil fuel combustion with electricity. 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

[48] Section 6.e of Appendix D to the ISOR, "2023 LSI Forklift Emission Inventory". Appendix D explains that the expected increase in gridded energy demand from electric forklifts after full implementation of the Proposed Regulation is roughly 0.4 percent of the statewide gridded energy demand. Note also that the Draft EIA used the incorrect term "Gigawatt" in this section above. The correct unit that CARB staff intended to use here is "Terawatt". Despite this typo (which has been corrected in the text above), the calculations used in Staff's underlying energy demand analysis were correct, and the 0.4 percent figure presented in Appendix D remains accurate.

energy grid is experiencing peak levels of demand. Charging during non-peak times, such as overnight, would also help manage electrical load.

California's RPS requires that California's load-serving entities procure 60 percent of their retail electricity from eligible renewable sources by 2030. The RPS also established the following interim targets for utilities:

- 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.[49]

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.[50]

According to the California Energy Commission, in 2020, 36 percent of all California consumed electricity was sourced from renewable power.[51]

California's energy capacity is expected to increase as a result of GHG-reducing regulations and policies. To meet the statewide targets of 1990 levels of GHG emissions by 2020 (i.e., Assembly Bill [AB] 32) and 40 percent below 1990 levels of GHG emissions by 2030 (i.e., SB 32), GHG reductions will need to be made from several sectors, including the energy and mobile source sectors. Statewide regulations such as the Advanced Clean Cars and Advanced Clean Trucks programs, Advanced Clean Fleet Regulation, Advanced Clean Transit Regulation, In-Use Locomotive Regulation, and Innovative Clean Transit Regulation aim to achieve GHG reductions from the mobile source sector through the deployment of electric and ZE and near-ZE vehicles, which would replace vehicles powered by internal combustion engines.

Battery-electric ZEFs will rely on the electric grid to provide consistent, on-demand power to fuel vehicles. Historically, the state's electric grid has expanded and evolved as consumer demand for electricity services has grown, including with the recent emergence of electric vehicles. California's existing grid and approved investments occurring now will allow the state to handle millions of electric vehicles in the near-term, and projections show the

[49] California Energy Commission, Renewables Portfolio Standard- Verification and Compliance (weblink: *https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard*, last accessed October 2023).
[50] Senate Bill No. 100, California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, 2018. (weblink: *https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100*).
[51] California Energy Commission, Tracking Progress - Renewable Energy, February 2020. (weblink: *https://www.energy.ca.gov/sites/default/files/2019-12/renewable_ada.pdf*).

broader western grid can handle up to 24 million electric vehicles without requiring any additional power plants[52]. Longer term, transitioning to 100 percent vehicle electrification is achievable with a gradual build out of clean energy resources – more gradual than during times of peak electricity sector growth in the past given electric vehicle loads can be distributed over non-peak hourly periods. Several studies have shown no major technical challenges or risks have been identified that would prevent a growing electric vehicle fleet at the generation or transmission level, especially in the near-term. Additionally, based on historical growth rates, sufficient energy generation and generation capacity is expected to be available to support a growing electric vehicle fleet.

Utilities are working in coordination with the California Public Utilities Commission (CPUC) and the CEC to fund infrastructure expansion projects to meet this future demand. CPUC is also responsible for regulating electric power procurement and generation and evaluates the necessity for additional power generation by California utilities in both the short and long term.[53] State agencies and electric utilities have begun proactively planning for electrical distribution upgrades and new load for electric vehicles via statewide energy system planning processes, including the CEC's Integrated Energy Policy Report forecasting, California Independent System Operator transmission planning, and the CPUC's Integrated Resource Plan proceeding for 10-year grid enhancement strategies. The CPUC has already approved utility investments for upgrading the electric grid along with electricity rate changes to fund those investments. The CPUC opened a new proceeding to modernize and prepare the grid in anticipation of multiple distributed energy sources. With this new proceeding, the CPUC aims to evolve grid capabilities to integrate distributed energy sources including electric vehicle charging. The CPUC also approved time-of-use rates, which provide signals to electricity rate changes at different times of the day that would impact the cost to fuel for electric vehicle drivers that charge at home. This decision was made to optimize grid resources, maintain grid reliability, and provide reasonable rates for residential electric vehicle charging. Additionally, recent policy changes allow investor-owned utilities in California to establish rules and tariffs under general rate case proceedings for electrical distribution infrastructure on the utility side of the meter to support transportation electrification charging stations.

Additional energy capacity in the state would be achieved through improved energy efficiency, energy storage, demand response, and generation of renewable resources. The

[52] Pacific Northwest National Laboratory, Influx of Electric Vehicles Accelerates Need for Grid Planning (News Release), July 2020 (weblink: *https://www.pnnl.gov/news-media/influx-electric-vehicles-accelerates-need-grid-planning*).

[53] California Public Utilities Commission, Electric Procurement and Generation (weblink: *https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement*, last accessed October 2023).

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 toward decarbonization, or the elimination of on-site natural gas combustion to power stoves and water heaters consistent with the findings of the 2018 Integrated Energy Policy Report, which identifies carbonization of the building sector as a major policy shift that will assist the State in meeting its long-term GHG reduction goals (i.e., reducing GHG emissions by 80 percent of 1990 levels by 2050).

The above mentioned factors combine to expand the state's energy capacity as compared to previous years. For example, in-state energy capacity rose from 55,534 megawatts in 2001 to 84,617 megawatts in 2022, an increase of 52 percent.[54] Additionally, as mentioned above, the California Energy Code is expected to increase the energy efficiency of buildings within the state, which would reduce energy demand generated by the building sector.

Operation of new or expanded facilities could result in an increase in vehicle mileage of workers and result in an increase in gasoline and diesel fuel consumption associated with worker commute trips. However, this increase in vehicle miles traveled (VMT) would facilitate meeting the emission reduction goals and objectives of the Proposed Regulation, which would inherently result in more efficient use of energy and would, therefore, not be considered unnecessary or wasteful.

Appendix F of the CEQA Guidelines lists increased use of renewable energy as an appropriate strategy to mitigate energy impacts. Use of ZE and near-ZE technologies, as discussed above, would divert energy from fossil fuel-powered systems and engines to electrical systems (and other systems, such as fuel cells), which, as mandated by the RPS, will become increasingly more renewable in the coming years. Arguably, through the use of electric and ZE and near-ZE technologies and an increasingly more renewable energy grid, implementation of the Proposed Regulation would improve the efficiency of energy use across the state.

Therefore, implementation of the Proposed Regulation would not result in the wasteful, unnecessary, or inefficient use of energy. Thus, long-term operation-related energy impacts would be **less than significant.**

[54] California Energy Commission, Electric Generation Capacity and Energy (weblink: *https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/electric-generation-capacity-and-energy*, accessed October 2023).

7. Geology and Soils

Impact 7-1: Short-Term Construction-Related and Long-Term Operation-Related Impacts on Geology and Soils

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

The Proposed Regulation could result in the construction of a variety of facilities to support forklift and battery/fuel cell manufacturing, battery/fuel cell recycling and refurbishment, and infrastructure to support charging and hydrogen fueling, each of which could potentially require ground-disturbing activities, such as excavation, grading, and site preparation. The specific design details, siting locations, and soil compaction details for manufacturing facilities are not known at this time. Construction of new infrastructure and facilities could cause adverse geologic impacts, such as erosion from vegetation grubbing and grading. Additionally, construction and operation of these facilities could be subjected to existing geologic hazards, such as seismic shaking, liquefaction, landslides, unstable soils, and other potential vulnerabilities. However, there is uncertainty as to the exact location of new facilities and infrastructure. As a result, there is uncertainty as to geologic conditions at future project sites. Furthermore, it is not known what kinds of modifications to existing facilities would occur and whether any ground disturbance would be needed.

Nonetheless, it is probable that construction activities for new facilities would 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 could have the potential to adversely affect soil and geologic resources in construction areas. Because of the nature of construction activities (e.g., no groundwater injection is anticipated), construction and operation of these facilities would not exacerbate seismicity. The level of susceptibility to seismicity-related geologic hazards like erosion and landslides varies by location and geologic conditions at the site.

In unusual cases in which facilities would be sited in areas without sewer systems, it would be expected that new facilities would be sited on lands capable of supporting septic tanks or alternative wastewater disposal. However, there is inherent uncertainty surrounding the location and magnitude of such facilities, which could also be located outside of California. Therefore, it is conceivable that a facility could be located on soils incapable of supporting facility-generated wastewater.

Lastly, implementation of the Proposed Regulation could result in increased demand for lithium-ion batteries and fuel cells, which could cause a surge in lithium, lead, nickel, cobalt and platinum mining activity within the United States, as well as internationally. Mining would have adverse effects on erosion from potential loss of forests and soil disturbance.[55]

Therefore, short-term construction-related and long-term operation-related impacts on geology and soils associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 7-1

The regulatory setting in Attachment A includes applicable laws and regulations that relate to geology and soils. CARB does not have the authority to require implementation of mitigation related to new or modified facilities or infrastructure that would be approved by State or local jurisdictions or jurisdictions outside of California. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to CEQA, project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority.

[55] Kinhal, Vijayalaxmi, How Does Mining Affect the Environment. (weblink: *https://greenliving.lovetoknow.com/How_Does_Mining_Affect_the_Environment*, last accessed May 2023).

Recognized practices routinely required to avoid and/or minimize geology and soils impacts include the following:

- Proponents of new or modified facilities constructed because of reasonably foreseeable compliance responses to new regulations would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents shall implement all mitigation measures identified in the environmental document to reduce or substantially lessen the environmental impacts related to seismic instability, fault rupture, soil erosion, landslides, loss of topsoil. The definition of actions required to mitigate potentially significant geology and soil impacts may include the following; however, any mitigation specifically required for a new or modified facility will be determined by the local lead agency.
    - Prior to the issuance of any development permits, proponents of new or modified facilities or infrastructure shall prepare a geotechnical investigation/study, which would include an evaluation of the depth to the water table, liquefaction potential, physical properties of subsurface soils including shrink-swell potential (expansion), soil resistivity, slope stability, mineral resources, and the presence of hazardous materials.
    - Proponents of new or modified facilities or infrastructure shall provide a complete site grading plan, and drainage, erosion, and sediment control plan with applications to applicable lead agencies. Proponents will avoid locating facilities on steep slopes, in alluvial fans and other areas prone to landslides or flash floods, or with gullies or washes, as much as possible.
    - Disturbed areas outside of the permanent construction footprint shall be stabilized or restored using techniques such as soil loosening, topsoil replacement, revegetation, and surface protection (i.e., mulching).

Because the authority to determine project-level impacts and require project-level mitigation lies with State or local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not contain project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

Consequently, while impacts would 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, it cannot be determined with certainty that impacts would be reduced to less than significant given that the authority to require these measures is within the responsibility and jurisdiction of another agency and not CARB. Therefore, this Final~~Draft~~ EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a project applicant seeks a permit for a compliance-response-related project, short-term construction-related and long-term operation-related impacts on geology and soils associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

8. Greenhouse Gas Emissions

Impact 8-1: Short-Term Construction-Related and Long-Term Operation-Related Impacts on Greenhouse Gas Emissions

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically (see "Mineral Resources" section below). The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal.

The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Increased production of new forklifts and forklift remanufacture and repower work may occur in response to the Proposed Regulation. It is not possible to predict exactly where project-related improvements would occur or what each project would involve. Modifying an existing facility using forklifts for new or expanded charging capabilities may involve

trenching to install new power cable lines and installation of power meters and power pedestals, all of which would be installed near existing service areas. Charging equipment may require construction of an enclosed concrete pad that houses equipment (e.g., transformers, cables, power circuit breakers). Depending on the size and scope of the modifications to facilities, construction equipment could range from earth-moving equipment, such as backhoes and excavators, to hand and power tools to install smaller devices, such as valves and flanges. Construction activities might include demolition and excavation, backfilling, compacting, paving, and equipment deliveries. Construction may last up to a year at each location when considering the development, permitting, and construction phases. However, because of the small size and scope of charging infrastructure, CARB staff assumes actual construction activities to occur for less than 6 months at each given project site.

Modifications and upgrades to industrial facilities to accommodate hydrogen fueling would include improvements, such as storage, refueling, and required safety improvements. Often, sites where forklifts operate and maintenance facilities are located are in heavily disturbed areas that include vacant, industrial-zoned land. A newly established hydrogen refueling station may require the construction of a hydrogen refueling pad and supporting infrastructure improvements, retrofits to ventilation (e.g., modified electrical equipment, fans), spark-proofing on electrical wiring, and installation of a hydrogen detection system.

This construction activity could require use of vehicles and equipment that would consume fuel and emit GHG emissions for construction activities, materials transport, and worker commutes. Construction-related GHG emissions would be temporary and last for only 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 ($MTCO_2e$) per 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 and EMFAC. These models require consideration of assumptions, including construction timelines and energy demands (e.g., fuel and electricity).

Air districts differ in their treatment of construction emissions. For instance, the Sacramento Metropolitan Air Quality Management District recommends that construction emissions be compared to a bright-line threshold of significance of 1,100 $MTCO_2e$ per year.[56] Other air districts, such as the Bay Area Air Quality Management District, do not have a numerical

[56] Sacramento Metropolitan Air Quality Management District, Greenhouse Gas Emissions, CEQA Guide, February 2021. (weblink: *http://www.airquality.org/LandUseTransportation/Documents/Ch6GHG2-26-2021.pdf*).

threshold for assessing the significance of construction-generated GHG emissions.[57] Additionally, other air districts, such as the South Coast Air Quality Management District, recommend amortizing construction emissions over a 30-year period and adding these emissions to total operational emissions.[58] Placer County Air Pollution Control District recommends the use of CalEEMod Model for estimating direct emissions from construction and operational activities as well as indirect emissions from energy consumption, and solid waste disposal.[59]

Depending on project size, the generation of construction emissions is inherently short term when compared to operational emissions, which continue to be emitted until a project or facility has been decommissioned. Nevertheless, GHGs typically have a long atmospheric lifespan. Therefore, construction and manufacturing related emissions must be considered in the overall context of a project, including its operational components.

Despite higher GHG emissions from vehicle manufacturing, BEVs on average have much lower lifecycle GHG emissions than comparable ICE vehicles, as manufacturing emissions are quickly offset by reduced emissions from operation. Numerous studies have documented the proven emissions reduction benefits of electrifying vehicles, demonstrating that even taking into account all "life-cycle" type impacts, electric vehicles deliver real air pollution and GHG reduction benefits.[60, 61, 62, 63]

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[57] Bay Area Air Quality Management District, CEQA Air Quality Guidelines, 2017. (weblink: *https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en*).

[58] South Coast Air Quality Management District. Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold, 2008. (weblink: *http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf*).

[59] Placer County Air Pollution Control District, CalEEMod Model, *https://www*.placerair.org/1808/Recommended-CEQA-Modeling-Analysis-Tools

[60] Elgowainy, Amgad, Jarod Kelly, Michael Wang. Life Cycle Greenhouse Gas Emissions for Small Sport Utility Vehicles, September 8, 2021 (web link: *https://www.hydrogen.energy.gov/pdfs/21003-life-cycle-ghg-emissions-small-suvs.pdf*, last accessed January, 2023).

[61] Kelly, J. C. et al., Energy, Greenhouse Gas, and Water Life Cycle Analysis of Lithium Carbonate and Lithium Hydroxide Monohydrate from Brine and Ore Resources and Their Use in Lithium Ion Battery Cathodes and Lithium Ion Batteries, Resources, Conservation and Recycling, November 2021 (web link: *https://doi.org/10.1016/j.resconrec.2021.105762*).

[62] International Energy Agency, Comparative Life-Cycle Greenhouse Gas Emissions of a Mid-Size BEV and ICE Vehicle, last updated May 2021 (web link: *https://www.iea.org/data-and-statistics/charts/comparative-life-cycle-greenhouse-gas-emissions-of-a-mid-size-bev-and-ice-vehicle*).

[63] O'Connell, A. et al., White Paper: A Comparison of the Life-Cycle Greenhouse Gas Emissions of European Heavy-Duty Vehicles and Fuels, The International Council on Clean Transportation, February 2023 (web link: *https://theicct.org/wp-content/uploads/2023/02/lca-ghg-emissions-hdv-fuels-europe-feb23.pdf*).

Well-To-Tank Emissions

To assess the impact of WTT emissions on GHGs, staff used the CI values and EERs per CARB's LCFS program.[64] Although a quantitative analysis was not performed, based on adjusted CI values, as shown in Table 5, WTW GHG emissions from a forklift using fossil-fuel-based propane are more than four times greater than such emissions from a ZEF using grid power. Additionally, while the unadjusted CI value of renewable propane is substantially lower than the CI values for both fossil-fuel-based propane and California grid electricity, when the EER is taken into account, WTW GHG emissions from a forklift using renewable propane are 1.7 times greater than for a ZEF using grid power.

Table 5. Carbon Intensity Value Comparison: Energy Production for Propane vs. Electric Forklift

Fuel Pathway	Carbon Intensity (gCO_2e/MJ)	Energy Economy Ratio	EER Adjusted Carbon Intensity
Fossil-Fuel-Based Propane	83.19[65]	0.9	92.43
Renewable Propane	33.26[66]	0.9	36.96
CA Grid	81[67]	3.8	21.32

Notably, this analysis does not take into account future efforts to reduce electricity generation emissions by increasing California's portfolio of renewable and zero-carbon

[64] Carbon intensity is defined by the LCFS program (Title 17, California Code of Regulation, Sections 95480 through 95503) as "the quantity of life cycle greenhouse gas emissions, per unit of fuel energy, expressed in grams of carbon dioxide equivalent per megajoule (gCO2e/MJ)."
[65] CARB, Low Carbon Fuel Standard Current Fuel Pathways spreadsheet, last updated September 14, 2023 (web link: https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/current-pathways_all.xlsx).
[66] Average CI based on renewable propane pathways in the Low Carbon Fuel Standard Current Fuel Pathways spreadsheet, last updated September 14, 2023 (web link: https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/current-pathways_all.xlsx).
[67] CARB, Low Carbon Fuel Standard Annual Updates to Lookup Table Pathways: 2023 Carbon Intensity Values for California Average Grid Electricity Used as a Transportation Fuel in California and Electricity Supplied Under the Smart Charging or Smart Electrolysis Provision, November 2022 (web link: https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/2023_elec_update.pdf)
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power generation such as solar and wind. According to the California Energy Commission, in 2020, 36 percent of all California consumed electricity was sourced from renewable power.[68] The state is on a course toward 60% renewables by 2030, and 100% renewables or zero carbon energy by 2045. [69] These factors would mean that in the future, electric forklifts powered from the grid will have even more of an advantage in terms of lower criteria and GHG emissions than propane powered forklifts.

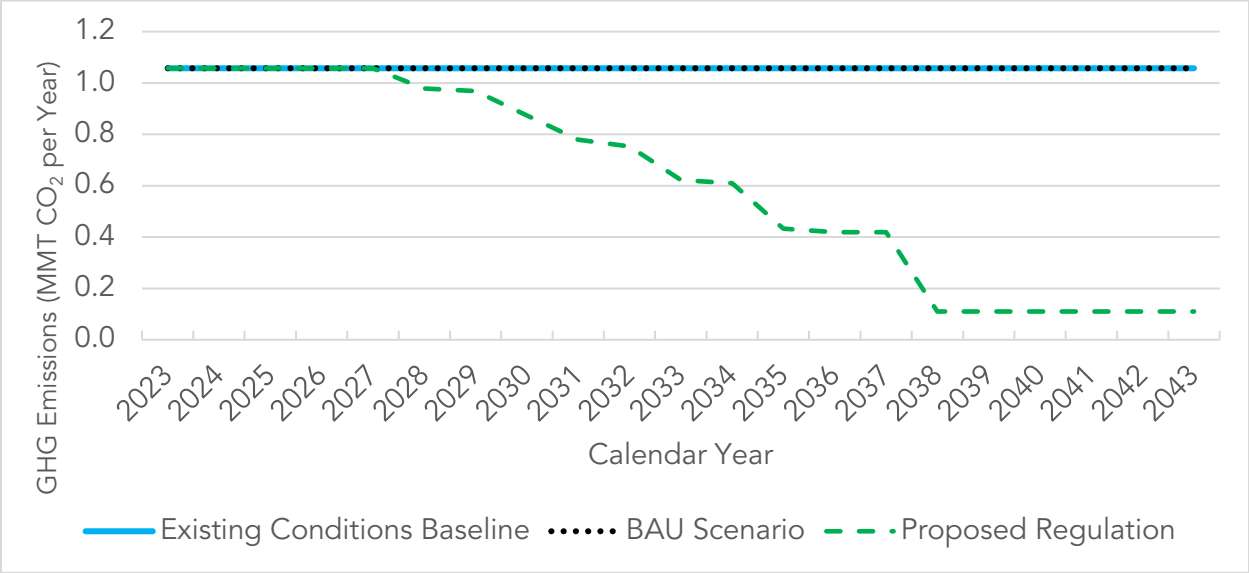
As shown above, including upstream fuels and energy related emissions in the analysis would tend to show further GHG benefits from the Proposed Regulation. This would therefore further support CARB's determination that the Proposed Regulation would reduce GHG emissions, even compared to renewable propane. It remains unknown where the upstream WTT emission benefits would occur (e.g., some benefits could be outside California if propane is imported from out of state).

Tank-To-Wheel Emissions

As shown in in Chapter V of the ISOR, "Air Quality", and in the Air Quality section of this Final~~Draft~~ EIA, the Proposed Regulation is expected to reduce tank-to-wheel CO_2 emissions from affected forklifts from 1.06 MMT per year in 2026 to 0.1 MMT per year by 2038. Under the Baseline and BAU scenarios, GHG emissions from LSI engines are projected to remain relatively stable over the regulatory horizon. LSI engines are not subject to GHG emission standards, and the LSI Inventory Model uses the latest available GHG emission factor (EF) for propane and gasoline equipment, consistent with the OFFROAD2021 model and the US EPA MOVES model. Based on those EFs, there is no significant difference in GHG emissions by equipment MY for LSI forklifts. Figure 4 summarizes the estimated CO_2 emission reductions per year from the Proposed Regulation, and the CEQA Baseline and BAU scenarios. Cumulative total emission reductions of CO_2 relative to the CEQA Baseline and BAU scenarios are estimated to be 9.4 MMT.

[68] California Energy Commission, Tracking Progress – Renewable Energy, February 2020 (web link: https://www.energy.ca.gov/sites/default/files/2019-12/renewable_ada.pdf).
[69] For example, the state is working toward 100% renewable and zero-carbon retail electricity sales by 2045 pursuant to Senate Bill 100 (2018). SB 100 also establishes an interim procurement target of 60% renewables by 2030.

Figure 4. Projected Statewide CO2 TTW Emissions: Comparing Existing Conditions (CEQA) Baseline, BAU Scenario, and Proposed Regulation



Increased demand for 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 batteries could also increase mining and exports from countries with raw mineral supplies. Some mineral demand may be met domestically. See the "Mineral Resources" section below for more information on minerals-related compliance responses.

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 minerals 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 emissions associated with combustion of gasoline, diesel, and other fossil fuels, reducing associated emissions.

As discussed under Impact 3-2, "Long-Term Operation-Related Impacts on Air Quality," of this Final~~Draft~~ EIA, the electrical demand generated by the use of ZEFs is anticipated to be supplied by public utility companies. California's electrical grid is anticipated to become increasingly cleaner by using more renewable energy over the coming years to comply with

the targets mandated by the RPS. Additionally, hydrogen production is anticipated to become cleaner with renewable energy production. Production of energy for battery-electric and hydrogen ZEFs would lead to an increase in GHG emissions. However, the decrease in demand for fossil fuels and fossil fuel production and combustion may would lead to an overall long-term reduction in GHG emissions. Implementation of the Proposed Regulation is anticipated to minimize emissions associated with operation of forklifts and would assist the State in meeting GHG reduction goals. Therefore, long-term operational-related GHG impacts associated with implementation of the Proposed Regulation would be **beneficial.**

9. Hazards and Hazardous Materials

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Production of new or retrofitting existing forklifts is expected to occur primarily at existing forklift manufacturing facilities. Manufacturing or retrofitting would primarily be accomplished using heavy-duty equipment currently used at existing manufacturing facilities that would not appreciably change the risk of hazards and hazardous materials

impacts. Therefore, short-term construction-related hazardous impacts from production of new forklift or forklift engine replacement would be less than significant.

The Proposed Regulation could require the construction of a variety of facilities to support forklift and battery/fuel cell manufacturing, battery/fuel cell recycling and refurbishment, and infrastructure to support charging and hydrogen fueling, each of which could potentially require ground-disturbing activities, such as excavation, grading, and site preparation. However, there is uncertainty as to the exact location of new facilities and infrastructure. As a result, there is uncertainty as to the presence of hazardous materials at future project sites. Furthermore, it is not known what kinds of modifications to existing facilities would occur and whether any ground disturbance would be needed. Nonetheless, it is probable that construction activities for new facilities would require disturbance of undeveloped areas or potentially encounter contamination and hazardous materials from past activities at existing industrial sites.

Construction activities associated with the Proposed Regulation may require the transport, use, and disposal of hazardous materials. Construction activities generally use heavy-duty equipment requiring periodic refueling and lubricating fluids. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site as they are not designed for use on public roadways. Thus, such maintenance involves the use of a service vehicle that travels to the location of the construction equipment, and it is during the transfer of fuel that the potential for an accidental release is most likely. Although precautions would be taken to ensure that any spilled fuel is properly contained and disposed of, and such spills are typically minor and localized to the immediate area of the fueling (or maintenance), the potential remains for a substantial release of hazardous materials into the environment.

For the reasons described above, short-term construction-related hazard and hazardous materials impacts associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 9-1

The regulatory setting in Attachment A includes 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 or infrastructure that would be approved by State or local jurisdictions or jurisdictions outside of California. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to CEQA, 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 upset and accident-related impacts include the following:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed Regulation would coordinate with local land use agencies to seek entitlements for development, including the completion of all necessary environmental review requirements (e.g., CEQA). The local land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions required to mitigate potentially significant upset and accident-related hazard impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.
    - Handling of potentially hazardous materials/wastes shall be performed by or under the direction of a licensed professional with the necessary experience and knowledge to oversee the proper identification, characterization, handling and disposal or recycling of the materials generated as a result of the project. As wastes are generated, they shall be placed, at the direction of the licensed professional, in designated areas that offer secure, secondary containment and/or protection from storm water runoff. Other forms of containment may include placing waste on plastic sheeting (and/or covering with same) or in steel bins or other suitable containers pending profiling and disposal or recycling.
    - The temporary storage and handling of potentially hazardous materials/wastes shall be in areas away from sensitive receptors such as schools or residential areas. These areas shall be secured with chain-link fencing or similar barrier with controlled access to restrict casual contact from non-Project personnel. All project personnel that may encounter potentially hazardous materials/wastes shall have the appropriate health and safety training commensurate with the anticipated level of exposure.

Because the authority to determine project-level impacts and require project-level mitigation lies with State or local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not contain project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

Consequently, while impacts would 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, it cannot be determined with certainty that impacts would be reduced to less than significant given that the authority to require these measures is within the responsibility and jurisdiction of another agency and not CARB. Therefore, this Final~~Draft~~ EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a project applicant seeks a permit for a compliance-response-related project, short-term construction-related impacts on hazards and hazardous materials associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

Impact 9-2: Long-Term Operation-Related Impacts on Hazards and Hazardous Materials

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Operation of electric forklift charging infrastructure and hydrogen fueling facilities under the Proposed Regulation could use potentially hazardous equipment, such as electrical cables, and high-voltage systems, and storage tanks. Additionally, the long-term operation of forklifts and facilities associated with ZE technology would result in the routine transport, use, and disposal of hazardous materials (i.e., lithium-ion batteries, lead batteries, fuel cells, hydrogen fuels). Harmful substances can enter the environment in several ways throughout

the entire cycle of fuel production, manufacturing, transportation, storage, distribution, and usage.

Increased use of ZE technology in forklifts could require the use of batteries or hydrogen fuel cells to provide alternative or additional electricity to forklifts with large electrical loads. An increase in demand for batteries and fuel cells could result in an increase in use of facilities that manufacture, recycle, refurbish, and dispose of batteries and hydrogen fuel cells. Hazardous materials are used and created during operations of such facilities. For example, smelting is used to recycle batteries and creates hazardous emissions, although those are generally treated. Chemical leaching processes use chemicals such as hydrochloric acid and sulfuric acid.[70] These activities would be more likely to occur indoors in a contained area and with proper equipment, limiting the potential effects of spills and accidents as activities involving the use of hazardous materials would occur within the confines of facilities. The risk of outdoor release of hazardous materials would be highest during the movement of raw goods to manufacturing facilities or the export of finished goods containing hazardous materials following the manufacturing process. The transport, use, and disposal of hazardous materials would be required to comply with all applicable federal, State, and local laws that would reduce the potential for accidents and require certain actions should a spill or release occur; however, the potential remains for the release of hazardous materials into the environment.

Implementation of the Proposed Regulation could also result in an increase in demand for mining, including lithium. Lithium is currently sourced in two ways: from hard rock 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), creating a fire and explosion hazard. In addition, lithium reacts with water, forming highly flammable hydrogen gas and corrosive fumes of lithium hydroxide. Lithium hydroxide represents a potentially substantial environmental hazard, particularly to water organisms. Implementation of the Proposed Regulation may also increase demand for platinum mining. Platinum mining can expose workers to excessive dust that can result in respiratory ailments.[71]

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

[71] Sepadi et al., Platinum Mine Workers' Exposure to Dust Particles Emitted at Mine Waste Rock Crusher Plants in Limpopo, South Africa, 2020. (weblink: *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7014327/*).

Lithium metal batteries contain potentially toxic metals, such as copper and nickel, and organic chemicals, like toxic and flammable electrolytes.[72] Improper management of lithium-ion batteries could pose an environmental hazard and be of concern to public safety. There have been some cases with consumer products containing lithium-ion batteries catching fire after or during transportation to disposal facilities. Once ignited, the resulting fires can be especially difficult to extinguish as temperatures can rapidly increase to up to 500 degrees Celsius (932 degrees Fahrenheit) as a result of interactions between a battery's cathodes and anodes., and water is an ineffective extinguisher.[73] The likelihood to overheat or ignite is increased if the batteries are poorly packaged, damaged, or exposed to a fire or other heat source. However, when packaged and handled properly and in compliance with the appropriate federal and State laws, lithium batteries pose no environmental hazard (79 *Federal Register* 46011, 46032); 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 also inherent risks associated with the installation and use of hydrogen fuel cells and fueling facilities, 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, and high diffusivity, and it is chemically lighter than air.[74] However, fuel cell manufacturers developed and extensively safety-tested carbon-fiber hydrogen tanks, which can withstand environmental and human-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 hydrogen fuel cells and 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. However, any increased rates of disposal of batteries and hydrogen fuel cells would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. Compliance with the appropriate federal and State laws governing the handling of potentially

[72] Zeng et al., Solving Spent Lithium-Ion Battery Problems in China: Opportunities and Challenges, Renewable and Sustainable Energy Reviews, 52, pp. 1759–1767, 2015.
[73] Battery University, BU-304a: Safety Concerns with Li-Ion, updated February 22, 2022. (weblink: *https://batteryuniversity.com/article/bu-304a-safety-concerns-with-li-ion*, accessed August 8, 2022.
[74] Health and Safety Executive, Fuel Cells: Understand the Hazards, Control the Risks, 2004.

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.

For the reasons described above, long-term operation-related impacts on hazards and hazardous materials associated with the Proposed Regulation could be potentially significant.

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

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

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

10. Hydrology and Water Quality

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a

related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

The Proposed Regulation could result in the construction of a variety of facilities to support forklift and battery/fuel cell manufacturing, battery/fuel cell recycling and refurbishment, and infrastructure to support charging and hydrogen fueling, each of which could affect existing hydrology and water quality conditions. However, there is uncertainty as to the exact location of new facilities and infrastructure. As a result, there is uncertainty as to the existing hydrologic conditions and the potential effects thereupon. Furthermore, it is not known what kinds of modifications to existing facilities would occur and whether any ground disturbance would be needed. These facilities could be located in areas with a range of hydrologic conditions. For example, some places may be vulnerable to flooding and mudflow. Construction of ZE facilities and infrastructure may exacerbate hydrologic hazards because grading and excavation 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; and erection of new buildings and facilities. Specific construction projects would be required to comply with applicable erosion measures, water quality standards, and waste discharge requirements (e.g., NPDES, stormwater pollution prevention plan [SWPPP]). With respect to depleted groundwater supply, impaired water quality, and polluted runoff issues, because of the nature of associated activities, construction of new facilities or infrastructure would not be anticipated to result in substantial groundwater demands, water quality, or runoff. 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.

Therefore, short-term construction-related impacts on hydrology and water quality associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 10-1

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

- Proponents of new or modified facilities constructed because of reasonably foreseeable compliance responses to new regulations would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents shall implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the potentially significant impacts of a project. The definition of actions required to mitigate potentially significant hydrology and water quality impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency. Project proponents shall implement the following measures as applicable:
    - Implement Best Management Practices to reduce sedimentation and pollution of surface waters, such as installation of silt fencing around the perimeter of active construction areas, sediment traps, revegetation, and rock and gravel cover.
    - Train construction workers for proper response to hazardous materials spills as well as responsibilities for maintaining best management practices on site.
    - Drainage plans for runoff shall be designed to contain adequate capacity for projected flows on site.
    - Avoid filling of waters of the United States and waters of the State to the extent feasible. If activities require a waste discharge requirement or Section 401 Water Quality Certification, comply with all avoidance, reduction, and compensatory measures.

- Under the oversight of the local lead agency, prior to issuance of any construction permits, the proponents for the proposed project shall prepare a stormwater drainage and flood control analysis and management plan. The plans will be prepared by a qualified professional and will summarize existing conditions and the effects of project improvements, and will include all appropriate calculations, a watershed map, changes in downstream flows and flood elevations, proposed on- and off-site improvements, features to protection downstream uses, and property and drainage easements to accommodate downstream flows from the site. Project drainage features will be designed to protect existing downstream flow conditions that will result in new or increased severity of off-site flooding.
- Project proponents shall establish drainage performance criteria for off-site drainage, in consultation with county engineering staff, such that project-related drainage is consistent with applicable facility designs, discharge rates, erosion protection, and routing to drainage channels, which could be accomplished by, but is not limited to: (a) minimizing directly connected impervious areas; (b) maximizing permeability of the site; and, (c) stormwater quality controls such as infiltration, detention/retention, and/or biofilters; and basins, swales, and pipes in the system design.
- The project proponent shall design and construct new facilities to provide appropriate flood protection such that operations are not adversely affected by flooding and inundation. These designs will be approved by the local or State land use agency. The project proponent will also consult with the appropriate flood control authority on the design of off-site stream crossings such that the minimum elevations are above the predicted surface-water elevation at the agency's designated design peak flows. Drainage and flood prevention features shall be inspected and maintained on a routine schedule specified in the facility plans, and as specified by the county authority.
- As part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid off-site groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions.

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

Although unlikely after implementation of Mitigation Measure 10-1, it is possible that significant impacts on hydrology and water quality could still occur.

Consequently, while impacts would 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, it cannot be determined with certainty that impacts would be reduced to less than significant given that the authority to require these measures is within the responsibility and jurisdiction of another agency and not CARB. Therefore, this Final~~Draft~~ EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a project applicant seeks a permit for a compliance-response-related project, short-term construction-related impacts on hydrology and water quality associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Operation of facilities to support ZEF manufacturing, battery and fuel cell production, battery and fuel cell recycling and refurbishment, and charging and hydrogen fueling infrastructure would be required to comply with applicable erosion measures, water quality standards, and waste discharge requirements (e.g., NPDES, SWPPP). The operation of these facilities would not require ground disturbance in addition to that performed during

construction. With respect to depleting groundwater supplies, because of the nature of associated activities, new facilities are not anticipated to result in substantial demands.

Under the Proposed Regulation, the demand for oil and gas extraction activities could decrease. Oil and gas extraction can produce substantial adverse effects on hydrology. For instance, fracking requires the use of millions of liters of water and consequently generates millions of liters of wastewater, which can contaminate groundwater with toxic chemical compounds.[75] As of June 2015, US EPA had identified 1,173 known chemicals used in the fracking industry. Additionally, accidental release of oil or gas and related wastewater (e.g., spills from pipelines or trucks, leakage from wastewater ponds or tanks) can introduce toxicants, radionuclides, and dissolved metals and affect the salinity of local drinking water supplies.[76] Through implementation of the Proposed Regulation, the aforementioned effects on hydrologic resources and water quality would be reduced as ZE forklifts displace internal combustion engine-powered forklifts. As a result, adverse hydrologic and water quality effects associated with oil and gas extraction could be decreased through implementation of the Proposed Regulation.

An increased demand for batteries would result in an increase in the demand for mineral resources, including 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 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 groundwater overdraft, as well as impacts on surface water should the concentrated water spill into adjacent areas. Because of its high reactivity, lithium is found bound to other elements. To process brine, toxic chemicals must be used that can cause water pollution through leaching and spills. Further, lithium mining from continental brines is a water-intensive process that, as mining typically occurs in arid landscapes, could result in the depletion of available water resources.[77]

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[75] European Parliament, Impact of Shale Gas and Shale Oil Extraction on the Environment and on Human Health, 2012. (web link: *https://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf*).

[76] Environmental Health Perspectives, Salting the Earth: The Environmental Impact of Oil and Gas Wastewater Spills, December 2016. (web link: *https://www.researchgate.net/publication/311243994_Salting_the_Earth_The_Environmental_Impact_of_Oil_and_Gas_Wastewater_Spills*, last accessed August 11, 2021).

[77] Friends of the Earth, Lithium, 2013. (web link: *https://www.foeeurope.org/sites/default/files/publications/13_factsheet-lithium-gb.pdf*, last accessed August 11, 2021).

Mineral extraction and mining activities within the United States would be required to comply with the provisions of the Clean Water Act and the natural resource protection and land reclamation requirements of the appropriate State and federal land managers. For instance, the U.S. Bureau of Land Management and U.S. Forest Service mining permit conditions contain protections for hydrologic resources and require mining reclamation standards. However, lithium and platinum are also obtained from areas outside of the United States, where State and U.S. federal laws and regulations are not applicable. Thus, water quality impacts related to mining could occur because of implementation of the reasonably foreseeable compliance responses associated with the Proposed Regulation.

New facilities constructed as a result of implementation of the Proposed Regulation could have long-term effects on hydrologic conditions and characteristics. Depending on the location of these facilities, the physical alterations caused by these facilities could produce long-term effects to runoff patterns and natural drainage, impede or reroute natural flood patterns. Therefore, operation of new facilities could have long-term effects related to the permanent introduction of new surfaces that could alter the existing drainage pattern of a project site or area. These impacts would be potentially significant.

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

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

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

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Final~~Draft~~ EIA takes the conservative approach in its post--mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational-related impacts to hydrology and water quality under the Proposed Regulation remains **potentially significant and unavoidable**.

11. Land Use and Planning

Impact 11-1: Short-Term Construction-Related and Long-Term Operation-Related Impacts on Land Use and Planning

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Short-term construction-related effects on land use and planning associated with implementation of the Proposed Regulation may not be consistent with existing and planned land uses. The environmental consequences of land use changes are considered in their respective sections of this Final~~Draft~~ EIA.

Construction and operation of new manufacturing, disposal, and recycling facilities may require the conversion of non-industrial land uses to industrial land uses. Manufacturers may modify existing facilities to build ZEFs, open new facilities, repurpose or close facilities building internal-combustion forklifts and components, or potentially reopen currently closed plants.

Potential environmental effects associated with land use change on agriculture and forestry, biological resources, geology and soils, and hydrology and their related mitigation measures are discussed in further detail in their respective section of this Final~~Draft~~ EIA.

New or expanded battery manufacturing facilities would be subject to local zoning ordinances and would generally be located on sites planned for those types of facilities, which are typically placed apart from residential communities and would not typically divide an established community. Also, projects that are more likely to divide an established community tend to be linear (e.g., new highway, railroad). Therefore, the Proposed Regulation would not have the potential to divide a community and would have a less-than-significant effect to this particular impact.

Nevertheless, as discussed in Section IV.B.2, "Agricultural and Forestry Resources," Section IV(B)4, "Biological Resources, Section IV.B.7, "Geology and Soils," and Section IV.B.10, "Hydrology and Water Quality," potential environmental effects associated with land use change would be potentially significant. Therefore, land use impacts would be potentially significant.

Mitigation Measure 11-1: Implement Mitigation Measures 2-1, 4-1, 4-2, 7-1, 10-1, and 10-2.

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 Final~~Draft~~ EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measures 2-1, 4-1, 4-2, 7-1, 10-1, and 10-2, it is possible that significant impacts related to land use conversions could still result in significant effects on various resource areas.

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

12. Mineral Resources

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of

currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

The Proposed Regulation would increase use of ZE technology thereby requiring the use of batteries sourced by various precious metals (e.g., lithium) or fuel cells. An increase in demand for batteries and fuel cells could result in the mining of rare earth metals critical to battery technology, among other resources, and exports from source countries or other states. While CARB recognizes that existing battery technology may contain a menu of various semi-precious metals, minerals, and other mined resources, lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, platinum, and aluminum will comprise the focus of this analysis, as many electric vehicle batteries and fuel cells contain these notable metals. However, the reduced use of conventional internal combustion engine vehicles will result in a reduction in auto-industry demand for platinum for catalytic converters.

Implementation of Proposed Regulation could have an effect on the availability of known materials because it would involve mining lithium. Owing to continuing exploration, identified lithium resources have increased substantially worldwide and total about 98 million tons. Identified lithium resources in the United States—from continental brines, claystone, geothermal brines, hectorite, oilfield brines, and pegmatites—are 12 million tons. Identified lithium resources in other countries have been revised to 86 million tons. Identified lithium resources are distributed as follows: Argentina, 20 million tons; Australia, 7.9 million tons; Austria, 60,000 tons; Bolivia, 21 million tons; Brazil, 730,000 tons; Canada, 2.9 million tons; Chile, 11 million tons; China, 6.8 million tons; Congo (Kinshasa), 3 million tons; Czechia, 1.3 million tons; Finland, 68,000 tons; Germany, 3.2 million tons; Ghana, 180,000 tons; Mexico, 1.7 million tons; Kazakhstan, 50,000 tons; Mali, 840,000 tons;

Namibia; 230,000 tons; Peru, 880,000 tons; Portugal, 270,000 tons; Russia, 1 million tons; Serbia, 1.2 million tons; Spain, 320,000 tons; and Zimbabwe, 690,000 tons. [78] As of March 2022, a domestic lithium mine is in operation in Nevada and the developer, Controlled Thermal Resources has begun extracting lithium in the Salton Sea. Two companies produced a large array of downstream lithium compounds in the United States from domestic or South American lithium carbonate, lithium chloride, and lithium hydroxide. From 2018 through 2021, the United States imported lithium from Argentina (51 percent), Chile (40 percent), China (4 percent), Russia (3 percent), and others (2 percent).[79] However, there are current initiatives at the State and federal level that are likely to influence lithium mining domestically, which includes efforts in California. Table 6 details lithium mine production and reserves by country.

Table 6: Lithium Mine Production and Reserves by Country[80]

Country	Mine Production in 2021 (Metric Tons)	Mine Production in 2022 (Estimated Metric Tons)	Reserve Amount (Metric Tons)
United States	Withheld[1]	Withheld[1]	1,000,000
Argentina	5,970	6,200	2,700,000
Australia	55,300	61,000	6,200,000
Brazil	1,700	2,200	250,000
Canada	0	500	930,000
Chile	28,300	39,000	9,300,000
China	14,000	19,000	2,000,000
Portugal	900	600	60,000
Zimbabwe	710	800	310,000
Other Countries	0	0	3,300,000
Worldwide Total (rounded and excluding U.S. production)	107,000	130,000	26,000,000

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

As mentioned, there are efforts to increase domestic supply of lithium. Efforts to address supply chains of mineral commodities have gained substantial interest from the State and

[78] U.S. Geological Survey, Lithium Mineral Commodity Summaries. January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-lithium.pdf, last accessed April 10, 2023).
[79] Ibid.
[80] Ibid.

federal government, both of which have sought to address mineral independence and security. Examples of efforts include California Assembly Bill 1657 (Garcia), Chapter 271, 2020 (AB 1657), which requires CEC 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 directed federal agencies to perform a 100-day review of "supply chain risks" for four classes of products, including semiconductors, high-capacity batteries (including for electric vehicles), critical and strategic minerals (including rare earths), and pharmaceuticals.[81] The EO additionally directs agencies to perform year-long reviews of supply chains in six critical sectors, which includes transportation and energy. The reviews will seek to identify supply chain risks that leave the United States vulnerable to reductions in the availability and integrity of critical goods, products, and services, and will include policy recommendations for addressing such risks. The EO indicates that, among other approaches, the current administration will explore how trade policies and agreements can be used to strengthen the resilience of U.S. supply chains. U.S. Congress has also passed the Inflation Reduction Act (Public Law 117-169, 136 Stat. 1818 [August 16, 2022]), which incentivizes development of the domestic supply of key minerals used in batteries by conditioning eligibility for federal tax credits on achieving certain domestic mineral source percentages.

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

The Proposed Regulation could also increase the mining of graphite ore worldwide. Table 7 summarizes the graphite mine productions and reserves by country. In 2022, natural graphite was not produced in the United States; however, approximately 95 U.S. companies, primarily in the Great Lakes and Northeast regions, consumed 72,000 tons valued at an estimated $140 million. The major uses of natural graphite were batteries, brake linings, lubricants, powdered metals, refractory applications, and steelmaking. During 2022, U.S. natural graphite imports were an estimated 82,000 tons, consisting of about 77 percent flake and high-purity, 22 percent amorphous, and 1 percent lump and chip graphite.

[81] 86 Federal Register 11849 (March 1, 2021), Executive Order 14017 of February 24, 2021, America's Supply Chains (web link: *https://www.govinfo.gov/content/pkg/FR-2021-03-01/pdf/2021-04280.pdf*).

Table 7: Graphite Mine Production and Reserves by Country[82]

Country	Mine Production in 2021 (Metric Tons)	Mine Production in 2022 (Estimated Metric Tons)	Reserve Amount (Metric Tons)
United States	–	–	(included in worldwide total)
Austria	500	500	(included in worldwide total)
Brazil	82,000	87,000	74,000,000
Canada	12,000	15,000	(included in worldwide total)
China	820,000	850,000	52,000,000
Germany	250	250	(included in worldwide total)
India	7,000	8,300	8,000,000
North Korea	8,100	8,100	2,000,000
Madagascar	70,000	110,000	26,000,000
Mexico	2,100	1,900	3,100,000
Mozambique	72,000	170,00	25,000,000
Norway	6,290	10,000	600,000
Russia	15,000	15,000	14,000,000
Sri Lanka	3,000	3,000	1,500,000
Tanzania	–	8,000	18,000,000
Turkey	2,700	2,900	90,000,000
Ukraine	10,000	3,000	(included in worldwide total)
Uzbekistan	110	–	7,600,000
Vietnam	5,000	5,000	(included in worldwide total)
Worldwide Total	1,130,000	1,300,000	330,000,000

Cobalt mining may also increase as a result of implementation of the Proposed Regulation as battery production, which requires the use of cobalt, increases to support the electrification of the on-road mobile source sector. Table 8 summarizes the cobalt mine production and reserves by country. In 2022, the nickel-copper Eagle Mine in Michigan

[82] U.S. Geological Survey, Graphite Mineral Commodity Summaries. January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-graphite.pdf, last accessed April 10, 2023).

produced cobalt-bearing nickel concentrate. In Missouri, a company produced nickel-copper-cobalt concentrate from historic mine tailings and was building a hydrometallurgical processing plant near the mine site. In October, commissioning began at a cobalt copper-gold mine and mill in Idaho, where cobalt concentrate will be produced. This mine and one in Morocco are the only mines in the world where cobalt is the principal product. Most U.S. cobalt supply consisted of imports and secondary (scrap) materials. About six companies in the United States produced cobalt chemicals. An estimated 40 percent of the cobalt consumed in the United States was used in superalloys, mainly in aircraft gas turbine engines; 35 percent in a variety of chemical applications; 15 percent in various other metallic applications; and 10 percent in cemented carbides for cutting and wear-resistant applications. The total estimated value of cobalt consumed in 2022 was $530 million.[83] Global cobalt mine and refinery production were forecast to increase to record-high levels in 2022. The increase in mine production was mainly in Congo (Kinshasa) and in Indonesia, where new mining and processing projects were starting production. Congo (Kinshasa) continued to be the world's leading source of mined cobalt, accounting for about 70 percent of world cobalt mine production. With the exception of some production in the United States, production in Morocco, and artisanally mined cobalt in Congo (Kinshasa), most cobalt is mined as a byproduct of copper or nickel. China was the world's leading producer of refined cobalt, most of which was produced from partially refined cobalt imported from Congo (Kinshasa). China was the world's leading consumer of cobalt, with about 80 percent of its consumption used by the rechargeable battery industry.[84] Estimated global nickel mine production increased by about 20 percent, with almost all increased production attributed to Indonesia. The largest share of the increase was facilitated by the ongoing commissioning of integrated nickel pig iron and stainless-steel projects. In addition, several companies continued to develop projects to produce intermediate matte or mixed nickel-cobalt hydroxide that were intended to be used as feedstock to produce battery-grade nickel sulfate.

Table 8: Cobalt Mine Production and Reserves by Country[85]

Country	Mine Production in 2021 (Metric Tons)	Mine Production in 2022 (Estimated Metric Tons)	Reserve Amount (Metric Tons)
United States	650	800	69,000
Australia	5,295	5,900	1,500,000
Canada	4,361	3,900	220,000

[83] U.S. Geological Survey, Cobalt Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-cobalt.pdf., last accessed April 10, 2023).
[84] Ibid.
[85] Ibid.

Country	Mine Production in 2021 (Metric Tons)	Mine Production in 2022 (Estimated Metric Tons)	Reserve Amount (Metric Tons)
China	2,200	2,200	140,000
Democratic Republic of the Congo	119,000	130,000	4,000,000
Cuba	4,000	3,800	500,000
Indonesia	2,700	10,000	600,000
Madagascar	2,800	3,000	100,000
Morocco	2,300	2,300	13,000
Papua New Guinea	2,953	3,000	47,000
Philippines	3,600	3,800	260,000
Russia	8,000	8,900	250,000
Other Countries	4,567	5,200	610,000
Worldwide Total (rounded and excluding U.S. production)	165,000	190,000	8,300,000

The Proposed Regulation could also result in an increase in nickel mining to manufacture batteries. Table 9 summarizes the nickel mine production and reserves by country. In 2022, the underground Eagle Mine in Michigan produced approximately 18,000 tons of nickel in concentrate, which was exported to smelters in Canada and overseas. Nickel in crystalline sulfate was produced as a byproduct of smelting and refining platinum-group-metal ores mined in Montana. In Missouri, a company produced nickel-copper-cobalt concentrate from historic mine tailings and was building a hydrometallurgical processing plant near the mine site. A nickel beneficiation project was to be built in North Dakota using $115 million awarded from the Bipartisan Infrastructure Law. In the United States, the leading uses for primary nickel are alloys and steels, electroplating, and other uses including catalysts and chemicals. Stainless and alloy steel and nickel-containing alloys typically account for more than 85 percent of domestic consumption.[86]

From 2018 through 2021, the United States imported nickel from Canada, 45 percent; Norway, 9 percent; Australia, 8 percent; Finland, 7 percent; and other, 31 percent. Nickel-

[86] U.S. Geological Survey, Nickel Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-nickel.pdf, last accessed April 10, 2023).

containing scrap, including nickel content of stainless-steel scrap: Canada, 38 percent; Mexico, 26 percent; United Kingdom, 9 percent; and others, 27 percent.[87]

Table 9: Nickel Mine Production and Reserves by Country[88]

Country	Mine Production in 2021 (Metric Tons)	Mine Production in 2022 (Estimated Metric Tons)	Reserve Amount (Metric Tons)
United States	18,400	18,000	370,000
Australia	151,000	160,000	21,000,000
Brazil	76,000	83,000	16,000,000
Canada	134,000	130,000	2,200,000
China	109,000	110,000	2,100,000
Indonesia	1,040,000	1,600,000	21,000,000
New Caledonia	186,000	190,000	Not available
Philippines	334,000	370,000	7,100,000
Russia	205,000	220,000	4,800,000
Other Countries	429,000	440,000	20,000,000
Worldwide Total (rounded and excluding U.S. production)	2,730,000	3,300,000	>100,000,000

Increase in the manufacture of battery technology from implementation of the Proposed Regulation could also increase mining of copper. Table 10 summarizes the copper mine production and reserves by country. In 2022, the recoverable copper content of U.S. mine production was an estimated 1.3 million tons, an increase of 6 percent from that in 2021, and was valued at an estimated $11 billion, 6 percent less than $11.7 billion in 2021. Arizona was the leading copper-producing State and accounted for approximately 70 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 (17 of which accounted for more than 99 percent of mine production), 2 primary smelters, 2 electrolytic refineries, and 14 electrowinning facilities. An additional primary smelter and electrolytic refinery have been closed indefinitely since October 2019, and a new secondary smelter was in the process of starting up as of September 2022. Refined copper and scrap were consumed at about 30 brass mills, 14 rod mills, and 500 foundries and miscellaneous manufacturers. Copper and copper alloy products were used in building construction, 46

[87] Ibid.
[88] Ibid.

percent; electrical and electronic products, 21 percent; transportation equipment, 16 percent; consumer and general products, 10 percent; and industrial machinery and equipment, 7 percent.[89]

Table 10: Copper Mine Production and Reserves by Country[90]

Country	Mine Production in 2021 (Metric Tons)	Mine Production in 2022 (Estimated Metric Tons)	Reserve Amount (Metric Tons)
United States	1,230	1,300	44,000
Australia	813	830	97,000
Canada	550	530	7,600
Chile	5,620	5,200	190,000
China	1,910	1,900	27,000
Democratic Republic of the Congo	1,740	2,200	31,000
Germany	–	–	–
Indonesia	731	920	24,000
Japan	–	–	–
Kazakhstan	510	580	20,000
South Korea	–	–	–
Mexico	734	740	53,000
Peru	2,300	2,200	81,000
Poland	391	390	30,000
Russia	940	1,000	62,000
Zambia	842	770	19,000
Other Countries	2,850	3,400	200,000
Worldwide Total	21,200	22,000	890,000

The Proposed Regulation could also result in additional mining of manganese, chromium, zinc, and aluminum. In 2022, worldwide mine production of manganese totaled 20,000

[89] U.S. Geological Survey, Copper Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-copper.pdf, last accessed April 11, 2023).
[90] Ibid.

thousand metric tons.[91] Worldwide chromium mine production totaled 41,000 thousand metric tons in 2022.[92] As the 23rd most common element, worldwide zinc resources are estimated to be about 1.9 billion tons.[93]

An increased demand for hydrogen fuel cell-powered vehicles and a related increase in demand for mining of platinum-group metals (PGMs) could occur. Table 11 summarizes the platinum and palladium mine production and reserves by country. 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.[94] Table 11 summarizes world platinum and palladium production and reserves. The United States has some platinum production and reserves, and internationally South Africa has the highest volume of platinum production and reserves.[95]

Table 11: Platinum and Palladium Mine Production and Reserves[96]

Country	Mine Production of Palladium in 2021 (kilograms)	Mine Production of Palladium in 2022 (Estimated kilograms)	Mine Production of Platinum in 2021 (kilograms)	Mine Production of Platinum in 2022 (Estimated kilograms)	PGM Reserve Amount (kilograms)
United States	13,700	11,000	4,020	3,300	900,000
Canada	15,000	15,000	6,000	6,000	310,000
Russia	86,000	88,000	21,000	20,000	5,500,000
South Africa	84,300	80,000	142,000	140,000	63,000,000
Zimbabwe	12,400	12,000	14,700	15,000	1,200,000
Other Countries	2,540	2,500	4,270	4,200	Not available

[91] U.S. Geological Survey, Manganese Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-manganese.pdf, last accessed April 11, 2023).
[92] U.S. Geological Survey, Chromium Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-chromium.pdf, last accessed April 11, 2023).
[93] U.S. Geological Survey, Zinc Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-zinc.pdf, last accessed April 11, 2023).
[94] U.S. Geological Survey, Platinum-Group Metals Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-platinum-group.pdf., last accessed April 12, 2023).
[95] Ibid.
[96] Ibid.

Country	Mine Production of Palladium in 2021 (kilograms)	Mine Production of Palladium in 2022 (Estimated kilograms)	Mine Production of Platinum in 2021 (kilograms)	Mine Production of Platinum in 2022 (Estimated kilograms)	PGM Reserve Amount (kilograms)
Worldwide Total (rounded)	214,000	210,000	192,000	190,000	70,000,000

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

Palladium has been substituted for platinum in most gasoline-engine catalytic converters because of the historically lower price for palladium relative to that of platinum. About 25 percent of palladium can routinely be substituted for platinum in diesel catalytic converters; the proportion can be as much as 50 percent in some applications. For some industrial end uses, one PGM can substitute for another, but with losses in efficiency. From 2018 through 2021, the United States imported platinum from South Africa, 34 percent; Germany, 18 percent; Switzerland, 14 percent; Italy, 7 percent; and other countries, 27 percent. During the same period, the United States imported palladium from Palladium: Russia, 34 percent; South Africa, 30 percent; Italy, 8 percent, Germany, 8 percent; and other countries, 20 percent.[97]

Increase in the manufacture of battery technology from implementation of the Proposed Regulation could also increase mining of iron ore. Table 12 summarizes the iron mine production and reserves by country. In 2022, seven open pit iron ore mines (each with associated concentration and pelletizing plants) in Michigan and Minnesota shipped 98 percent of domestic usable iron ore products, which were consumed in the steel industry in the United States. The remaining 2 percent of domestic iron ore products were consumed in nonsteel end uses. In 2022, the United States produced iron ore with an estimated value of $5.2 billion, a 22 percent decrease from $6.7 billion in 2021. Four iron metallic plants—one direct-reduced iron plant in Louisiana and three hot-briquetted iron plants in Indiana, Ohio, and Texas—operated during the year to supply steelmaking raw materials with an estimated value of $1.3 billion. The United States was estimated to have produced 1.8 percent and consumed 1.5 percent of the world's iron ore output. [98]

[97] Ibid.
[98] U.S. Geological Survey, Iron Ore-Group Metals Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-iron-ore.pdf, last accessed June 5, 2023).

Slight decreases in production and trade in 2022 were due to rising global inflation, which resulted in decreased steel demand and consumption. Domestic iron ore production was estimated to be 46 million tons in 2022, a 3 percent decrease from 47.5 million tons in 2021. Total raw steel production was estimated to have decreased to 82 million tons in 2022 from 85.5 million tons in 2021. The World Steel Association forecast global finished steel consumption to decrease by 2.3 percent in 2022 and increase by 1.0 percent in 2023. End-use consumption of steel products was expected to decline in 2022 following concurrent events affecting consumer demand, including the conflict in Ukraine, continuing coronavirus disease 2019 (COVID-19) mitigation measures in China, and rising energy costs and interest rates. [99]

Table 12: Iron Ore Mine Production and Reserves by Country[100]

Country	Useable Ore Mine Production in 2021 (Thousand Metric Tons)	Useable Ore Mine Production in 2022 (Estimated Thousand Metric Tons)	Crude Ore Reserve Amount (Million Metric Tons)
United States	47,500	46,000	3,000
Australia	912,000	880,000	51,000
Brazil	431,000	410,000	34,000
Canada	57,500	58,000	6,000
Chile	17,700	16,000	Not available
China	394,000	380,000	20,000
India	273,000	290,000	5,500
Iran	72,900	75,000	2,700
Kazakhstan	64,100	66,000	2,500
Mauritania	12,800	13,000	Not available
Mexico	10,800	11,000	Not available
Peru	18,100	17,000	2,600
Russia	96,000	90,000	29,000
South Africa	73,100	76,000	1,000
Sweden	40,200	39,000	1,300
Turkey	16,100	17,000	130
Ukraine	83,800	76,000	6,500

[99] Ibid.
[100] Ibid.

Country	Useable Ore Mine Production in 2021 (Thousand Metric Tons)	Useable Ore Mine Production in 2022 (Estimated Thousand Metric Tons)	Crude Ore Reserve Amount (Million Metric Tons)
Other Countries	56,700	59,000	18,000
Worldwide total (rounded)	2,680,000	2,600,000	180,000

Increase in the manufacture of battery technology from implementation of the Proposed Regulation could also increase mining of lead. Table 13 summarizes the lead mine production and reserves by country. Lead was produced domestically by five lead mines in Missouri plus as a byproduct at two zinc mines in Alaska and two silver mines in Idaho. The value of the lead in concentrates of ore mined in 2022 was an estimated $710 million, 3 percent less than that in 2021. Nearly all lead concentrate production has been exported since the last primary lead refinery closed in 2013. The value of the secondary lead produced in 2022 was $2.4 billion, essentially unchanged from that in 2021. The lead-acid battery industry accounted for an estimated 92 percent of reported U.S. lead consumption during 2022. Lead-acid batteries were primarily used as starting-lighting-ignition batteries for automobiles, as industrial-type batteries for standby power for computer and telecommunications networks, and for motive power. In 2022, domestic mine production and production of secondary lead decreased by an estimated 5 percent and 3 percent, respectively, from that in 2021. U.S. apparent consumption of refined lead increased slightly from that in 2021, and the net import reliance increased to 42 percent from 38 percent. In the first 9 months of 2022, 24.6 million spent starting-lighting-ignition lead-acid batteries were exported, 4 percent less than exports in the same period in 2021. According to the International Lead and Zinc Study Group, global refined lead production in 2022 was forecast to decrease by 0.3 percent to 12.34 million tons and refined lead consumption to increase by 0.8 percent to 12.42 million tons. [101]

Table 13: Lead Mine Production and Reserves by Country[102]

Country	Mine Production in 2021 (Tons)	Mine Production in 2022 (Estimated Tons)	Reserve Amount (Tons)
United States	294	280	4,600
Australia	485	440	37,000

[101] U.S. Geological Survey, Lead-Group Metals Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-lead.pdf, last accessed June 5, 2023).
[102] Ibid.

Country	Mine Production in 2021 (Tons)	Mine Production in 2022 (Estimated Tons)	Reserve Amount (Tons)
Bolivia	93	90	1,600
China	1,960	2,000	12,000
India	215	240	2,500
Iran	50	50	2,000
Mexico	272	270	5,600
Peru	264	250	5,300
Russia	200	200	6,000
Sweden	65	65	1,700
Tajikistan	56	55	NA
Turkey	75	75	860
Other Countries	510	510	5,900
Worldwide Total (rounded)	4,550	4,500	85,000

Increase in the manufacture of battery technology from implementation of the Proposed Regulation could also increase smelting of aluminum. Table 14 summarizes the aluminum smelting production and capacity by country. In 2022, three companies operated six primary aluminum smelters in five states. Two of these six smelters operated at full capacity throughout the year. The other four smelters operated at reduced capacity and one of these four smelters began a temporary shutdown in June. A seventh smelter remained on standby throughout the year. Domestic smelters were operating at about 52 percent of capacity of 1.64 million tons per year at yearend 2022. Estimated primary production decreased by 3 percent compared with that in 2021 but estimated secondary production from new and old scrap increased by 3 percent compared with that in 2021. Transportation applications accounted for 35 percent of domestic consumption; the remainder was used in packaging, 23 percent; building, 16 percent; electrical, 10 percent; machinery, 7 percent; consumer durables, 6 percent; and other, 3 percent.[103]

In June 2022, a 250,000-ton-per-year primary aluminum smelter in Hawesville, Kentucky, idled its full production for an estimated 9–12 months owing to high energy costs. In July, a 161,000-ton-per-year primary aluminum smelter in Newburgh, Indiana, curtailed one of three operating aluminum smelting lines, citing operational challenges. In July, force majeure was declared at a rolling mill and aluminum packaging products manufacturer in Newburgh that produced approximately 310,000 tons per year of rolled aluminum. A

[103] U.S. Geological Survey, Aluminum-Group Metals Mineral Commodity Survey, January 2023. (web link: https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-aluminum.pdf, last accessed June 5, 2023).

shortage of magnesium, an essential component of aluminum packaging products, was cited for the declaration. Production at the plant was reduced by up to 50 percent before the declaration was lifted in September. In August, low local demand led to the permanent closure of aluminum beverage can manufacturing facilities in Phoenix, Arizona, and St. Paul, Minnesota. [104]

In October 2022, construction began on a $2.5 billion aluminum recycling and rolling plant in Bay Minette, Alabama. When completed in 2025, the plant is expected to produce 600,000 tons per year of finished products, including beverage cans. Prices for aluminum increased through March, then generally trended downward throughout 2022 in the United States and in world markets. [105]

In June 2022, a tariff-rate quota system began that exempted certain aluminum imports from the United Kingdom from the 10 percent tariff imposed since 2018 under the authority of Section 232 of the Trade Expansion Act of 1962. The quota system consisted of quantity limits during two periods in 2022 and the requirement that imports of aluminum articles be accompanied by a certificate of analysis for the smelted primary aluminum contained within in the articles. To be eligible for the tariff exemption, imports could not contain primary aluminum from Belarus, China, or Russia. [106]

In April 2022, a 447,000-ton-per-year primary aluminum smelter in Sao Luis, Brazil, restarted operations with full production expected by yearend. Several European aluminum producers announced production curtailments owing to high energy costs. In August, a 175,000-ton-per-year primary aluminum smelter in Slovakia ceased production, and a 94,000-ton-per-year primary aluminum smelter in Norway curtailed operation of a single potline. In September, a 70,000-ton-per-year primary aluminum smelter in Germany reduced production by 50 percent, and a 290,000-ton-per-year primary aluminum smelter in France reduced production by 22 percent. By year end, a Norwegian primary aluminum smelter reduced production across two facilities by 110,000 to 130,000 tons per year. These facilities have annual capacities of 197,000 tons per year and 270,000 tons per year of primary aluminum. [107]

[104] Ibid.
[105] Ibid.
[106] Ibid.
[107] Ibid.

Table 14: Aluminum Smelting Production and Capacity by Country[108]

Country	Smelter Production in 2021 (Thousand Metric Tons)	Smelter Production in 2022 (Estimated Thousand Metric Tons)	Year-End Capacity 2021 (Thousand Metric Tons)	Year-End Capacity 2022 (Thousand Metric Tons)
United States	889	860	1,640	1,600
Australia	1,570	1,500	1,720	1,700
Bahrain	1,560	1,600	1,550	1,600
Canada	3,140	3,000	3,270	3,300
China	38,900	40,000	42,300	44,000
Iceland	750	750	890	900
India	3,970	4,000	4,060	4,100
Norway	1,400	1,400	1,430	1,400
Russia	3,640	3,700	4,020	4,000
United Arab Emirates	2,540	2,700	2,780	2,800
Other Countries	9,140	9,100	12,300	12,000
Worldwide Total (rounded)	67,500	69,000	76,000	77,000

Appendix G of the CEQA Guidelines considers an impact on mineral resources to be the loss of availability of a known mineral resource that would be of value to a local entity, a region, or the State. Local jurisdictions are responsible for identifying appropriate areas to protect and/or allow mining of mineral resources. Facilities developed in response to implementation of the Proposed Regulation 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. Mining-related impacts associated with the reasonably foreseeable compliance responses of the Proposed Regulation and mitigation measures are discussed throughout this Final~~Draft~~ EIA (e.g., see the "Aesthetics," "Agriculture and Forestry Resources," "Hazards and Hazardous Materials," "Hydrology and Water Quality," and "Transportation" sections).

Therefore, short-term construction-related and long-term operational-related effects to mineral resource availability associated with the Proposed Regulation would be **less than significant**.

[108] Ibid.

13. Noise

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Implementation of the Proposed Regulation would include construction of new or modifications of existing ZE forklift manufacturing facilities, battery and fuel cell recycling and refurbishment facilities, and supporting charging and fueling infrastructure. These activities, including earth moving, grading, demolition, and building construction, would require the use of heavy-duty equipment, including potentially pile driving equipment, that would generate high volumes of short-term noise. Construction activities may occur during the day or night. The effects of construction noise would depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and whether the equipment is mobile or stationary. Additionally, the perception of changes in noise would depend on the existing ambient noise environment, as 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. Use of heavy equipment would be consistent with the existing noise characteristics of typical construction activities within industrial areas. Moreover, it would be expected that

manufacturing facilities and other supporting infrastructure for forklift operations would not be located close to sensitive receptors.

According to the California Department of Transportation Technical Supplemental document, a doubling of sound energy (i.e., two sources of the same loudness each producing sound) would result in a 3-decibel (dB) increase in sound.[109] Also, a 3-dB increase in sound is considered to be barely perceptible to the normal person.[110] If the Proposed Regulation is not going to double the intensity of off-road construction equipment, the Proposed Regulation would not result in a noise increase during construction that would be perceptible to the nearest sensitive receptor.[111] Furthermore, industrial areas and other locations where new or modified facilities may be located generally do not support substantial numbers of sensitive land uses, such as residences, hospitals, day care facilities, and hotels. Therefore, construction of compliance response facilities would not likely produce adverse noise levels as compared to existing conditions.

During any construction project, the site preparation phase typically generates the most substantial noise levels because site preparation generally requires the largest and noisiest types of construction equipment. A detailed construction equipment list is not known for each project because no final specific engineering has been completed for any compliance responses in response to the Proposed Regulation. However, it is expected that the primary sources of noise, based on the anticipated compliance responses, would include backhoes, bulldozers, excavators, and cranes.

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 use 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 daytime hours and 40/50 dBA L_{eq}/L_{max} during nighttime hours) and could be considered a substantial increase in ambient noise. Construction may also take place outside of hours allowed for by local jurisdictions.

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109 California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013. (web link: *https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf*, last accessed August 11, 2021).

110 Ibid.

111 Ibid.

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 to 109 vibration decibels (VdB) and from 0.003 to 0.089 inch per second (in/sec) peak particle velocity (PPV) at 25 feet. 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 in newer buildings, construction-related activities would not exceed FTA vibration damage criteria (e.g., 0.2 in/sec PPV for nonengineered timber and masonry buildings). 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.

Implementation of the Proposed Regulation could result in 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. Therefore, short-term construction-related noise impacts (including vibration) associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 13-1

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

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

- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions required to mitigate potentially significant noise impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.
    - Ensure noise-generating construction activities (including truck deliveries, pile driving, and blasting) are limited to the least noise-sensitive times of day (e.g., weekdays during the daytime hours) for projects near sensitive receptors.
    - Use noise barriers, such as berms, as needed (where feasible) to limit ambient noise at property lines, especially where sensitive receptors may be present.
    - Ensure all project equipment has sound-control devices no less effective than those provided on the original equipment.
    - All construction equipment used would be adequately muffled and maintained.
    - Use battery-powered forklifts and other facility vehicles, as needed to remain within acceptable noise levels.
    - Ensure all stationary construction equipment (i.e., compressors and generators) is located as far as practicable from nearby sensitive receptors or shielded.
    - Properly maintain mufflers, brakes, and all loose items on construction- and operation-related-related vehicles to minimize noise and address operational safety issues. Keep truck operations to the quietest operating speeds. Advise about downshifting and vehicle operations in sensitive communities to keep truck noise to a minimum.
    - Use noise controls on standard construction equipment; shield impact tools.
    - Use flashing lights instead of audible back-up alarms on mobile equipment, if necessary to maintain acceptable noise levels.
    - Install mufflers on air coolers and exhaust stacks of all diesel and gas-driven engines.
    - Equip all emergency pressure relief valves and steam blow-down lines with silencers to limit noise levels.
    - Contain facilities within buildings or other types of effective noise enclosures.
    - Employ engineering controls, including sound-insulated equipment and control rooms, to reduce the average noise level in normal work areas.

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

programmatic level of analysis associated with this Final~~Draft~~ EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 13-1, it is possible that significant impacts on noise and vibration could still occur.

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

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Implementation of the Proposed Regulation could result in increased electrical/battery power and hydrogen fuel cell usage, thereby eliminating combustion engine noise from forklifts. New sources of noise associated with implementation of Proposed Regulation could include operation of electrical and hydrogen fueling infrastructure at industrial land uses where forklifts are typically operated. Noise from operation of such equipment would not exacerbate noise impacts above existing noise levels.

Increased mining could also occur due to increased demands for mineral resources needed for batteries and fuel cells. Operational-related activities associated with mining could produce substantial stationary sources of noise. Mechanical equipment (e.g., backhoes, dozers) required to excavate bedrock and vegetation would generate noise that could be considered adverse to sensitive receptors; however, it would be expected that expansion of existing mines would not involve sensitive receptors given that mines typically are in areas zoned industrial. Also, it would be anticipated that new hard rock and brine mines constructed as a compliance response to the Proposed Regulation would be in areas of consistent zoning and therefore not in close proximity to sensitive receptors.

New sources of noise associated with implementation of the Proposed Regulation could include operation of manufacturing plants as well as battery recycling and refurbishment facilities. Manufacturing and recycling/refurbishment 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 Regulation would be potentially significant.

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

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

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this FinalDraft EIA 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 Regulation would remain **potentially significant and unavoidable**.

14. Population and Housing

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Construction, modification, and maintenance activities occurring within manufacturing and battery recycling/refurbishment facilities would be expected to be served by workers currently serving them. Likewise, it is expected that ZE manufacturing and modifications and battery recycling and refurbishment would largely be completed by businesses that conduct such activities already, with some potential new businesses and facilities being needed. The existing employment base at these facilities is expected to be sufficient to serve the additional demands to achieve compliance with the Proposed Regulation. Although it is conceivable that additional employment could be needed to execute the Proposed Regulation, such a rise in employment opportunities would not be substantial enough to increase a community's population or require the construction of housing.

Additionally, ZE technology infrastructure construction and maintenance as a compliance response to the Proposed Regulation is anticipated to require relatively small crews, and demand for crews would be temporary and short term (e.g., 6–12 months per project).

Therefore, a sufficient construction employment base would likely be available, and substantial construction worker migration would not be likely to occur.

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

Further, it is unlikely that any new facilities would be constructed in areas with existing housing because of the nature of the facilities. That is, industrial facilities would be sited in areas zoned for these types of uses. Therefore, it is unlikely the Proposed Regulation would displace existing housing to accommodate new manufacturing facilities.

Any additional employment needed to support the compliance response to the Proposed Regulation would not be substantial enough to substantially increase a community's population, require the construction of housing, or displace housing. Impacts would be **less than significant**.

15. Public Services

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The

increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

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

16. Recreation

Impact 16-1: Short-Term Construction-Related and Long-Term Operation-Related Impacts on Recreation

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Construction and operation activities, as well as new or modified facilities or infrastructure, would likely occur within footprints of existing facilities or in areas with appropriate zoning that permit such uses and activities. Therefore, compliance responses would not displace any recreational facilities. Construction and operational activities associated with reasonably foreseeable compliance responses would not be anticipated to result in increased use of regional parks and other recreational facilities, such that existing neighborhood and regional parks or other recreational facilities would be substantially deteriorated. An increased need for recreational facilities and the accelerated degradation of existing recreational facilities typically are associated with permanent population growth. As discussed under Impact 14-1, the Proposed Regulation is not expected to result in an increase in employment opportunities that is great enough to substantially increase a community's population. Therefore, new or expanded recreational facilities would not be needed as a result of the Proposed Regulation, and existing facilities would not experience accelerated degradation. As a result, short-term construction-related and long-term operation-related impacts on recreational facilities associated with the Proposed Regulation would be **less than significant**.

17. Transportation

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

State CEQA Guidelines Section 15064.3(b) identifies criteria for analyzing the transportation impacts of a project, including land use projects (Title 14 CCR Section 15064.3[b][1]) and transportation projects (Title 14 CCR 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., 6–12 months per project) and would not result in construction worker migration. Therefore, while implementation of the Proposed Regulation may include development and operation of new facilities, short-term construction would not drive development of urban areas, residential development, major employment generation, or transportation projects. As discussed throughout this Final~~Draft~~ EIA, including in Impact 3-1 above, predicting the precise location, timing, duration and intensity of individual projects undertaken as compliance responses to the Proposed Regulation is not possible and would be entirely speculative, given the performance standard-based nature of the requirements and given that the responses depend on individual business decisions. Therefore, modeling changes to VMT during construction of the various projects undertaken in response to the Proposed Regulation is not possible at this high-level planning stage.

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

Mitigation Measure 17-1

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

Recognized practices that are routinely required to avoid and/or minimize construction traffic impacts include:

- Proponents of new or modified facilities constructed will coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body will certify that the environmental document was prepared in compliance with applicable regulations and will approve the project for development.
- Based on the results of the environmental review, proponents will implement all mitigation identified in the environmental document to reduce or substantially lessen potentially significant impacts on traffic and transportation. The definition of actions required to mitigate potentially significant traffic impacts may include the following; however, any mitigation specifically required for a new or modified facility will be determined by the local lead agency.
    - Minimize the number and length of access, internal, service, and maintenance roads and use existing roads when feasible.
    - Provide safe ingress and egress to/from a proposed project site. Identify road design requirements for any proposed roads, and related road improvements.
    - If new roads are necessary, prepare a road siting plan and consult standards contained in federal, State, or local requirements. The plans should include design and construction protocols to meet the appropriate roadway standards and be no larger than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Access roads should be located to avoid or minimize impacts to washes and stream crossings, follow natural contours and minimize side-hill cuts. Roads internal to a project site should be designed to minimize ground disturbance. Excessive grades on roads, road embankments, ditches, and drainages should be avoided, especially in areas with erodible soils.
    - Prepare a Construction Traffic Control Plan and a Traffic Management Plan.

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

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

Impact 17-2: Long-Term Operation-Related Effects on Transportation

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

The use of new or modified forklifts would not affect transportation in terms of VMT, emergency access, or hazards because forklift manufacturing and operations would be similar to current activities and locations.

Implementation of the Proposed Regulation could require the operation of new infrastructure and facilities to produce and distribute hydrogen fuels, as well as electrical facilities for charging. The increase in lithium and platinum mining is expected to be extremely small; therefore, it is anticipated that a sufficient employment base would be available and that substantial new personnel would not be needed to operate new facilities. Thus, VMT associated with employees may not substantially increase depending on their location. Additionally, it is likely that the majority of ZE manufacturing and battery and fuel cell recycling and refurbishment would occur at existing facilities and would therefore not

create a substantial number of new trips because substantial new personnel would not be needed to operate existing manufacturing facilities following possible retrofitting to produce ZE forklifts. 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. The locations of new facilities cannot currently be known; therefore, the total change in VMT cannot be assessed. Many activities, such as lithium battery manufacturing, recycling, and refurbishing, would take place at existing facilities; however, long-term operation-related activities associated with deliveries and distribution of freight and fuels could result in the addition of new trips, which could increase VMT.

New facilities created as a result of the Proposed Regulation 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. As a result, long-term operation-related impacts associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 17-2

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

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

Because the authority to determine project-level impacts and require project-level mitigation lies with local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not allow project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

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 applicant seeks a permit for a compliance-response-related project, this FinalDraft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operation-related impacts on transportation associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

18. Tribal Cultural Resources

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

Tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objectives with cultural value to a California Native American tribe. The Proposed Regulation could result in construction of a variety of facilities and infrastructure, which would require ground disturbance. Because the locations of any future new facilities or infrastructure are unknown, there is a possibility that they may be in or adjacent to a region that is a tribal cultural resource or that contains a tribal cultural resource. Therefore, ground-

disturbing activities associated with construction of new facilities or infrastructure could encounter tribal cultural resources.

Operation of new and/or modified forklifts, facilities, and infrastructure would not require ground disturbance in addition to that performed during construction and modification because operation activities would occur within the footprint of the constructed or modified facility. Therefore, most operational activities would not have the potential to affect tribal cultural resources. However, the presence of new infrastructure, in and of itself, may change the setting or other attributes of the surrounding area, which could adversely affect trial cultural resources, as determined by a California Native American tribe.

Additionally, the increased demand for battery storage and fuel cells could result in an increase in mining. Ground-disturbing activities from hard rock and continual brine mining activities could affect areas and resources that are considered tribal cultural resources, particularly if that location is considered a sacred place of cultural value to a tribe.

Therefore, short-term construction-related and long-term operation-related impacts on tribal cultural resources associated with the Proposed Regulation could be potentially significant.

Mitigation Measure 18-1

The regulatory setting in Attachment A includes applicable laws and regulations that relate to tribal cultural resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities or infrastructure that would be approved by State or local jurisdictions or jurisdictions outside of California. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to 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 on tribal cultural resources include the following:

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

- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant impacts on tribal cultural resources associated with the project.
- Actions required to mitigate potentially significant tribal cultural resources impacts may include the following; however, any mitigation specifically required for a modified facility would be determined by the local lead agency.
- Retain the services of tribal cultural resources specialists with training and background that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, Part 61.
- Seek guidance from the State and federal lead agencies, as appropriate, for coordination of nation-to-nation consultations with the Native American tribes.
- Follow notification procedures and conduct consultation as required with California Native American tribes under AB 52 (including PRC Sections 21080.3.1 and 21080.3.2). Provide notice to Native American tribes of project details to identify potential tribal cultural resources (TCRs). In the case that a TCR is identified, consistent with 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 State or local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not contain project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

Consequently, while impacts would 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, it cannot be determined with certainty that impacts would be reduced to less than significant given that the authority to require

these measures is within the responsibility and jurisdiction of another agency and not CARB. Therefore, this Final~~Draft~~ EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a project applicant seeks a permit for a compliance-response-related project, short-term construction-related and long-term operation-related impacts on tribal cultural resources associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

19. Utilities and Service Systems

Impact 19-1: Short-Term Construction-Related and Long-Term Operation-Related Impacts on Utilities and Service Systems

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

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

facilities, no matter their size and location would be required to seek local or State land use approvals prior to their development. In addition, part of the land use entitlement process for facilities proposed in California requires that each of these projects undergo environmental review consistent with the requirements of CEQA and the CEQA Guidelines. It is assumed that facilities proposed in other states would be subject to comparable federal, State, and/or local environmental review requirements (e.g., CEQA) and that the environmental review process would assess whether adequate utilities and services (i.e., wastewater services, water supply services, solid waste facilities) would be available and whether the project would result in the need to expand or construct new facilities to serve the project. Because of the relative uncertainty regarding the types and number of new facilities or modifications to existing facilities that would be required to be constructed, short-term construction-related effects to utilities and services systems could be potentially significant.

For ZEF manufacturing and remanufacturing that would take place at existing facilities and use similar methods, it is anticipated that existing utilities would be sufficient to serve these operations. However, new facilities, such as those associated with the production and distribution as well as recycling and refurbishment of batteries and hydrogen fuel cells could result in an increase in the demand for water, wastewater treatment, stormwater drainage, energy, and solid waste services in their local areas. 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, these facilities are unlikely to cause exceedances in wastewater treatment requirements of the applicable regional water quality control board such that construction of new wastewater treatment infrastructure and/or plants would be required. Additionally, because of the size and nature of these facilities, it is unlikely that these facilities would generate levels of solid waste that exceed an existing landfill's capacity. However, there is a potential that new facilities may require new or expanded stormwater drainage facilities or produce water demand in exceedance of available water supplies.

The electricity required to charge ZEFs would be supplied by the utility company serving the territory in which the given ZEF fleet is charged. Because of the relatively small size of the batteries used in forklifts, it is not expected that the increase in electricity use would be so large that utility companies would have insufficient energy supply; however, distributed generation resources or lithium-ion storage batteries could be relied on during rare cases when total energy demand is high, and the energy grid is experiencing peak levels of demand. Use of electricity to charge the batteries would divert energy demand from the direct burning of fossil fuels to the various energy resources serving the electricity grid. Pursuant to State law (i.e., SB 350, SB 100), public utilities must incrementally increase their

portion of renewable energy to their energy portfolio. As discussed in greater detail under Impact 6-2, "Long-Term Operation-Related Impacts on Energy," public utilities are continually modifying their infrastructure and developing strategies to diversify the grid. This is due in large part to increasing demand for use of electric vehicles in an effort to reduce the state's GHG emissions.

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

Currently, lead acid batteries comprise approximately 20 million of the registered vehicles in use within the state. While implementation of the Proposed Regulation may result in increased lead acid battery production, use, and disposal, such levels would not generate notable strain on existing manufacturing, disposal, and recycling facilities such that additional adverse effects to utilities would occur.

Thus, short-term construction-related and long-term operational-related effects to utilities and services systems associated with the Proposed Regulation would be potentially significant.

Mitigation Measure 19-1

The regulatory setting in Attachment A includes 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 or infrastructure that would be approved by State or local jurisdictions or jurisdictions outside of California. 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 could qualify as a "project" under CEQA and be subject to CEQA review. The jurisdiction with primary approval authority over a proposed project is the lead agency, which is required to review the proposed project for compliance with CEQA statutes. To the extent new or modified facilities in California are subject to CEQA, 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 utility and service system-related impacts include the following:

- Proponents of new or modified facilities constructed because of reasonably foreseeable compliance responses would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to reduce or substantially lessen potentially significant impacts on utilities and service systems. The definition of actions required to mitigate potentially significant utility or service-related impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.
    - Comply with local plans and policies regarding the provision of water supply, wastewater treatment, and storm water drainage utilities, and solid waste services.
    - Where an on-site wastewater system is proposed, submit a permit application to the appropriate local jurisdiction.
    - Where appropriate, prepare a Water Supply Assessment (WSA) consistent with the requirements of Section 21151.9 of the PRC and Section 10910 et seq. of the Water Code. The WSA would be approved by the local water agency/purveyor prior to construction of the project.
    - Comply with local plans and policies regarding the provision of wastewater treatment services.

Because the authority to determine project-level impacts and require project-level mitigation lies with State or local land use and/or permitting agencies for individual projects, CARB finds it legally infeasible to implement and enforce this measure. Moreover, because of the programmatic analysis of this Final~~Draft~~ EIA, which does not contain project-specific details of potential impacts and associated mitigation, there is inherent uncertainty regarding the degree of mitigation that lead agencies may ultimately implement to reduce the potentially significant impacts if they approve these potential projects.

Consequently, while impacts would 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, it cannot be determined with certainty that impacts would be reduced to less than significant given that the authority to require these measures is within the responsibility and jurisdiction of another agency and not CARB. Therefore, this Final~~Draft~~ EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that if and when a

project applicant seeks a permit for a compliance-response-related project, short-term construction-related and long-term operation-related impacts on utilities and service systems associated with the Proposed Regulation could remain **potentially significant and unavoidable**.

20. Wildfire

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

The purchase of new ZEFs would increase demand for ZEF manufacturing, which in turn may result in the construction and operation of new manufacturing facilities, modification of existing facilities, repurposing, or closing of some existing facilities, or reopening of currently closed plants. The Proposed Regulation may also result in increased use of lithium and lead-acid batteries, which could incrementally increase mining and imports of lithium, lead, and other minerals from countries with raw mineral supplies, with some mineral demand being met domestically. The increase in the use of batteries could also require new facilities and the expansion of existing facilities for recycling and disposal. The Proposed Regulation may also result in increased demand for hydrogen fuel cells, which could require the development of new manufacturing facilities and/or expansion of existing manufacturing facilities. Increased demand for fuel cells could also result in an extremely small increase in platinum mining and exports from source countries or other states and a related increase in recycling, refurbishment, or disposal of hydrogen fuel cells. The increased use of battery electric and hydrogen fuel ZEFs could increase the installation of on-site charging and fueling facilities. The use of hydrogen fuel may require transport of hydrogen to fueling locations by truck. Disposal of LSI forklifts would increase sales out of state, scrapping, salvage, recycling, and disposal of hazardous materials, including components, engine oil, filters, exhaust catalysts, and other accessories. Additionally, while less likely to occur, facilities may utilize generators for charging ZEFs, or make operational changes to eliminate the need for forklifts altogether. Lastly, though very unlikely, fleets may replace LSI forklifts with diesel forklifts.

In the event of an emergency, such as a wildfire, evacuation coordination is dealt with at various levels of government through federal, State, 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 U.S. Bureau of Land Management (BLM), BLM coordinates fire response.

Individual facilities and associated infrastructure would be placed within response areas for various jurisdictions and would be dealt with in the same manner as existing infrastructure. Construction- and operation-related activities, as well as new or modified facilities, would likely occur within footprints of existing manufacturing facilities or in areas that are zoned for industrial or other appropriate uses; therefore, changes or modifications to existing fire response and evacuation plans would not be necessary. Likewise, the increase in use at battery or fuel cell manufacturing, refurbishing, and recycling facilities would occur at existing facilities that are already under an assigned jurisdiction for fire safety. In addition, projects implemented under the Proposed Regulation would not create growth substantial enough to impede emergency response or affect evacuation route capacity.

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

As discussed above in Impact 9-2, lithium batteries have caused large explosions as a result of 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 other heat source. However, when packaged and handled properly and in compliance with applicable state and Federal laws, lithium batteries pose no environmental hazard (79 *Federal Register* 46011, 46032). Thus, the increased use of lithium-based batteries would not substantially increase the risk of wildland fire.

Therefore, short-term construction-related and long-term operation-related impacts related to wildfire associated with the Proposed Regulation would be **less than significant**.

V. Cumulative and Growth-Inducing Impacts

A. Approach to Cumulative Analysis

This section satisfies the requirement of the California Environmental Quality Act (CEQA) to discuss how the project being analyzed would contribute to cumulative impacts. The California Air Resources Board's (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" (Title 14 California Code of Regulations [CCR] Section 15130[a]). The discussion of cumulative impacts need not provide as much detail as the discussion of effects attributable to the project alone (Title 14 CCR 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 Chapter IV, above, the Proposed Regulation would result in potentially significant and unavoidable impacts with respect to aesthetics, agricultural and forestry resources, air quality (short-term construction and odor related), 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 zero-emission forklift (ZEF) manufacturing facilities, battery and fuel cell manufacturing and recycling facilities, as well as the construction and operation of new infrastructure to support ZEFs and increased extraction of raw materials for the manufacture of new ZEFs 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 produce or would 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 (Title 14 CCR Section 15130[b]). Further, the CEQA Guidelines state that the pertinent discussion of cumulative impacts contained in one or more previously certified environmental impact reports (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 areawide impacts have already been addressed in the prior certified EIR for that plan (Title 14 CCR Section 15130).

This cumulative impact analysis uses the "summary of projections" approach set forth in Title 14 CCR Section 15130(b)(1)(B), using the 2022 Scoping Plan and the 2022 State SIP Strategy's lists of actions, which consist of other similar statewide air quality and GHG reduction measures. Because of the statewide reach of the Proposed Zero Emission Forklift Regulation and the longer-term future horizon for achievement of emission reductions, the impact analyses for the resource topics in Chapter IV are programmatic, rather than site or project specific, to address the statewide context. The document contains a description and analysis of a series of actions that are part of one large program. Recommended mitigation measures in Chapter IV provide a series of generally recognized methods to reduce potentially significant impacts but cannot offer details related to specific project locations. As a result, the impact conclusions and mitigation measures in the resource-oriented sections of Chapter IV are cumulative by nature, because they describe the potential impacts associated collectively with the full range of reasonably foreseeable compliance responses.

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

B. Projects Resulting in Related Effects

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 areawide cumulative impacts of a proposed project have already been adequately addressed, as defined in Section 15152(f), in a certified EIR for that plan (14 CCR Section 15130[d]). CEQA further directs that a tiered EIR focus on significant environmental effects that were not already analyzed in the previous environmental analysis. (PRC Sections 21068.5, 21093; see also Section 21094[c].)

Additional community-level strategies to reduce emissions and exposure, beyond the existing efforts, focus on amending current State measures and implementing new State measures. For purposes of disclosure and broad consideration of the potential actions that address air quality, CARB has identified relevant projects that would result in related impacts. Related projects consist of the 2022 Scoping Plan for Achieving Carbon Neutrality[112] (2022 Scoping Plan), which contains measures that reduce air pollutant and greenhouse gas (GHG) emissions and exposure within communities across the State, and the 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy) [113].

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

- Final Environmental Analysis (EA) for the 2022 Scoping Plan[114]
- Final EA for the 2022 State SIP Strategy[115]

The portions of the document relevant to this discussion are summarized below and within the respective resource area analyses. The documents are available upon request from CARB and online here:

- https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-b-final-environmental-analysis.pdf
- https://ww2.arb.ca.gov/sites/default/files/2022-09/Final%20EA%202022%20SIP.pdf

1. 2022 Scoping Plan

In April 2015, Governor Brown issued EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. In doing so, the Governor

[112] CARB, 2022 Scoping Plan for Achieving Carbon Neutrality, December 2022 (Web link: *https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf*).
[113] CARB, 2022 State Strategy for the State Implementation Plan, September 2022. (Web link: *https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf*).
[114] CARB, Final Environmental Analysis for the 2022 Scoping Plan for Achieving Carbon Neutrality, 2022. (Web link: *https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-b-final-environmental-analysis.pdf*, Last accessed May 4, 2023).
[115] CARB, Final Environmental Analysis for Proposed 2022 State Strategy for the State Implementation Plan, 2022. (Web link: *https://ww2.arb.ca.gov/sites/default/files/2022-09/Final%20EA%202022%20SIP.pdf*, last accessed May 8, 2023).

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. This target was later codified in SB 32; however, this target was expanded in 2022 with the passage of AB 1279, which established new long-term GHG reduction targets of reducing statewide emissions by 85 percent from 1990 levels and achieving carbon neutrality by no later than 2045. In December 2022, CARB adopted the 2022 Scoping Plan, which sets the framework for achieving the ambitious target of becoming carbon neutral by 2045.

Implementation of the measures to achieve the 2022 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 2022 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 (on-site 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 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 2022 Scoping Plan, there would be various methods to reduce GHG emissions that would result in new operations or changes to existing operational processes. New operations could include increased mining for lithium and increased recycling or refurbishment of batteries for on-road light-duty vehicles and 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 United States. 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 2022 Scoping Plan are summarized below in Table 15.

Table 15: Summary of Environmental Impacts for the 2022 Scoping Plan[116]

Resource Areas and Impact Categories	Significance Determination
Aesthetics	
Impact 1.a: Short-Term Construction-Related Impacts	PSU
Impact 1.b: Long-Term Operational-Related Impacts	PSU
Agriculture and Forest Resources	
Impact 2.a: Short-Term Construction-Related Impacts	PSU
Impact 2.b: Long-Term Operational-Related Impacts	PSU
Air Quality	
Impact 3.a: Short-Term Construction-Related Impacts	PSU
Impact 3.b: Long-Term Operational-Related Impacts	B

[116] CARB, Final Environmental Analysis for the 2022 Scoping Plan for Achieving Carbon Neutrality. 2022. (web link: *https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-b-final-environmental-analysis.pdf*, last accessed May 6, 2023).

Resource Areas and Impact Categories	Significance Determination
Biological Resources	
Impact 4.a: Short-Term Construction-Related Impacts	PSU
Impact 4.b: Long-Term Operational-Related Impacts	PSU
Cultural Resources	
Impact 5.a: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Energy Demand	
Impact 6.a: Short-Term Construction-Related Impacts	LTS
Impact 6.b: Long-Term Operational-Related Impacts	LTS
Geology and Soils	
Impact 7.a: Short-Term Construction-Related Impacts	PSU
Impact 7.b: Long-Term Operational-Related Impacts	PSU
Greenhouse Gas	
Impact 8.a: Short-Term Construction-Related and Long-Term Operational-Related Impacts	B
Hazards and Hazardous Materials	
Impact 9.a: Short-Term Construction-Related Impacts	PSU
Impact 9.b: Long-Term Operational-Related Impacts	PSU
Hydrology and Water Quality	
Impact 10.a: Short-Term Construction-Related Impacts	PSU
Impact 10.b: Long-Term Operational-Related Impacts	PSU
Land Use Planning	
Impact 11.a: Short-Term Construction-Related Impacts	PSU
Impact 11.b: Long-Term Operational-Related Impacts	PSU
Mineral Resources	
Impact 12.a: Short-Term Construction-Related and Long-Term Operational-Related Impacts	LTS
Noise	
Impact 13.a: Short-Term Construction-Related Impacts	PSU
Impact 13.b: Long-Term Operational-Related Impacts	PSU
Population and Housing	
Impact 14.a: Short-Term Construction-Related and Long-Term Operational-Related Impacts	LTS
Public Services	

Resource Areas and Impact Categories	Significance Determination
Impact 15.a: Short-Term Construction-Related and Long-Term Operational-Related Impacts	LTS
Recreation	
Impact 16.a: Short-Term Construction-Related Impacts	LTS
Impact 16.b: Long-Term Operational-Related Impacts	PSU
Transportation/Traffic	
Impact 17.a: Short-Term Construction-Related Impacts	PSU
Impact 17.b: Long-Term Operational-Related Impacts	PSU
Tribal Cultural Resources	
Impact 18.a: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Utilities and Service Systems	
Impact 19.a: Long-Term Operational-Related Impacts	PSU
Wildfire	
Impact 20.a: Short-Term Construction-Related Impacts	PSU
Impact 20.b: Long-Term Operational-Related Impacts	PSU

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

2. 2022 State SIP Strategy

Under the federal Clean Air Act (CAA), CARB and local air districts are responsible for developing and submitting to the US EPA clean air plans, known as SIPs. (See CAA Section 110; 42 U.S. Code Section 7410.) SIPs are comprehensive plans that demonstrate how and when nonattainment areas within California would reach attainment of air quality standards. SIPs must identify both the magnitude of emission reductions needed and the actions necessary to achieve those reductions by the required attainment deadline.

Developing the SIPs is an immediate focus of CARB's planning efforts, with regional plans periodically due to US EPA. The 2022 State SIP Strategy addresses US EPA's recently strengthened 8-hour ozone standard of 70 parts per billion (ppb). Nineteen areas in California were designated nonattainment in 2018. CARB will be considering regional SIPs for this standard in 2022. The 2022 State SIP Strategy will include measures and commitments to reduce emissions from State-regulated sources to support attainment of the 70-ppb standard in all nonattainment areas across California. The most recent SIP (2022 SIP) was due to US EPA in September 2022. CARB noted that substantial emission reductions beyond those being achieved with

current programs were needed to meet these standards. In addition to the most recent air quality standards, the South Coast and San Joaquin Valley must also continue to progress towards attaining earlier standards, which they have not yet achieved, including the 8-hour ozone standard of 80 ppb, and the 24-hour $PM_{2.5}$ standard of 35 micrograms per cubic meter. CARB released the draft State SIP Strategy and Draft EIA for public review on January 31, 2022. CARB prepared written responses to comments received on the Draft EIA and made revisions as necessary. On August 12, 2022, CARB released the Revised Proposed 2016 State SIP Strategy and in February 2022, the Board adopted the State SIP Strategy. Therefore, reasonably foreseeable future projects under the 2022 SIP Strategy will be used in relation to the Proposed Regulation.

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy include construction and operation of new manufacturing facilities to support increased market penetration of plug-in hybrid electric vehicles (PHEVs); non-combustion ZEVs, including battery electric vehicles and hydrogen fuel cell electric vehicles; zero-emission technologies; and electric-powered equipment (e.g., forklifts). Increased use of ZEVs and PHEVs may result in increased infrastructure for natural gas and hydrogen refueling and charging stations, and increased demand for lithium-ion battery manufacturing and associated increases in lithium mining and exports. New testing centers to monitor vehicle emissions may be constructed throughout the state. In addition, increased low-emission diesel (LED) demand may increase cultivation or imports of LED feedstocks, processing of LED fuels, and shipment of finished LED fuels and/or their feedstocks. Infrastructure to support collection, processing, and distribution of LED fuels and feedstock may also increase.

Potential environmental impacts associated with the 2022 State SIP Strategy are summarized below in Table 16.

Table 16: Summary of Environmental Impacts for the 2022 State SIP Strategy[117]

Resource Areas and Impact Categories	Significance Determination
Aesthetics	
Impact 1-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Agriculture and Forest Resources	
Impact 2-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Air Quality	
Impact 3-1: Short-Term Construction-Related Impacts	PSU
Impact 3-2: Long-Term Operational-Related Impacts	B
Biological Resources	
Impact 4-1: Short-Term Construction-Related Impacts	PSU
Impact 4-2: Long-Term Operational-Related Impacts	PSU
Cultural Resources	
Impact 5-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Energy Demand	
Impact 6-1: Short-Term Construction-Related Impacts	LTS
Impact 6-2: Long-Term Operational-Related Impacts	LTS
Geology and Soils	
Impact 7-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Greenhouse Gas	
Impact 8-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	B
Hazards and Hazardous Materials	
Impact 9-1: Short-Term Construction-Related Impacts	PSU
Impact 9-2: Long-Term Operational-Related Impacts	PSU
Hydrology and Water Quality	
Impact 10-1: Short-Term Construction-Related Impacts	PSU

[117] CARB, Final Environmental Analysis for the Proposed 2022 State Strategy for the State Implementation Plan, 2022. (web link: https://ww2.arb.ca.gov/sites/default/files/2022-09/Final%20EA%202022%20SIP.pdf, last accessed May 6 2023).

Resource Areas and Impact Categories	Significance Determination
Impact 10-2: Long-Term Operational-Related Impacts	PSU
Land Use Planning	
Impact 11-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Mineral Resources	
Impact 12-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	LTS
Noise	
Impact 13-1: Short-Term Construction-Related Impacts	PSU
Impact 13-2: Long-Term Operational-Related Impacts	PSU
Population and Housing	
Impact 14-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	LTS
Public Services	
Impact 15-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	LTS
Recreation	
Impact 16-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	LTS
Transportation/Traffic	
Impact 17-1: Short-Term Construction-Related Impacts	PSU
Impact 17-2: Long-Term Operational-Related Impacts	PSU
Tribal Cultural Resources	
Impact 18-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	PSU
Utilities and Service Systems	
Impact 19-1: Long-Term Operational-Related Impacts	PSU
Wildfire	
Impact 20-1: Short-Term Construction-Related and Long-Term Operational-Related Impacts	LTS

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

C. 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 2022 Scoping Plan EA and the 2022 SIP Strategy EA considered cumulative impacts of a full range of reasonably foreseeable compliance responses to all the recommendations 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" (Title 14 CCR Sections 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 2022 Scoping Plan EA and the 2022 State SIP Strategy EA.
- A discussion of the types of compliance responses associated with the Proposed Regulation, pertinent to each resource area.
- A significance conclusion that determines if the Proposed Regulation 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 Regulation would potentially result in cumulatively considerable contributions to significant cumulative impacts related to certain resource areas, as discussed below. While recommended mitigation is provided for each potential cumulatively considerable contribution to a significant impact, other agencies would be responsible for implementing the mitigation measures. Consequently, it is uncertain whether those other agencies would implement the mitigation measures, which precludes assurance that significant impacts would be avoided or reduced to a less-than-significant level. Where impacts cannot feasibly be mitigated or where there is uncertainty about implementation of mitigation, this Final~~Draft~~ EIA 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 Proposed Regulation as part of the approval process.

D. Cumulative Impacts by Resource Area

1. Aesthetics

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

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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

The Proposed Regulation's impacts to aesthetics would be significant and unavoidable on their own, as concluded in Chapter IV. Because the Proposed Regulation on its own would result in a significant and unavoidable impact, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter IV could likely effectively reduce the incremental contribution from the Proposed Regulation to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter IV, CARB's enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** on aesthetics.

2. Agriculture and Forestry Resources

Implementation of the reasonably foreseeable compliance responses included in the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location or character of these new facilities or modification of existing facilities is uncertain. However, new facilities could be located on important farmland (i.e., Prime Farmland, Farmland of Statewide Importance Unique Farmland, and Farmland of Local Importance as defined by the Farmland

Mapping and Monitoring Program), 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

The Proposed Regulation's impacts to agriculture and forestry resources would be significant and unavoidable on their own, as concluded in Chapter IV. These impacts would be significant because of the potential for land conversion to non-agricultural and non-forest uses. Because the Proposed Regulation on its own would result in a significant and unavoidable impact, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter IV could likely effectively reduce the incremental contribution from the Proposed Regulation to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter IV, CARB's implementation and enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** on agriculture and forestry resources.

3. Air Quality

Implementation of the reasonably foreseeable compliance responses for the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Short-term construction activities would generate emissions of criteria air pollutants, toxic air contaminants (TACs), and odors. Emissions from construction activities could occur from grading and site preparation, use of heavy-duty equipment, and construction worker commute trips. The exact location and state of ambient air quality where construction activities may take place is uncertain.

Implementation of mitigation measures would not reduce construction-related 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 2022 Scoping Plan and

2022 State SIP Strategy could result in a significant cumulative impact for construction.

The Proposed Regulation's contribution to adverse air quality effects would be significant with respect to construction emissions when compared to local thresholds applied by local air districts. ARB's implementation and enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** on air quality during construction.

However, these emissions from construction activity would be greatly offset by the beneficial long-term air quality impacts that would be realized under 2022 Scoping Plan and the 2022 State SIP Strategy as discussed in Chapter IV. Both the 2022 Scoping Plan EA and 2022 State SIP Strategy EA found that implementation of the reasonably foreseeable compliance responses for the various measures would not result in significant impacts to air quality from operational activities. More specifically, the purpose of the approved plans is to improve air quality conditions and reduce emissions. 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 2022 Scoping Plan and 2022 State SIP Strategy would be beneficial, and thus, cumulative impacts would be less than significant.

The Proposed Regulation's long-term operational impacts to air quality would be beneficial on their own, as discussed in Chapter IV of this Final~~Draft~~ EIA. These impacts would be beneficial through the electrification of ZEFs resulting in a decrease in gasoline and diesel fuel combustion, which contributes greatly to the degradation of air quality in the state. Unlike other resource area, CARB can directly influence the composition of ZEFs, therefore, the beneficial long-term air quality effects would likely be realized. The Proposed Regulation would assist the state in meeting the NAAQS and California Ambient Air Quality Standards. This indicates that the Proposed Regulation would result in a **cumulatively beneficial contribution** to air quality by reducing air pollution.

4. Biological Resources

Implementation of the reasonably foreseeable compliance responses for the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location of these new facilities or the modification of

existing facilities is uncertain. Construction could require disturbance of an undeveloped area, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. These activities would have the potential to adversely affect biological resources (e.g., species, habitat) that may reside or be present in those areas. Because there are biological species that occur, or even thrive, in developed settings, resources could also be adversely affected by construction and operations within disturbed areas at existing manufacturing facilities or at other sites in areas with zoning that would permit the development of manufacturing or industrial uses.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

The Proposed Regulation's impacts to biological resources would be significant and unavoidable on their own, as concluded in Chapter IV. These impacts would be significant because of effects on habitat, special-status species, wildlife movement, and other aspects. Because the Proposed Regulation on their own would result in a significant and unavoidable impact, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter IV could likely effectively reduce the incremental contribution from the Proposed Regulation to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter IV, CARB's implementation and enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** on biological resources.

5. Cultural Resources

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location of these new facilities or the modification of existing facilities is uncertain. Construction activities could require disturbance of an 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 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

The Proposed Regulation's impacts to cultural resources would be significant and unavoidable on their own, as concluded in Chapter IV. These impacts would be significant because of the potential to damage and destroy cultural, prehistoric, historic, tribal cultural, and paleontological resources. Because the Proposed Regulation on their own would result in a significant and unavoidable impact, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter IV could likely effectively reduce the incremental contribution from the Proposed Regulation to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter IV, CARB's implementation and enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** on cultural resources.

6. Energy

Implementation of the reasonably foreseeable compliance responses to the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Both EAs found that construction and operations would result in less-than-significant 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. Thus, cumulative impacts would be less than significant.

While the Proposed Regulation would require the consumption of energy resources, these actions would enable the transition to zero-emission technologies to comply with provisions of the Proposed Regulation and would not involve the wasteful or inefficient use of energy. While energy demand would increase during construction of future projects in response to implementation of the Proposed Regulation, these energy expenditures would be necessary to facilitate the actions that would result in environmental benefits such as reduced air pollution and GHG emissions. Therefore, short- or long-term energy consumption would not be considered unnecessary. Implementation of the Proposed Regulation ZEFs would divert energy from fossil fuel-powered systems and engines to electrical and fuel cell systems, which, as mandated by the renewable portfolio standard, will become increasingly more renewable in the coming years. Arguably, through the use of alternative fuels and an increasingly more renewable energy grid, implementation of the Proposed Regulation would improve the efficiency of energy usage across the State. Therefore, the Implementation of the Proposed Regulation **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to energy.

7. Geology and Soils

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location of these new facilities or the modification of existing facilities is uncertain. Construction could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Additional disturbance could result from the increased mineral ore extraction activities which would provide raw materials to these manufacturing facilities and energy projects. These activities would have the potential to adversely affect the geology and soils in construction or mineral ore extraction areas such that a rupture of a known earthquake fault, strong seismic ground shaking, liquefication, landslides, erosion, or the destruction of a unique paleontological resource or geographic feature could occur. Soil compaction, soil erosion, and loss of topsoil could occur during construction activities.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

The Proposed Regulation's impacts to geology and soils would be significant and unavoidable on their own, as concluded in Chapter IV. Because the Proposed Regulation on its own would result in a significant and unavoidable impact, and because the project would combine with impacts across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter IV could likely effectively reduce the incremental contribution from the project to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter IV, CARB's enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** related to geology and soils.

8. Greenhouse Gases

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan and 2022 State SIP Strategy could require the construction and operation of new or modified facilities or infrastructure and mining activities. Overall, the Scoping Plan and the SIP Strategy would result in substantial long-term GHG reductions, although certain aspects of both would cause comparatively small short-term GHG emission increases which were determined to be less than significant. When these short-term construction GHG emissions associated with construction activities are considered in relation to the overall long-term operational GHG beneficial effects, they are not considered substantial. Thus, the cumulative impacts would be less than significant. Compliance responses implemented in response to the Proposed Regulation were found to have a ~~less- than-significant impact for construction and~~ beneficial impact related to ~~operational~~ GHG emissions. Given these ~~long-term~~ benefits, the Proposed Regulation would result in a **cumulatively beneficial contribution** to GHG by reducing GHG emissions and **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to GHGs.

9. Hazards and Hazardous Materials

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Construction activities generally use heavy-duty equipment requiring periodic refueling and lubricating. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site. There would be a potential risk of accidental release during fuel transfer activities. Although precautions would be taken to ensure that any spilled fuel

is properly contained and disposed, and such spills are typically minor and localized to the immediate area of the fueling (or maintenance), the potential still remains for a substantial release of hazardous materials into the environment.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

The Proposed Regulation's impacts related to hazards and hazardous materials would be significant and unavoidable on their own, as concluded in Chapter IV. These impacts would be significant because of the effects of disposal of hazardous materials, the potential for hazardous materials spills, and exposure and environmental effects from lithium. Because the Proposed Regulation on their own would result in a significant and unavoidable impact, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter IV could likely effectively reduce the incremental contribution from the Proposed Regulation to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter IV, CARB's implementation and enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** related to hazards and hazardous materials.

10. Hydrology and Water Quality

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

determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

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

11. Land Use and Planning

Implementing reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities. Facilities would likely occur within the footprints of existing manufacturing facilities or in areas with zoning that would permit the development of these facilities. Thus, implementation of the recommended actions could divide an established community or conflict with a land use or conservation plan.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

The Proposed Regulation's impacts related to land use and planning would be significant and unavoidable on their own, as concluded in Chapter IV. Because the Proposed Regulation on its own would result in a significant and unavoidable impact, and because this impact would combine with other land use and planning impacts across the state, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter IV could likely effectively reduce the incremental contribution from the Proposed Regulation to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter IV, CARB's enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** related to land use and planning.

12. Mineral Resources

Implementation of the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. 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, and hydrogen fuel cell forklifts would require increased battery production and increased mining. In the case that new mines are required, the proposed mining projects 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 would be 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-ion battery recycling potential could supplement future increased demand. Appendix G of the CEQA Guidelines considers an impact on mineral resources to be the loss of availability of a known mineral resource that would be of value to a local entity, a region, or the state. This type of impact could result from actions such as building a structure over an area that contains mineral resources and thereby prohibiting access to mining activities or the consumption of a mineral resource. Because compliance responses could result in increased development where mining for lithium is feasible, they could conceivably affect the availability of these mineral resources if access to resources becomes impeded and result in a significant cumulative impact.

The Proposed Regulation's contribution to this significant impact would be negligible, because the increased demand for lithium and the potential for increased

development where mining for lithium is feasible would be extremely small compared to the overall increased demand for lithium for other uses, as described in Chapter IV. Thus, the Proposed Regulation **would not result in a cumulatively considerable contribution to a significant cumulative impact** on mineral resources.

13. Noise

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Noise and vibration associated with construction and operation of these facilities and mining operations would fluctuate depending on type, number, size, and duration of usage for the varying equipment. The effects of noise and vibration would depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise sensitive receptors, and the existing ambient noise environment in the receptor's vicinity. Operational-related activities associated with mining or operation of manufacturing plants could produce new or ongoing sources of noise that could exceed applicable noise standards and result in a substantial increase in ambient noise levels.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

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

14. Population and Housing

Implementation of the 2022 Scoping Plan and 2022 State SIP Strategy 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. 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. Therefore, a substantial amount of construction worker migration would not be likely to occur, and a sufficient construction employment base would likely be available. Construction activities would not require new additional housing or generate changes in land use. It would be expected that the aforementioned facilities would be located within areas of consistent zoning and have sufficient employees and housing to support their operation. Thus, cumulative impacts related to population and housing would be less than significant.

Similarly, there is uncertainty as to the specific location of new facilities or the modification of existing facilities associated with the Proposed Regulation, and project-specific impacts were determined to be less than significant. When considered in the context of the compliance responses for the Scoping Plan and SIP Strategy, increased employment would be negligible from construction and operations of the Proposed Regulation. Therefore, the Implementation of the Proposed Regulation **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to population and housing.

15. Public Services

Implementation of the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction activities would not require new additional housing to accommodate or generate changes in land use and, therefore, would not affect the provision of public services. It would be expected that the aforementioned facilities would be located within areas of consistent zoning and have sufficient public services to support their operation.

Similarly, there is uncertainty as to the specific location of new facilities or the modification of existing facilities associated with the Proposed Regulation, and project-specific impacts were determined to be less than significant. When considered in the context of the compliance responses for the Scoping Plan and SIP

Strategy, increases in demands for public services would be negligible from construction and operations of the Proposed Regulation. Therefore, activities related to the Implementation of the Proposed Regulation **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to public services.

16. Recreation

Implementation of the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. There is uncertainty as to the exact locations of potential new or modified facilities. Construction activities associated with the Scoping Plan and the SIP would not be anticipated to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would be likely to occur. In addition, the demand for new (or expansion of existing) recreational-related facilities would not occur as a result of construction activities. However, implementation of the Scoping Plan was found to result in potentially significant impacts to recreation due to adversely affecting the quality of recreational resources and restricting access to recreational resources.

Implementation of mitigation measures could reduce these impacts to a less-than-significant level; however, because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, reduction of impacts to recreational resources cannot be assured. Thus, recognizing that mitigation measures to reduce impacts to recreational resources may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan could result in a significant cumulative impact during operations.

There is uncertainty as to the specific location of new facilities or the modification of existing facilities associated with the Proposed Regulation, and project-specific impacts were determined to be less than significant. Increases in demands on recreational facilities and impacts to the quality of existing recreational resources are not expected. When considered in the context of the compliance responses for the Scoping Plan and SIP Strategy, impacts on recreation would be negligible from construction and operations of the Proposed Regulation. Therefore, activities related to the implementation of the Proposed Regulation **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to recreation.

17. Transportation

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Although detailed information about potential specific construction activities is not currently available, these activities could result in short-term construction traffic (primarily motorized) from worker commute- and material delivery-related trips. Depending on the amount of trip generation and the location of new facilities, implementation could conflict with applicable programs, plans, ordinances, or policies (e.g., performance standards, congestion management); and/or result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially due to project-generated heavy-duty truck trips. The locations of facilities with newly installed infrastructure to distribute and dispense alternative fuels cannot currently be known; therefore, the total change in VMT resulting from operation of these facilities cannot be assessed. Many activities, such as lithium battery manufacturing, recycling, and refurbishing, would take place at existing facilities; however, long-term operational-related activities associated with deliveries and distribution of goods (e.g., alternative fuels) could result in the addition of new trips, which could increase regional VMT.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

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

considerable contribution to a significant cumulative impact related to transportation.

18. Tribal Cultural Resources

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The exact location of these new facilities or the modification of existing facilities is uncertain. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Demolition of existing structures may also occur before the construction of new buildings and structures. The cultural resources that could potentially be affected by ground disturbance activities could include tribal cultural resources. Properties important to Native American communities, including tangible properties possessing intangible traditional cultural values, also may exist.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

The Proposed Regulation's impacts to tribal cultural resources would be significant and unavoidable on their own, as concluded in Chapter IV. These impacts would be significant because of the potential to damage and destroy tribal cultural resources. Because the Proposed Regulation on their own would result in a significant and unavoidable impact, the project's contribution to the significant cumulative impact would also be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter IV could likely effectively reduce the incremental contribution from the Proposed Regulation to a less-than-considerable level, but authority to require that mitigation will rest with other agencies that will be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter IV, CARB's implementation and enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Regulation **could result in a cumulatively considerable contribution to a significant cumulative impact** on tribal cultural resources.

19. Utilities and Service Systems

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and

operational activities associated with new or modified facilities or infrastructure and increased mining activities. As a result, there could be new demand for water, wastewater, electricity, and gas services for new or modified facilities. Generally, facilities would be cited in areas with existing utility infrastructure—or areas where existing utility infrastructure is easily assessable. At this time, the specific location and type of construction needed is not known and would be dependent upon a variety of market factors that are not within the control of CARB including: economic costs, product demands, environmental constraints, and other market constraints. Thus, the specific impacts from construction on utility and service systems cannot be identified with any certainty, and individual compliance responses could potentially result in significant environmental impacts for which it is unknown whether mitigation would be available to reduce the impacts.

Implementation of mitigation measures would not reduce 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 2022 Scoping Plan and 2022 State SIP Strategy could result in a significant cumulative impact.

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

20. Wildfire

Implementation of the 2022 Scoping Plan and 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. The 2022 Scoping Plan and the associated compliance responses indicated that these activities would result in a significant impact because there is uncertainty as to the exact locations of potential new or modified facilities that could increase fire hazards; however, the 2022 State

SIP Strategy concluded that the compliance responses associated with the plan's actions would result in a less-than-significant impact.

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

E. Growth-Inducing Impacts

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

VI. Mandatory Findings of Significance

Consistent with the requirements of the California Environmental Quality Act (CEQA) Guidelines Section 15065 and Section XXI of the Environmental Checklist, this Final~~Draft~~ Environmental Analysis (Final~~Draft~~ EIA) addresses the mandatory findings of significance for the Proposed Regulation.

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

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

This Final~~Draft~~ EIA addresses and discloses potential environmental effects associated with implementation of the Proposed Regulation, including direct, indirect, and cumulative impacts. As described in Chapter IV, this Final~~Draft~~ EIA discloses potential environmental impacts, the level of significance prior to mitigation, mitigation measures, and the level of significance after the incorporation of mitigation measures.

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

A lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has potential environmental effects that are individually limited, but cumulatively considerable (14 CCR Section 15065). Cumulatively considerable means "that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (14 CCR Section 15065[a][3]). Cumulative impacts are discussed in Chapter V of this Final~~Draft~~ EIA.

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

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

VII. Alternatives Analysis

This section satisfies California Environmental Quality Act (CEQA) Guidelines Section 15126.6, which addresses requirements related to alternatives to the Proposed Regulation. The following discussion provides an overview of the steps taken to develop alternatives to the proposed action (i.e., adoption of the Proposed Regulation), 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

The California Air Resources Board's (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 15364).

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(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[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 Regulation 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 IV of this Final~~Draft~~ EIA (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 four additional alternatives (Alternatives 4–7, below) that were considered but rejected from further analysis per CEQA Guidelines (Title 14 CCR Section 15126.6[c]). CARB has made a good faith effort to identify all potentially feasible project alternatives.

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

- Alternative 1 (No Project Alternative)
- Alternative 2 (Reduce Scope to Cover Only Forklifts with up to 8,000 Pounds of Lift Capacity)
- Alternative 3 (Allow for the Use of Cleaner Spark-Ignited Forklifts)
- Alternative 4 (Use Hours-of-Use as Basis for Phasing Out Targeted Forklifts)
- Alternative 5 (Extend the Availability of the Low-Use Exemption Indefinitely for All Fleets)
- Alternative 6 (Allow Rental Fleets to Purchase New Class IV Forklifts in 2026, 2027, and 2028)
- Alternative 7 (Exempt Small Fleets)

C. Project Objectives

Recognizing the requirements of SB 32 (Ch. 249, Stats. 2016, Pavley), EO S-3-05, and AB 1279 (Muratsuchi, Chapter 337, Statutes of 2022) to reduce greenhouse gas (GHG) emissions as well as the need for California to attain National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards for criteria air pollutants and to

reduce exposure to TAC emissions, the primary objectives of the Proposed Regulation include the following:

1. Accelerate the deployment of zero-emission forklifts (ZEF), which achieve the maximum emissions reduction possible to assist in the attainment of NAAQS for criteria air pollutants (Health and Safety Code Sections 43000.5[b], 43018[a]).

2. Decrease and eliminate emissions from petroleum and fossil-fuel use by forklifts by setting standards that eliminate exhaust emissions from forklifts. Emissions from petroleum use as an energy resource contribute substantially to the following public health and environmental problems, among others: air pollution and its associated health impacts, 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 ZEFs in California to support the Scoping Plan, which was developed to reduce GHG emissions in California, as directed by AB 32 (Nuñez, Chapter 488, Statutes of 2006). California's 2022 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.

4. Develop a regulation that is consistent with and meets the goals of the State Implementation Plan (SIP) and the 2016 State SIP Strategy, providing necessary emissions reductions for all of California's nonattainment areas to meet NAAQS (Health and 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 and 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 as soon as possible, but no later than 2045, pursuant to SB 100 (Ch. 312, Stats. of 2018, De León) and AB 1279, maintain net negative emissions thereafter in accordance with AB 1279 and EO B-55-18, and to ensure that by 2045, statewide anthropogenic greenhouse gas emissions are reduced to at least 85 percent below the 1990 levels, pursuant to AB 1279.

6. Lead the transition of California's off-road sector from internal combustion to ZE technology. Support ZEF sales and EO N-79-20's goal to transition off-road operations to zero-emission 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 ZE technology that will be needed to achieve California Air Resources Board's (CARB's or Board's) SIP and Scoping Plan goals.

9. Achieve emission reductions that are real, permanent, quantifiable, verifiable, and enforceable (Health and Safety Code Sections 38560, 38562[d][1]).

10. Provide market certainty for ZE technologies and charging and hydrogen-fueling infrastructure to guide the acceleration of the development of environmentally superior ZEFs 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 and Safety Code Section 43000[b]).

12. Spur economic activity of ZE technologies in the off-road sectors. Incentivize innovation that will transition California's economy into greater use of clean and sustainable ZE technologies and promote increased economic and employment benefits that will accompany this transition (AB 1493, Section 1[g]; Health and Safety Code Section 38501[e]).

D. Alternatives Analysis

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 IV of this Final~~Draft~~ EIA.

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 Regulation. The No Project Alternative is included only to assist in the analysis and consideration of this portion of the Proposed Regulation 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 Regulation would not occur. Existing conditions would continue, and spark-ignited forklifts would continue to be purchased and operated as they have been to date.

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 result in neither the development of new manufacturing plants that specialize in the production of propulsion batteries or fuel cells nor the modification or expansion of existing production facilities. In addition, new electrical-charging and hydrogen-fueling infrastructure would not likely be developed. Thus, no impacts related to new or expanded facilities would occur under the No Project Alternative.

Beneficial impacts resulting from the Proposed Regulation would not occur under the No Project Alternative. This would include no reduction of criteria pollutants and GHGs beyond what is required under existing regulations and no reduction in energy use, and no additional public health benefits. In addition to failing to meet project objectives, despite not causing any *new* environmental impacts, the No Project Alternative would be substantially less beneficial to the environment overall compared to the Proposed Regulation. That is, the No Project Alternative would not accelerate the necessary criteria pollutant and GHG reductions to achieve California's air quality, health, and climate goals.

Purchase data show that the ZEF population in California has been gradually increasing over the past 10 years, and staff believes this trend could continue in future years even without the Proposed Regulation. To the extent this trend does continue, staff would expect associated environmental impacts to occur. That said, such impacts are not being considered in this analysis because the purchase data suggest that the growth in ZEFs is primarily attributed to overall forklift population growth and not to the transition of large-spark ignition (LSI) forklifts to ZE technology. That is, although ZEFs have been increasing over the years, the LSI forklift population has remained generally constant.

ii) Objectives

The No Project Alternative was rejected because it fails to meet the Proposed Regulation's objectives 1–12 and would not result in any criteria pollutant or GHG emissions reductions beyond the baseline. This alternative would simply maintain business as usual and would not increase ZEF deployments beyond existing conditions.

2. Alternative 2: Reduce Scope to Cover Only Forklifts with up to 8,000 Pounds of Lift Capacity

a) Alternative 2 Description

Alternative 2 is a less stringent alternative to the Proposed Regulation. Staff have discussed this alternative with stakeholders early in the rulemaking process. Alternative 2 would apply to many of same fleets as the Proposed Regulation. However, Alternative 2 would apply only to Class IV and Class V forklifts with a lift capacity of 8,000 pounds or less. That is, unlike the Proposed Regulation, Alternative 2 would not require the phase out of Class IV forklifts with a lift capacity greater than 8,000 pounds and Class V forklifts with a lift capacity between 8,001 and 12,000 pounds. The phase-out schedules for Alternative 2 would be the same as those in the Proposed Regulation for both forklift classes. In addition, all other requirements and provisions in the Proposed Regulation, including reporting, recordkeeping, labeling, and exemptions, would apply. The more-limited scope of Alternative 2 would reduce the number of Class IV and Class V forklifts that would need to be phased out and replaced with ZEFs over the regulatory timeframe. While Alternative 2 would result in lower upfront costs, it would also result in lower emission reductions and health benefits than the Proposed Regulation.

When compared to the Proposed Regulation, this alternative would result in approximately 25,000 fewer ZEFs deployed by 2038, lower criteria emissions benefits, lower health benefits, and lower climate emissions reduction benefits as detailed in Chapter IX of the ISOR, "Regulatory Alternatives", and discussed in the following sections.

b) Alternative 2 Discussion

i) Environmental Impacts

Alternative 2 would result in greater ZEF sales when compared to the baseline and fewer ZEF sales than the Proposed Regulation, and would therefore have reduced environmental impacts related to ZEF manufacturing and deployment as well as battery and fuel cell recycling and disposal. In addition, when compared to the Proposed Regulation, there would be less environmental impacts related to ZEF infrastructure installations and less construction-related impacts to aesthetics, air quality, biological resources, cultural resources, geology and soil, hazards and hazardous materials, hydrology and water quality, and noise associated with installation of ZEF charging/refueling infrastructure.

Alternative 2 would produce fewer operational impacts as compared to the Proposed Regulation because of the reduced number of ZEFs deployed. However, it would be expected that although such impacts would be less, potentially significant and unavoidable impacts to aesthetics, agricultural resources, 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 2 could still occur. This is because the compliance responses to this less stringent ZEF requirement would still require infrastructure and facility development, albeit at potentially fewer locations, to serve the introduction of ZEFs into the marketplace from the Proposed Regulation. Therefore, this alternative would not avoid all significant impacts associated with the Proposed Regulation, nor would it achieve many of the objectives of the Proposed Regulation.

Although Alternative 2 would result in oxides of nitrogen (NO_x), fine particulate matter of a diameter less than 2.5 microns ($PM_{2.5}$), reactive organic gases (ROG), and GHG emission benefits relative to the Baseline scenario, the benefits would not be as great as those estimated for the Proposed Regulation. This is because Alternative 2 would be limited to only forklifts up to 8,000 pounds lift capacity, so fewer LSI forklifts would be phased out and replaced with ZEFs under the Alternative 2 scenario.

ii) Objectives

This alternative was rejected because it would fail to meet the primary ZEF-related objectives 1 and 6. These objectives seek to accelerate deployment of ZEFs to achieve maximum emission reductions and transition the off-road sector to ZE technologies by 2035 where feasible. The less-stringent alternative would result in fewer ZEF deployments, less ZEF-related economic activity, and less ZEF infrastructure build-out. Additionally, this alternative fails to meet the goals outlined in EO N-79-20 as effectively as the Proposed Regulation, including achieving 100 percent zero-emission off-road vehicles and equipment in the State by 2035. Furthermore, this alternative would be less effective in meeting California's climate goals and GHG-related objectives 3 and 5. This alternative would also be less effective at meeting criteria-pollutant emission reductions program objectives 4, 7, and 8. As discussed in Chapter IX of the ISOR (which is incorporated by reference), this alternative would achieve less NO_x (47 percent less), $PM_{2.5}$ (31 percent less), ROG (32 percent less), and GHG (35 percent less) emission reductions when compared to the Proposed Regulation. Finally, this alternative would be less effective in meeting program objectives 2 and 11 compared to the Proposed Regulation.

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

3. Alternative 3: Allow for the Use of Cleaner Spark-Ignited Forklifts

a) Alternative 3 Description

This alternative is a modification to the Proposed Regulation and would allow fleets to turn over some portion of their forklifts to the cleanest certified LSI engines rather than ZE technology. These cleaner spark-ignited forklifts could include forklifts fueled by renewable propane. Variations of this approach have been suggested by stakeholders during the rulemaking process, with the primary intent of reducing anticipated compliance costs and burden. Some advocates for this approach have stated that this alternative could provide flexibility for forklift operations that may be more difficult to transition to zero emission.

This alternative could result in less air pollution, compared to both the CEQA baseline and the BAU scenario, in some fleets. However, it would reduce the number of Class IV and Class V forklifts replaced with ZEFs over the regulatory timeframe compared to the Proposed Regulation. While this alternative could result in lower upfront costs, it would also result in lower emission reductions and health benefits than the Proposed Regulation, even taking into account upstream fuels and energy production (see discussion in the Air Quality section above). While staff understands there could be certain forklift operations that are more challenging to transition to ZE technology initially, the Proposed Regulation includes provisions that would provide extensions when warranted for feasibility and other issues.

Those promoting this alternative also suggest that using renewable propane would achieve additional GHG benefits. However, any requirement to use renewable fuels would not result in true additional GHG benefits because low carbon fuels are already accounted for under California's LCFS program.[118] Further, based on EERs, zero-emission forklifts are about four times more energy efficient than a propane-powered forklift.[119] This means that the zero-emission forklift uses about a third of the energy that a propane forklift uses for the same amount of work, and results in less overall GHG emissions when a zero-emission forklift is operated instead of a renewable propane powered forklift.[120] Additionally, the GHG reduction difference between the two types of forklifts will increase over time as California' electricity generation further transitions to renewables.[121] Furthermore, very little renewable propane is currently available, and what is available is being used for transportation fuel given LCFS incentives. If the LCFS credits were reduced in the future for forklifts, there would also be less of an incentive to use renewable propane in forklifts.

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[118] Title 17 CCR Sections 95480–95503.

[119] See Air Quality section, above.

[120] See id.

[121] For example, the state is working toward 100% renewable and zero-carbon retail electricity sales by 2045 pursuant to Senate Bill 100 (2018). SB 100 also establishes an interim procurement target of 60% renewables by 2030.

b) Alternative 3 Discussion

i) Environmental Impacts

Alternative 3 would result in greater ZEF sales when compared to the baseline and fewer ZEF sales than the Proposed Regulation. Alternative 3 would, therefore, result in reduced environmental impacts related to ZEF manufacturing and deployment as well as battery and fuel cell recycling and disposal. In addition, when compared to the Proposed Regulation, there would be less environmental impacts related to ZEF infrastructure installations and less construction-related impacts to aesthetics, air quality, biological resources, cultural resources, geology and soil, hazards and hazardous materials, hydrology and water quality, and noise associated with installation of ZEF charging/refueling infrastructure.

Alternative 3 would produce fewer operational impacts as compared to the Proposed Regulation because of the reduced number of ZEFs deployed. However, it would be expected that although such impacts would be less, potentially significant and unavoidable impacts to aesthetics, agricultural resources, 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 ZEF requirement would still require infrastructure and facility development to serve the introduction of ZEFs into the marketplace from the Proposed Regulation. Therefore, this alternative would not avoid the potential significant impacts associated with the Proposed Regulation, nor serve many of the objectives of the Proposed Regulation (see discussion regarding objectives below).

Although Alternative 3 would result in NO_x, $PM_{2.5}$, ROG, and GHG emission benefits relative to the Baseline scenario, the benefits would not be as great as those estimated for the Proposed Regulation. This is because Alternative 3 would allow some forklifts to transition to cleaner combustion technology that would have otherwise been required to transition to ZE technology under the Proposed Regulation. Therefore, fewer LSI forklifts would be phased out and replaced with ZEFs under the Alternative 3 scenario.

ii) Objectives

This alternative would fail to meet the primary ZEF-related objectives 1 and 6. These objectives seek to accelerate deployment of ZEFs to achieve maximum emission reductions and transition the off-road sector to zero-emission technologies by 2035 where feasible. Alternative 3 would result in less ZEF deployments, less ZEF-related economic activity, and less ZEF infrastructure build-out. Additionally, this alternative fails to meet the goals outlined in EO N-79-20. Furthermore, this alternative would be less effective in meeting California's climate goals and GHG-related objectives 3 and 5, both in the near term and over time as California's electric grid pivots further toward renewable and zero-carbon resources. As described in Table 5 and sections IV(B)(3) and (8) in this EIA, ZE forklifts are considerably

less emissions-intensive (from both a GHG and criteria pollutant perspective), even than forklifts fueled by renewable propane. This alternative would also be less effective at meeting criteria pollutant emissions reductions program objectives 4, 7, and 8. This alternative would achieve less NO_x, $PM_{2.5}$, ROG, and GHG emission benefits when compared to the Proposed Regulation. Finally, this alternative would be less effective in meeting program objectives 2 and 11 compared to the Proposed Regulation.

E. Alternatives Considered but Rejected

Additional alternatives were considered during development of the alternatives to the Proposed Regulation. The CEQA Guidelines (Title 14 CCR 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: Use Hours-of-Use as Basis for Phasing Out Targeted Forklifts

Stakeholders have suggested the use of a phase-out schedule based on hours-of-use instead of forklift age. Under this alternative, forklifts would be required to be phased out of a fleet after reaching a set hours-of-service threshold.

Alternative 4 presents implementation and enforcement challenges that would potentially lead to the slower deployment of ZEFs. Forklift hour meters, especially on older forklifts, cannot be relied upon for accurately determining hours-of-operation, because they can be easily replaced, malfunction, or be disconnected or tampered with in other ways. Therefore, staff believes Alternative 4 could create a loophole that operators could use to delay or avoid transitioning to ZE technology.

This alternative was rejected primarily because staff is not confident that this alternative is practically feasible to implement. Staff has concerns about the reliance on an hour meter for implementation and enforcement purposes, and an hour meter provides less certainty as to when affected LSI forklifts would be required to be phased out. As a result, the level of emission reductions achieved through this alternative would be uncertain. In addition, though this alternative would result in uncertainty on the timing of LSI forklift phase-out it would still ultimately result in the phase-out of LSI forklifts which would result in the same impacts as disclosed in Chapter IV of this Final~~Draft~~ EIA. Therefore, this alternative results in an inability to avoid significant environmental impacts.

2. Alternative 5: Extend the Availability of the Low-Use Exemption Indefinitely for All Fleets

The Proposed Regulation would establish a low-use exemption that would allow a fleet operator to use a Targeted Forklift of a phased-out model year up to 200 hours per year. However, the exemption would sunset on December 30, 2030, for all fleets except microbusinesses. Microbusinesses would be able to keep one Targeted Forklift as a low-use forklift indefinitely. This alternative would allow all fleets to keep one Targeted Forklift as a low-use forklift indefinitely.

Although Alternative 5 would result in NO_x, $PM_{2.5}$, ROG, and GHG emission benefits relative to the Baseline scenario, the benefits would not be as great as those estimated for the Proposed Regulation. This is because Alternative 5 would allow some forklifts to be maintained as low-use forklifts that would have otherwise been removed from the fleet. In addition, this alternative either fails to meet or would be less effective in meeting program objectives 1, 2, 3, 5, 6, 7, 8, 11, and 12 of the Proposed Regulation. For the aforementioned reasons, Alternative 5 was rejected.

3. Alternative 6: Allow Rental Fleets to Purchase New Class IV Forklifts in 2026, 2027, and 2028

While fleet operators would be prohibited by the Proposed Regulation from purchasing new Targeted Forklifts (both Class IV and Class V) starting January 1, 2026, rental agencies would be allowed to continue purchasing new affected Class V forklifts until January 1, 2029, to use in their rental fleet. This alternative would allow rental agencies to purchase new affected Class IV forklifts as well through December 31, 2028.

This alternative was rejected because staff does not believe it would be necessary to allow the continued purchase of affected Class IV forklifts after December 31, 2028. While commercially available, zero-emission pneumatic-tired forklifts are still relatively new when compared to zero-emission solid-tired forklifts. Therefore, staff expects that there could be more operational challenges and learning for fleets deploying ZE pneumatic-tired forklifts for the first time. The allowance for rental fleets to purchase affected Class V forklifts was added so that rental agencies could maintain a newer, more-reliable Class V forklift fleet during the phase-out period to better serve their customer fleets facing such operational challenges. However, staff does not believe such an allowance is needed for Class IV forklifts.

Although Alternative 6 would result in NO_x, $PM_{2.5}$, ROG, and GHG emission benefits relative to the Baseline scenario, the benefits would likely not be as great as those estimated for the Proposed Regulation. This is because by allowing rental agencies to purchase new Class IV forklifts in 2026, 2027, and 2028, it would increase the overall availability of Class IV forklifts on which fleet operators could depend, which could delay their decision to transition to

ZEFs. In addition, this alternative either fails to meet or would be less effective in meeting program objectives 1, 2, 3, 5, 6, 7, 8, 10, 11, and 12 of the Proposed Regulation. For the aforementioned reasons, Alternative 6 was rejected.

4. Alternative 7: Exempt Small Fleets

This alternative proposes to completely exempt small fleets, that is, fleets of 25 or fewer forklifts, from the Proposed Regulation. All other requirements in the proposal would remain the same.

The alternative was rejected because staff does not believe it would not be necessary to exclude small fleets as explained below. Like larger fleets, small fleets could also achieve cost savings over time operating a ZEF. Staff acknowledges that it may be more difficult for smaller businesses to absorb the additional capital costs of ZEFs, and most small businesses would likely fall into the small-fleet category. Therefore, the Proposed Regulation includes elements that would help ease cost impacts on small fleets by allowing such fleets to extend the utility of existing Targeted Forklifts and by providing more time to plan, budget, and prepare for the transition. Specifically, for small fleets, the phase-out of Targeted Class IV Forklifts would be delayed one year (i.e., would start in 2029 instead of 2028), and the phase-out age of Targeted Class IV Forklifts would be 13 years old rather than 10 years old, as proposed for large fleets. In addition, microbusinesses that only use their forklifts less than 200 hours per year on average would be allowed to maintain one Targeted Forklift as a low-use forklift indefinitely.

Although Alternative 7 would result in NO_x, $PM_{2.5}$, ROG, and GHG emission benefits relative to the Baseline scenario, the benefits would not be as great as those estimated for the Proposed Regulation. This is because small fleets would not be required to turnover Targeted Forklifts to ZEFs. Based on staff's estimates, roughly one-third of Targeted Forklifts in California are in fleets of 25 or fewer units. In addition, this alternative either fails to meet or would be less effective in meeting program objectives 1, 2, 3, 5, 6, 7, 8, 10, 11, and 12 of the Proposed Regulation. For the aforementioned reasons, Alternative 7 was rejected.