

**RECIRCULATED DRAFT**

**ENVIRONMENTAL ANALYSIS**

**FOR THE**

**Draft 2022 Scoping Plan for  
Achieving Carbon Neutrality**

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

**Date of Release: September 9, 2022**

This page intentionally left blank.

## Table of Contents

<b>1.0</b>	<b>INTRODUCTION AND BACKGROUND.....</b>	<b>1</b>
	A. Introduction .....	1
	B. Background Information on California’s Climate Change Scoping Plan.....	3
1.	2008 Climate Change Scoping Plan.....	3
2.	First Update to the Climate Change Scoping Plan .....	3
3.	California’s 2017 Climate Change Scoping Plan .....	4
4.	Purpose of the Proposed 2022 Scoping Plan.....	4
	C. Prior Environmental Analysis .....	4
1.	2008 Climate Change Scoping Plan Functional Equivalent Document.....	5
2.	2011 Supplement to 2008 FED – Alternatives Analysis .....	5
3.	First Update to the Climate Change Scoping Plan Environmental Analysis .....	6
4.	2017 Scoping Plan Environmental Analysis.....	6
	D. Environmental Review Process .....	7
1.	Requirements under the California Air Resources Board–Certified Regulatory Program.....	7
2.	Scope of Analysis and Assumptions.....	7
	E. Organization of This Environmental Analysis .....	9
	F. Public Review Process for the Environmental Analysis.....	10
<b>2.0</b>	<b>PROJECT DESCRIPTION.....</b>	<b>11</b>
	A. Overview of the 2022 Scoping Plan and Scope of the “Project” under CEQA .....	12
	B. Project Objectives .....	13
	C. Summary of the 2022 Scoping Plan.....	15
1.	Increase in Renewable Energy and Decrease in Oil and Gas Use Actions.....	20
2.	Low Carbon Fuels Actions.....	22
3.	Expansion of Electrical Infrastructure Actions.....	23
4.	Climate-Ready and Climate-Friendly Buildings.....	24
5.	Expanded Use of Zero-Emission Mobile Source Technology Actions .....	24
6.	Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions.....	25
7.	Improvements to Oil and Gas Facilities Actions .....	26
8.	Reduced High-GWP Fluorinated Gases Actions .....	27
9.	Manure Management Actions.....	28
10.	Forest, Shrubland, and Grassland Management Actions.....	31
11.	Agricultural Actions.....	32
12.	Organic Waste Diversion and Composting Actions.....	33

13.	Afforestation, Urban Forestry Expansion, Urban Greening, Avoided Natural and Working Land Use Conversion, and Wetland Restoration Actions.....	35
14.	Offshore Wind Actions.....	36
15.	Reduced VMT Actions.....	37
16.	Guidance for Agencies Consistent with the 2022 Scoping Plan .....	39
<b>3.0</b>	<b>ENVIRONMENTAL AND REGULATORY SETTING .....</b>	<b>41</b>
<b>4.0</b>	<b>IMPACT ANALYSIS AND MITIGATION MEASURES.....</b>	<b>43</b>
	A. Approach to the Environmental Impacts Analysis and Significance Determination.....	43
1.	Adverse Environmental Impacts.....	44
2.	Mitigation Measures.....	45
	B. Resource Area Impacts and Mitigation Measures.....	46
1.	Aesthetics.....	47
2.	Agriculture and Forest Resources .....	65
3.	Air Quality .....	74
4.	Biological Resources .....	93
5.	Cultural Resources.....	113
6.	Energy .....	118
7.	Geology and Soils .....	128
8.	Greenhouse Gas Emissions .....	138
9.	Hazards and Hazardous Materials.....	143
10.	Hydrology and Water Quality .....	166
11.	Land Use.....	187
12.	Mineral Resources .....	197
13.	Noise and Vibration.....	205
14.	Population and Housing.....	223
15.	Public Services.....	224
16.	Recreation .....	226
17.	Transportation.....	233
18.	Tribal Cultural Resources.....	237
19.	Utilities and Service Systems.....	241
20.	Wildfire.....	251
<b>5.0</b>	<b>CUMULATIVE AND GROWTH-INDUCING IMPACTS .....</b>	<b>259</b>
	A. Introduction .....	259
	B. Cumulative Impacts Analysis .....	260
1.	Aesthetics.....	260
2.	Agriculture and Forestry Resources .....	260
3.	Air Quality .....	261

4.	Biological Resources .....	262
5.	Cultural Resources.....	263
6.	Energy .....	264
7.	Geology and Soils .....	264
8.	Greenhouse Gas Emissions .....	265
9.	Hazards and Hazardous Materials.....	266
10.	Hydrology and Water Quality .....	267
11.	Land Use.....	268
12.	Mineral Resources .....	268
13.	Noise and Vibration.....	268
14.	Population and Housing.....	269
15.	Public Services.....	269
16.	Recreation .....	270
17.	Transportation.....	270
18.	Tribal Cultural Resource .....	271
19.	Utilities and Service Systems.....	272
20.	Wildfire.....	273
	C. Growth-Inducing Impacts .....	273
	D. Significant Irreversible Changes .....	274
<b>6.0</b>	<b>MANDATORY FINDINGS OF SIGNIFICANCE .....</b>	<b>275</b>
	A. Mandatory Findings of Significance .....	275
<b>7.0</b>	<b>ALTERNATIVES ANALYSIS .....</b>	<b>279</b>
	A. Approach to Alternatives Analysis.....	279
	B. Selection of Range of Alternatives .....	280
	C. Project Objectives .....	281
	D. Description of Alternatives .....	283
	E. Evaluation of Scoping Plan Alternatives.....	284
1.	No-Project Alternative .....	286
2.	Alternative A: Nearly Complete Phaseout of All Combustion, Limited Reliance on Mechanical Carbon Dioxide Removal and CCS, and Restricted Applications for Biomass-Derived Fuels; Natural and Working Lands Actions are unchanged from the 2022 Scoping Plan.....	288
3.	Alternative B: Deployment of a Broad Portfolio of Existing and Emerging Fossil Fuel Alternatives, Slower Deployment and Adoption Rates than the Proposed Scenario, and Higher Reliance on Carbon Dioxide Removal; Natural and Working Land Actions are unchanged from the 2022 Scoping Plan .....	290
4.	Alternative C: Land Management Activities representative of California’s Current Commitments and Plans; AB 32 GHG Inventory Sector activities are unchanged from the 2022 Scoping Plan.....	293

<b>8.0 REFERENCES.....</b>	<b>295</b>
----------------------------	------------

## **ATTACHMENTS**

Attachment A. Environmental and Regulatory Setting

Attachment B. Summary of Environmental Impacts

## **TABLES**

Table 2-1: Actions for the Proposed Scenario: AB 32 GHG Inventory Sectors.....	17
Table 2-2: Actions for the Proposed Scenario: NWL Sectors.....	19
Table 4-1: Mitigation Measures Applicable to Long-Term Operational Impacts on Aesthetic Resources.....	61
Table 4-2: Mitigation Measures Applicable to Long-Term Operational Impacts on Agriculture and Forestry Resources.....	72
Table 4-3: Total Reductions in NO <sub>x</sub> , PM <sub>2.5</sub> , and ROG in 2045 for the Proposed Scenario.....	80
Table 4-4: Estimated Air Quality Improvement from Peak and Population-Weighted REductions in 24-hour PM <sub>2.5</sub> and Ozone for the Proposed Scenario.....	81
Table 4-5: Avoided Incidence of Health Endpoints from Reduced Exposure to PM <sub>2.5</sub> during January 2045. ....	82
Table 4-6: Avoided Incidence of Hospital Health Endpoints from Reduced Exposure to PM <sub>2.5</sub> and Ozone during July 2045.....	83
Table 4-7: Estimated Average Annual GHG and Criteria Pollutant Emissions for forests, grasslands, and shrublands relative to the Reference Scenario for the Proposed Scenario from 2025-2045.....	84
Table 4-8: Estimated average annual avoided incidence of hospital admissions, emergency room visits, and mortality relative to the Reference Scenario for the Proposed Scenario resulting from forest, shrubland, and grassland wildfire emissions.....	85
Table 4-9: Mitigation Measures Applicable to Long-Term Operational Impacts on Odors .....	90
Table 4-10: Mitigation Measures Applicable to Long-Term Operational Impacts on Biological Resources .....	111
Table 4-11: Mitigation Measures Applicable to Long-Term Operational Impacts on Geology and Soils.....	137
Table 4-12: GHG Emissions Reductions from PATHWAYS Modeling of AB 32 GHG Inventory Sectors(in MMTCO <sub>2e</sub> ).....	141
Table 14-13: Average Annual GHG Emissions and Reductions from NWL Modeling of NWL Sectors 2025-2045 (MMTCO <sub>2e</sub> /year).....	142

Table 4-14: Mitigation Measures Applicable to Long-Term Operational Impacts on Hazards and Hazardous Materials.....	162
Table 4-15: Mitigation Measures Applicable to Long-Term Operational Impacts on Hydrology and Water Quality .....	186
Table 4-16: Mitigation Measures Applicable to Long-Term Operational Impacts on Land Use .....	197
Table 4-17: Lithium Mine Production and Reserves by Country .....	199
Table 4-18: Graphite Mine Production and Reserves by Country .....	201
Table 4-19: Cobalt Mine Production and Reserves by Country.....	202
Table 4-20: Nickel Mine Production and Reserves by Country .....	203
Table 4-21: Copper Mine Production and Reserves by Country .....	203
Table 4-22: Platinum and Palladium Mine Production and Reserves.....	204
Table 4-23: Mitigation Measures Applicable to Long-Term Operational Impacts on Noise and Vibration.....	221
Table 4-24: Mitigation Measures Applicable to Long-Term Operational Impacts on Recreation .....	231
Table 4-25: Mitigation Measures Applicable to Long-Term Operational Impacts on Utilities and Service Systems.....	249
Table 4-26: Mitigation Measures Applicable to Long-Term Operational Impacts on Wildfire.....	257
Table 7-1: Relative Comparison of Scoping Plan Alternatives to the 2022 Scoping Plan .....	285

LIST OF ABBREVIATIONS

AB	Assembly Bill
ADT	average daily traffic
AJF	alternative jet fuel
APA	Administrative Procedure Act
APE	area of potential effects
ARB or Board	Air Resources Board
BLM	U.S. Bureau of Land Management
BMP	best management practices
CAL FIRE Protection	California Department of Forestry and Fire
CalGEM	Geologic Energy Management Division
CalRecycle	California Department of Resources Recycling and Recovery
CalVTP	California Vegetation Treatment Program
CARB	California Air Resources Board
CCR	Code of Regulations
CCS	carbon capture and sequestration
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CI	carbon intensity
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNPS	California Native Plant Society
CO <sub>2</sub>	carbon dioxide
CPUC	California Public Utilities Commission
dBA	A-weighted decibels
DOT	U.S. Department of Transportation
EA	Environmental Analysis
ELZ	Equipment limitation zones
EO	Executive Order
EOR	enhanced oil recovery



EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESHA	Environmentally Sensitive Habitat Area
EV	electric vehicle
FAA	Federal Aviation Administration
FSOR	Final Statement of Reasons
FTA	Federal Transit Administration
GHG	greenhouse gas
GPS	Global Positioning System
GREET	Greenhouse gases, Regulated Emissions, and Energy use in Transportation
GTAP	Global Trade Analysis Project
GWP	global warming potential
HABS	Historic American Buildings Survey
HFC	hydrofluorocarbons
HFO	hydrofluoroolefins
HOV	high-occupancy vehicle
IAP	incident action plan
LUC	land use change
in/sec	inch per second
ISOR	Initial Statement of Reasons
LCFS	Low Carbon Fuel Standard
LCP	Local Coastal Program
LEA	Local Enforcement Agencies
$L_{eq}$	dBA equivalent level measurements
$L_{max}$	dBA maximum sound level
MEA	monoethanolamine
NiMH	nickel-metal hydride
NOAA	National Oceanic and Atmospheric Administration
$NO_x$	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
OIMP	Odor Impact Minimization Plan
OMP	Odor Management Plan
PCA	Pest Control Advisor
PGM	platinum-group metals
PM	particulate matter

PM <sub>10</sub>	respirable particulate matter
PM <sub>2.5</sub>	fine particulate matter
PPE	protective equipment
PPV	peak particle velocity
PV	photovoltaic
RNG	renewable natural gas
ROG	reactive organic gases
RPF	Registered Professional Forester
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SLCP	Short-Lived Climate Pollutant
SNAP	Significant New Alternatives Policy
SPR	standard project requirements
SPRP	Spill Prevention and Response Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TCR	Tribal cultural resources
TFA	trifluoroacetic acid
UIC	Underground Injection Control
USFWS	U.S. Fish and Wildlife Service
VdB	vibration decibels
VMT	vehicle miles traveled
Waivers	Waivers of Waste Discharge Requirements
WDR	Waste Discharge Requirements
WLPZ	Watercourse and Lake Protection Zones
WUI	wildland-urban interface

This page intentionally left blank

## 1.0 INTRODUCTION AND BACKGROUND

### A. Introduction

In May 2022, the California Air Resources Board (CARB) released for public review the Draft Environmental Analysis for the Draft 2022 Scoping Plan for Achieving Carbon Neutrality (Draft EA), which assesses the potential environmental impacts of implementing the Draft 2022 Scoping Plan Update (2022 Scoping Plan).

CARB circulated the Draft EA for public review and comment for a period of 45 days that began on May 10, 2022 and ended on June 24, 2022. CARB held a public hearing on June 23, 2022 to provide the opportunity for public comment. During the review period, written and oral comments were received on the Draft EA. CARB reviewed the comments to identify environmental topics and began preparation of responses to those comments. After the end of the Draft EA public review period, CARB identified revisions to certain aspects of the proposal that merit revisions to the project description. The changes are provided in Chapter 2, "Project Description," below. In addition, in response to public comment, the public safety evaluation has been reassessed and expanded for carbon dioxide pipelines associated with potential atmospheric mechanical carbon dioxide removal projects and carbon capture and storage projects.

In accordance with Public Resources Code (PRC) Section 21092.1, which is contained in Chapter 2.6 (a part of CEQA outside of the chapters for which a certified regulatory program is exempt), and Title 14 California Code of Regulations (CCR) Section 15088.5, when "significant new information is added to an environmental impact report (EIR) after notice has been given pursuant to Section 21092" and the draft EIR has undergone public review, a lead agency must recirculate the environmental document for public review of the new information. "Significant new information" can include substantial changes to the project description. Recirculation is not required unless the EIR is changed in a way that would deprive the public of the opportunity to comment on significant new information, including a new significant impact for which no feasible mitigation is available to fully mitigate the impact (thus resulting in a significant and unavoidable impact), a substantial increase in the severity of a disclosed significant environmental impact, or development of a new feasible alternative or mitigation measures that would clearly lessen environmental impacts but that the project proponent declines to adopt (Title 14 CCR Section 15088.5[a]). Recirculation is not required when the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR (Title 14 CCR Section 15088.5[b]).

The additional reasonably foreseeable compliance responses, and associated significant environmental impacts discussed herein, have resulted in the addition of substantial new information compared to what was presented in the Draft EA. Therefore, CARB has determined that recirculation of the Draft EA is warranted.

This Recirculated Draft EA for the Draft 2022 Scoping Plan for Achieving Carbon Neutrality (Recirculated Draft EA) is presented to the California Air Resources Board (CARB) for consideration along with the 2022 Scoping Plan).<sup>1</sup> Chapter 2, “Project Description,” of this Recirculated Draft EA presents a summary of the 2022 Scoping Plan to provide the information necessary for environmental review under the California Environmental Quality Act (CEQA). A more detailed description of the 2022 Scoping Plan is included in the plan, which is incorporated by reference.

This Recirculated Draft EA presents a programmatic analysis of the potential for implementation of the 2022 Scoping Plan to result in adverse environmental impacts, and it describes feasible mitigation measures for identified significant impacts. The 2022 Scoping Plan is a State-level planning document that assesses the State’s progress toward achieving the 2030 target for reduced greenhouse gas (GHG) emissions and lays out a path for achieving carbon neutrality no later than 2045. Its approval would not lead directly to any adverse impacts on the environment, because CARB’s 2022 Scoping Plan approval, by itself, does not authorize any project specific activities that would change the physical environment. Rather, it is the first step in a potential sequence of public agency decisions that may lead to implementation of the reasonably foreseeable compliance responses disclosed herein. If approved, this would be a statewide plan that could lead to or inform future CARB rulemaking efforts or other efforts at multiple levels of government to further define requirements for components of the plan. In addition, local or regional lead agencies could then take action (if they so choose) to approve reasonably foreseeable physical projects proposed to implement the identified rules or strategies. As described in Chapter 4 of this Recirculated Draft EA, implementation of the recommended measures in the 2022 Scoping Plan might through this sequence of events indirectly lead to adverse environmental impacts as a result of reasonably foreseeable compliance responses.

Many of the identified potentially significant impacts of the reasonably foreseeable compliance responses could be feasibly avoided or mitigated to a less-than-significant level either when the specific regulatory measures are designed and evaluated during the rulemaking process or through project-specific approval or entitlement processes related to reasonably foreseeable compliance responses, which typically require a project-specific environmental review by another public agency. While the analysis presented in this Recirculated Draft EA uses the questions in CEQA Guidelines Appendix G as a guide for significance thresholds Title 14 CCR Section 15064(b) calls for careful judgement based on substantial evidence in the determination of a significant environmental impact.

This Recirculated Draft EA is intended to provide CEQA compliance for CARB’s approval of the proposed 2022 Scoping Plan. It is not the intent of this document to provide CEQA coverage for a later activity, such as a compliance response by another

---

<sup>1</sup> CARB will release a proposed final draft of the Scoping Plan and appendices prior to the final CARB Board meeting.

agency . That is, local lead agencies that may consider implementation of the reasonably foreseeable compliance responses related to the 2022 Scoping Plan would be required to address any applicable CEQA requirements relating to the proposed project before them.

The Recirculated Draft EA discloses the potential for indirect significant impacts resulting from the reasonably foreseeable compliance responses of the 2022 Scoping Plan and presents feasible mitigation measures in as much detail as can be provided at a statewide level of analysis. Nevertheless, public agencies may come to similar conclusions with regard to the significance of environmental impacts and types of required mitigation measures. However, in cases where CARB has determined that mitigation measures are necessary to reduce impacts to a less than significant level, because of the uncertainty related to the significance of environmental impacts and degree to which mitigation measures would be required by a local lead agency this document concludes that these impacts would be significant and unavoidable.

## **B. Background Information on California's Climate Change Scoping Plan**

### **1. 2008 Climate Change Scoping Plan**

Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006 (Statutes of 2006, Chapter 488), declared that global warming poses a serious threat to the economic well-being, public health, natural resources, and environment of California and charged CARB with "monitoring and regulating sources of emissions of GHGs that cause global warming to reduce emissions of greenhouse gases" (Health and Safety Code Section 38510). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions to 1990 levels by 2020 and initiate the transformations required to achieve the State's long-range climate objectives. One specific requirement of AB 32 is to prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code Section 38561(a)).

The first AB 32 Scoping Plan (initial Scoping Plan), approved in 2008 and reapproved in 2011, contains a mix of recommended strategies that combine direct regulations, market-based approaches, voluntary measures, policies, and other emission-reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives.

### **2. First Update to the Climate Change Scoping Plan**

The First Update to the Scoping Plan (First Update), approved by CARB on May 22, 2014, builds on the initial Scoping Plan with new strategies and recommendations. The First Update identified opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low-carbon investments. The First Update defined CARB's climate change priorities for the next 5 years and set the groundwork to reach long-term goals set forth in Executive Orders

S-3-05 and B-16-2012. The First Update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the initial Scoping Plan. It also evaluated how to align the State's longer-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

### **3. California's 2017 Climate Change Scoping Plan**

"California's 2017 Climate Change Scoping Plan: The strategy for achieving California's 2030 greenhouse gas target" (2017 Scoping Plan), approved on December 14, 2017, identifies how the State can reach the 2030 climate target to reduce GHG emissions by 40 percent from 1990 levels, and substantially advance toward the 2050 climate goal to reduce GHG emissions by 80 percent below 1990 levels. On September 8, 2016, the governor signed Senate Bill 32 (SB 32) (Pavley, Chapter 249, Statutes of 2016), which codified into statute the 2030 target in Executive Order B-30-15. The 2030 target establishes a critical midterm target between 2020 and 2050 that helps frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue driving down GHG emissions.

The 2017 Scoping Plan builds on and integrates efforts already underway to reduce the State's GHG, criteria pollutant, and toxic air contaminant emissions. To meet the 2030 and 2050 targets, all State agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions. CARB was directed in Executive Order B-30-15 to update the AB 32 Scoping Plan to reflect the path to achieving the 2030 target.

### **4. Purpose of the Proposed 2022 Scoping Plan**

The Proposed Scenario reflects the GHG reductions, technology, and clean energy mandated by statutes. The 2022 Scoping Plan was developed to achieve carbon neutrality by 2045<sup>2</sup> through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy. The plan would also reduce emissions of short-lived climate pollutants (SLCPs) and includes mechanical carbon dioxide (CO<sub>2</sub>) removal and carbon capture and sequestration actions, as well as natural working lands management and nature-based strategies

## **C. Prior Environmental Analysis**

This Recirculated Draft EA describes and evaluates the measures proposed in the 2022 Scoping Plan (see Chapter 2, "Project Description," for further details). Approved measures and the associated environmental analysis from previous Scoping Plan documents include the initial Scoping Plan in the CEQA Functional Equivalent

---

<sup>2</sup> This objective is consistent with AB 1279, Muratsuchi, 2021-2022 legislative session.

Document (2008 FED), the 2011 Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (2011 Supplement), the First Update to the Climate Change Scoping Plan Environmental Analysis (First Update EA), and the Scoping Plan for Achieving California's 2030 Greenhouse Gas Target Environmental Analysis (2017 Scoping Plan EA). Where applicable and still valid, information and analysis are drawn from these prior environmental documents for use in this Recirculated Draft EA. A summary of the prior environmental analyses is provided below.

## **1. 2008 Climate Change Scoping Plan Functional Equivalent Document**

In 2008, CARB, acting as the CEQA lead agency under its certified regulatory program, prepared the 2008 FED, which was included as Appendix J (Volume III) of the AB 32 Scoping Plan document. The 2008 FED analyzed the reasonably foreseeable indirect environmental impacts that could result from implementing the measures recommended in the initial Scoping Plan. The 2008 FED also included an analysis of a range of five alternatives to the initial Scoping Plan, including a “no project” alternative, a plan relying primarily on a cap-and-trade program for the sectors included in a cap, a plan relying more on source-specific regulatory requirements with no cap-and-trade component, a plan relying on a carbon fee or tax, and a plan relying on variations of proposed strategies and measures. Following the public review and comment period, the initial Scoping Plan and the 2008 FED were approved in 2008.

Each recommended measure that involved regulatory action by CARB was subject to the required Administrative Procedures Act (APA) rulemaking process, which includes preparation of a Staff Report: Initial Statement of Reasons (ISOR) containing the required CEQA review for that regulatory proposal. The ISORs and the Final Statement of Reasons (FSORs) for individual rulemaking can be found on CARB’s webpage at <http://www.arb.ca.gov/regact/regact.htm>.

## **2. 2011 Supplement to 2008 FED – Alternatives Analysis**

In June 2011, in response to a decision by a California trial court, CARB revisited and expanded the alternatives analysis provided in the 2008 FED. The 2011 Supplement provided an expanded analysis of the five project alternatives discussed in Section V of the 2008 FED and superseded and replaced the project alternatives section of the 2008 FED found on pages J-74 to J-90. Following a workshop and 45-day comment period, staff responded to comments received in a document entitled *Response to Comments on the Supplement to the AB 32 Scoping Plan Functional Equivalent Document*. At a public hearing in August 2011, CARB considered and certified the combination of the 2011 Supplement, the written response to comments, and the prior environmental documents, after which it reconfirmed the approval of the initial Scoping Plan. Subsequently, the trial court dismissed that portion of the lawsuit because CARB had fully satisfied the court’s requirements for an expanded alternatives analysis.



### **3. First Update to the Climate Change Scoping Plan Environmental Analysis**

In 2014, CARB, acting as the CEQA lead agency under its certified regulatory program, prepared the First Update EA, which was included as Appendix F of the Scoping Plan. The First Update EA analyzed the reasonably foreseeable indirect environmental impacts that could result from implementing the measures recommended in the First Update to the Climate Change Scoping Plan. The First Update EA also included an analysis of a range of three alternatives to the First Update to the Climate Change Scoping Plan, including a “no project” alternative, a plan relying on reduced intensity, and a plan to extend the cap-and-trade regulation to all economic sectors. Following the public review and comment period, staff responded to comments received on the First Update EA in a document entitled *Response to Comments on the First Update to the Climate Change Scoping Plan Environmental Analysis*. At a public hearing in May 2014, CARB certified the First Update EA, approved the written responses to comments, and approved the First Update to the Climate Change Scoping Plan.

Each recommended measure that involved regulatory action by CARB was subject to the required APA rulemaking process, which includes preparation of a Staff Report: ISOR containing the required CEQA review for that regulatory proposal. The ISORs and the FSORs for individual rulemaking can be found on CARB’s webpage at <http://www.arb.ca.gov/regact/regact.htm>.

### **4. 2017 Scoping Plan Environmental Analysis**

In 2017, CARB, acting as the CEQA lead agency under its certified regulatory program, prepared the 2017 Scoping Plan EA, which was included as Appendix F of that Scoping Plan. The 2017 Scoping Plan EA analyzed the reasonably foreseeable indirect environmental impacts that could result from implementing the measures recommended in the Scoping Plan for Achieving California’s 2030 Greenhouse Gas Target. The EA also included an analysis of a range of five alternatives, including a “no project” alternative, two cap-and-trade alternatives, carbon tax alternative, and a cap-and-tax alternative. Following the public review and comment period, staff responded to comments received on the 2030 Target EA in a document entitled *Response to Comments on the Environmental Analysis*. At a public hearing in November 2017, CARB certified the 2017 Scoping Plan EA, approved the written responses to comments, and approved the 2017 Scoping Plan.

Each recommended measure that involved regulatory action by CARB was subject to the required APA rulemaking process, which includes preparation of a Staff Report: ISOR containing the required CEQA review for that regulatory proposal. The ISORs and the FSORs for individual rulemaking can be found on CARB’s webpage at <http://www.arb.ca.gov/regact/regact.htm>.

## **D. Environmental Review Process**

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

CARB, the lead agency for the 2022 Scoping Plan, prepared this Recirculated Draft EA pursuant to its certified regulatory program for CEQA compliance, in Title 17 California Code of Regulations (CCR) sections 60000-60007. PRC Section 21080.5 allows public agencies with regulatory programs to prepare a functionally equivalent substitute document in lieu of an environmental impact report or negative declaration after the program has been certified by the Secretary for Natural Resources as meeting the requirements of CEQA. CARB's regulatory program was certified by the Secretary for Natural Resources in 1978 (see Title 14 CCR Section 15251(d)). As required by CARB's certified regulatory program and the policy and substantive requirements of CEQA, CARB prepared this Recirculated Draft EA to assess the potential for significant adverse and beneficial environmental impacts associated with the recommended measures and to provide a succinct analysis of those impacts (see Title 17 CCR Section 60005(a) and (b)). The resource areas from the CEQA Guidelines Environmental Checklist (Appendix G) (Title 14 CCR Section 15000 et seq.) were used as a framework for assessing potentially significant impacts.

CARB determined that approving the 2022 Scoping Plan would be a "project," as defined by CEQA (see Title 14 CCR Section 15378(a)). The CEQA Guidelines define a "project" as "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is...an activity directly undertaken by any public agency."

Although the approval of policy aspects of the 2022 Scoping Plan does not directly change the physical environment, indirect physical changes to the environment could occur from reasonably foreseeable compliance responses taken because of implementation of the measures identified in the 2022 Scoping Plan.

### **2. Scope of Analysis and Assumptions**

The degree of specificity required in a CEQA document corresponds to the degree of specificity inherent in the underlying proposed activity it evaluates. The environmental analysis for broad plans will necessarily be less detailed than that for specific projects that might follow after the broad plans (see Title 14 CCR Section 15146). For example, assessing a construction project would naturally be more detailed than assessing a broad plan because the construction effects can be predicted with a greater degree of accuracy (see Title 14 CCR Section 15146(a)).

The level of detail in this Recirculated Draft EA reflects that the 2022 Scoping Plan is a broad statewide-level planning document. Consequently, the analysis is at a programmatic level and is not intended to be relied upon to develop subsequent

environmental documents prepared for specific follow-up actions that other agencies may decide to pursue to reduce GHG emissions. Nor is the analysis intended to be relied upon by environmental reviews carried out for reasonably foreseeable, specific projects by various entities consistent with the 2022 Scoping Plan. If CARB or other State agencies pursue regulations to implement any of the GHG measures discussed in the 2022 Scoping Plan, each regulation would go through the APA process. The APA is a rigorous process that includes technical, environmental, and economic analyses, as well as public review and input. The ISOR prepared for each regulation or regulatory amendments proposed by CARB, also known as the staff report, would include a more detailed environmental analysis specific to that proposal. If specific actions included in this Recirculated Draft EA are proposed by a public agency, further CEQA review of the individual projects would be undertaken as necessary.

This Recirculated Draft EA represents a good-faith effort to evaluate and fully disclose the potential for significant adverse impacts associated with the compliance responses that are reasonably foreseeable based on information known at this time, if the recommended actions identified in the 2022 Scoping Plan are implemented. It evaluates potential significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses related to implementing the 2022 Scoping Plan at the statewide level, based on currently available information, without being speculative. The EA, including the Draft EA, public comment on the Draft EA, this Recirculated Draft EA, and public comments on this Recirculated Draft EA, and responses to environmental points raised in public comments, will inform CARB about the environmental implications of approving the proposed 2022 Scoping Plan.

The analysis of potentially significant adverse environmental impacts of the 2022 Scoping Plan is directed by the following parameters:

1. This analysis addresses the environmental impacts resulting from implementing the proposed 2022 Scoping Plan, compared to a baseline consisting of existing conditions.
2. The analysis of environmental impacts is based on the effects of compliance responses that are reasonably foreseeable, if the measures in the 2022 Scoping Plan are implemented.
3. The analysis in this Recirculated Draft EA addresses environmental impacts both within California and outside the state to the extent that they are reasonably foreseeable and do not require speculation.
4. The level of detail of impact analysis is necessarily and appropriately general because the 2022 Scoping Plan describes a broad plan and is itself programmatic. Furthermore, it would be speculative to predict decisions by other entities regarding the specific location and design of new or modified facilities, source and production of materials, and other activities that may

be undertaken to implement measures in the 2022 Scoping Plan. Given the lack of specificity of the measures, the influence of other business and market considerations, and the numerous locations where facilities might be built, it is impossible to predict location-specific effects with precision at this stage. Specific development projects or actions undertaken to implement recommended measures in the 2022 Scoping Plan would undergo required project-level environmental review and compliance processes when they are proposed.

5. This Recirculated Draft EA does not analyze site-specific impacts when the location of future facilities or other infrastructure, modifications to existing facilities or other infrastructure, and land management actions and practices would be speculative. However, the Draft EA does examine regional (e.g., air basin) and local (i.e., community-level) issues to the degree feasible and appropriate. Thus, the impact conclusions in the resource sections of Chapter 4, "Impact Analysis and Mitigation Measures," cover broad types of impacts, considering the potential effects of the full range of reasonably foreseeable compliance actions undertaken in response to the 2022 Scoping Plan.

## **E. Organization of This Environmental Analysis**

This Recirculated Draft EA is organized into the following chapters to assist the reader in obtaining information about the 2022 Scoping Plan and the specific environmental issues:

Chapter 1, "Introduction and Background," provides a project overview, background information, and other introductory material.

Chapter 2, "Project Description," summarizes the 2022 Scoping Plan, implementation assumptions, and reasonably foreseeable compliance responses expected to be taken to implement the recommended measures in the plan.

Chapter 3, "Environmental and Regulatory Setting," in combination with Attachment A, contains the environmental setting and regulatory framework relevant to the environmental analysis of the 2022 Scoping Plan.

Chapter 4, "Impact Analysis and Mitigation Measures," identifies the potential environmental impacts associated with the 2022 Scoping Plan and mitigation measures for each resource impact area.

Chapter 5, "Cumulative and Growth-Inducing Impacts," identifies the cumulative effects of implementing the 2022 Scoping Plan against a backdrop of past, present, and reasonably foreseeable future projects.

Chapter 6, “Mandatory Findings of Significance,” discusses whether implementing the 2022 Scoping Plan has the potential to degrade the quality of the environment, cause substantial adverse impacts on human beings, and cause cumulatively considerable environmental impacts.

Chapter 7, “Alternatives Analysis,” discusses a reasonable range of potentially feasible alternatives that could reduce or eliminate adverse environmental impacts associated with implementing the 2022 Scoping Plan.

Chapter 8, “References,” identifies sources of information used in this Recirculated Draft EA.

## **F. Public Review Process for the Environmental Analysis**

On June 8, 2021, CARB commenced a public workshop series to begin development of the 2022 Scoping Plan. At this workshop, CARB described plans to prepare a Draft EA for the 2022 Scoping Plan and invited public feedback on the scope of the analysis. As part of the initial workshop series, CARB hosted workshops aimed at focus area discussions addressing the electricity sector, transportation sector, equity and environmental justice, and natural working lands. Technical workshops, beginning in July 2021, focused on specific topics, including: natural and working lands, engineered carbon removal, short-lived climate pollutants, the electricity sector, building decarbonization, public health, scenario concepts, scenario inputs, and initial modeling results. These workshops were one of the many opportunities for public and stakeholder engagement.

As noted above, the Draft EA was circulated for a period of 45 days, from May 10, 2022 through June 24, 2022. Following this review period, CARB determined that recirculation of the Draft EA is appropriate. In accordance with CARB’s certified regulatory program, and consistent with CARB’s commitment to public review and input on its proposed actions, this Recirculated Draft EA is being released for a public review period that begins on September 9, 2022 and ends on October 24 2022.

After the public review period, CARB will prepare written responses to comments received on the Draft EA and Recirculated Draft EA and make revisions as necessary. The Final EA and the written responses to environmental comments will be considered by CARB at a public hearing later in the year. If the 2022 Scoping Plan is approved, a notice of decision will be filed with the Secretary for Natural Resources and posted on CARB’s website (Title 17 CCR Section 60007(b)).

## 2.0 PROJECT DESCRIPTION

This section provides a summary of the proposed 2022 Scoping Plan and the recommended measures for purposes of the impact analysis. Please refer to Chapter 2 of the 2022 Scoping Plan for additional information to complement the descriptions below. The project description, presented in this chapter, has been revised to include new information primarily consisting of the following:

1. The addition of offshore wind energy generation facilities;
2. Consideration of climate-ready and climate-friendly buildings – 3 million homes that at a minimum are all electric and electric-ready by 2030 and 7 million by 2035;
3. Expanded description of potential hydroelectric power compliance responses;
4. Expansion of reasonably foreseeable compliance responses associated with Natural and Working Lands, including: land application of compost to rangelands and grasslands; reduced fertilizer use; climate smart irrigation for agricultural practices; and green schoolyards, urban farms, rain gardens, and community gardens;
5. Deeper targets for per-capita vehicle miles travelled (VMT) reductions;
6. Further transition away from fossil fuel-based electricity generation, and toward increased renewable energy generation resources.
7. Guidance, information, and recommendations regarding potential agency actions consistent with the Scoping Plan that were presented as appendices to the Draft EA previously circulated; and
8. Targets for carbon removal of 20 MMT in 2030 and 100 MMT in 2045, with focus on natural and working lands first.

Note that despite the inclusion of these items, the 2022 Scoping Plan continues to remain largely advisory in nature, as CARB does not directly regulate many of the sectors described above, and therefore these measures remain at the discretion of other agencies. However, in an effort to provide the maximum feasible public disclosure, CARB is analyzing these measures and recommendations (including the additions listed above and described in more detail below) as part of the proposed CEQA “project”. As described below, while CARB has made best efforts to analyze potential environmental impacts associated with these measures and recommendations, it is not possible to do so in greater detail given the statewide and programmatic nature of these measures, and the lack of available detail in how they may be implemented.

## **A. Overview of the 2022 Scoping Plan and Scope of the “Project” under CEQA**

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

The First Update defined the State’s GHG emission reduction priorities for the next five years and laid the groundwork to start the transition to the post-2020 goals set forth in Executive Orders S-3-05 and B-16-2012. The First Update recommended the need for a 2030 mid-term GHG reduction target to establish a continuum of action to reduce emissions. The First Update identified broad, post-2020, sector-specific actions, but did not yet define a detailed suite of strategies, along with estimated emission reductions, cost projections, and a schedule for adoption.

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

The 2022 Scoping Plan will assess progress towards achieving the Senate Bill 32 (SB 32) 2030 target and lay out a path to achieve carbon neutrality no later than 2045. Every sector of the economy will need to contribute to achieving carbon neutrality. This includes considering the emissions and sequestration from our Natural and Working Lands. The transportation, industrial, electricity (in-state and imported), and buildings sectors are the largest contributors to GHG emissions. Actions to reduce fossil fuel use in these sectors play a pivotal role in achieving climate and air quality targets while also providing important public health benefits. The carbon neutrality framework also includes a role for increasing implementation of nature-based solutions on our natural and working lands and through mechanical carbon dioxide removal and carbon capture and sequestration.

For the purposes of this Draft Environmental Analysis (EA), CARB considers the types of actions needed to reduce GHG emissions from AB 32 GHG Inventory Sectors and

Natural and Working Lands Sectors as the recommended measures to achieve carbon neutrality no later than 2045 in Chapter 2 of the 2022 Scoping Plan to be the “project” under the California Environmental Quality Act (CEQA). The Draft EA has determined that the reasonably foreseeable compliance responses associated with assumed full implementation of the 2022 Scoping Plan’s recommended measures (technology and energy actions and land management actions) in Chapter 2 have the potential to result in an indirect physical change in the environment.

## **B. Project Objectives**

The statement of objectives of the 2022 Scoping Plan is presented below. These objectives are primarily derived from the requirements of SB 32 and AB 32 (Health & Saf. Code, § 38561), as well as other governing law and statutory requirements applicable to and for the approval of AB 32 GHG emission reduction measures (Health & Saf. Code, § 38562).

1. To update the State’s Scoping Plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions to reflect progress towards the 2030 target (Executive Order B-30-15 and SB 32, Statutes of 2016) and to plan the longer-term trajectory to reduce GHG emissions at least 80 percent below 1990 levels by 2050 (Executive Order S-03-5) and achieve carbon neutrality no later than 2045 (Executive Order B-55-18);
2. Pursue actions and outcomes covering the State’s GHG emissions in furtherance of executive and statutory direction to continue progress reducing GHG emissions to at least 40 percent below 1990 levels by 2030, at least 80 percent below 1990 levels by 2050, and achieve carbon neutrality no later than 2045;
3. Continue to increase electricity derived from renewable sources to 60 percent by 2030 and increase electricity derived from renewable and zero-carbon resources to 100 percent by 2045;
4. Continue actions to double efficiency savings achieved at existing buildings and make heating fuels cleaner;
5. Continue actions such that 100 percent of in-State sales of new passenger cars and trucks are zero-emission by 2035, 100 percent of medium- and heavy-duty vehicles in the State are zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks, and transition off-road vehicles and equipment to 100 percent zero-emission by 2035 where feasible (Executive Order N-79-20);
6. Continue to reduce the release of methane and other short-lived climate pollutants (Health & Saf. Code §§ 39740.2, 39730.6, 39730.8 and Public Resources Code §§ 42652, 42653, 42654);



7. Pursue actions to reduce the GHG intensity of cement used within the State 40 percent below 2019 average levels by 2035 and achieve net-zero emissions of GHGs associated with cement used within the State by 2045 (Health & Safety Code, 38561.2);
8. Pursue actions to achieve the updated target for the natural and working lands sector determined in the 2022 Scoping Plan process (Executive Order N-82-20);
9. Establish carbon dioxide removal targets for 2030 and beyond, taking into consideration the Natural and Working Lands Climate Smart Strategy, science-based data, cost-effectiveness, and technological feasibility in setting the targets (Health & Saf. Code, § 39740.2, subd. (b));
10. Pursue emission reductions that are real, permanent, quantifiable, verifiable and enforceable;
11. Achieve the maximum technologically feasible and cost-effective reductions in GHG emissions, in furtherance of reaching the statewide GHG emissions limit (Health & Saf. Code, § 38562, subd. (a) and (c));
12. Minimize, to the extent feasible, leakage of emissions outside of the State;
13. Ensure, to the extent feasible, that activities undertaken to comply with the measures do not disproportionately impact low-income communities (Health & Saf. Code, § 38562, subd. (b)(2));
14. Ensure, to the extent feasible, that activities undertaken pursuant to the measures complement, and do not interfere with, efforts to achieve and maintain national and California Air Quality Attainment Standards (AAQS) and to reduce toxic air contaminant (TAC) emissions (Health & Saf. Code, § 38562, subd. (b)(4));
15. Consider overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health (Health & Saf. Code, § 38562, subd. (b)(6));
16. Minimize, to the extent feasible, the administrative burden of implementing and complying with the measure (Health & Saf. Code, § 38562, subd. (b)(7));
17. Consider, to the extent feasible, the contribution of each source or category of sources to statewide emissions of GHGs (Health Saf. Code § 38562, subd. (b)(9));
18. Maximize, to the extent feasible, additional environmental and economic benefits for California, as appropriate (Health & Saf. Code, § 38570, subd. (b)(3));

19. Ensure that electricity and natural gas providers are not required to meet duplicative or inconsistent regulatory requirements (Health & Saf. Code, §§ 38501, subd. (g), 38561, subd. (a));
20. Consider the social costs of the emissions of GHGs and prioritize emission reduction rules and regulations that result in direct emission reductions at large stationary sources of GHG emissions, from mobile sources, and from other sources (Health & Saf. Code, § 38562.5);
21. Update the State's Climate Change Scoping Plan as required by statute (Health & Saf. Code § 38561(h));
22. Describe paths to equitably achieve vehicle miles travelled (VMT) reductions of 25% per capita below 1990 levels by 2030 and 30% per capita below 1990 levels by 2045, consistent with the state's need to cut vehicular pollution, and secure the many public health and economic benefits that come with a greater range of transportation choices; and
23. Further the Governor's stated goal of 3 million climate-ready and climate-friendly homes by 2030 and 7 million homes by 2035, supplemented through the deployment of 6 million heat pumps statewide by 2030. Climate-ready and climate-friendly is applied as electric-ready and all-electric for the purposes of the Scoping Plan.

### **C. Summary of the 2022 Scoping Plan**

The proposed project, for purposes of this analysis, is the 2022 Scoping Plan, a statewide plan that describes a suite of measures referred to as the "Proposed Scenario", set forth in Chapter 2 of the 2022 Scoping Plan. These "Proposed Scenario" measures, which are assumed to be likely to occur due to statutory or gubernatorial direction and that are referenced in Table 2-2 and Table 2-3 of the 2022 Scoping Plan, are recommended to achieve the Scoping Plan's objectives, including carbon neutrality by 2045. The proposed project also includes the elements included in the appendices to the 2022 Scoping Plan, which are not required by statutory or gubernatorial direction, and are not binding, but contain guidance and information regarding actions that other jurisdictions may choose to take that complement the 2022 Scoping Plan measures. Readers should note that the 2022 Scoping Plan is a high level, statewide, long-term strategy to attain California's climate change goals, and its success depends on the cooperation of other state and local agencies. As such, detailed environmental analysis of its elements is generally not possible given that it is not known whether, where, or when many of the elements of the 2022 Scoping Plan will take place. The 2022 Scoping Plan is a vision for climate success in California, and much additional planning work and implementation action will need to take place by various agencies to make its vision a reality.

Additionally, due to the longer planning horizon in the proposed 2022 Scoping Plan, the focus is on actions and outcomes. To achieve these outcomes (which focus on unprecedented scales of action), existing programs may need to be adjusted and new ones implemented. There may also be need for additional enabling legislation at the State and Federal levels. For example, SB 905 (Caballero, 2021-2022 legislative session, enrolled by the legislature but not signed by the Governor at the time of writing) does not allow for the transport of concentrated carbon dioxide via pipelines until a federal CO<sub>2</sub> pipeline safety rulemaking is completed. It is unknown at this time when that rulemaking will conclude. Similarly, when the Board approved the 2017 Scoping Plan Update it was unforeseen that the Legislature would pass SB 100 (De León, Chapter 312, Statutes of 2018) and SB 596 (Becker, Chapter 246, Statutes of 2021).) As such, it is not possible to know the exact design or universe of policy tools that will be needed to successfully implement the proposed 2022 Scoping Plan. In many instances, some policy tools may need to work in concert, such as incentive programs for zero-emissions vehicles and the recently adopted Advanced Clean Cars II regulation. As each of those subsequent plans, regulations, and programs are developed, each will be subject to their own environmental review under CEQA, as appropriate.

The 2022 Scoping Plan contains two main approaches to reduce GHG emissions: AB 32 GHG Inventory Sectors and natural and working lands. Actions associated with AB 32 GHG Inventory Sectors concern types of technologies and fuels, many of which are in response to statutes and executive orders. Chapter 2 of the 2022 Scoping Plan provides an overview of the proposed sectors, actions, and directives proposed to meet the objectives listed above. The actions comprising the Proposed Scenario are shown in Tables 2-1 and 2-2. Please refer to Chapter 2 of the 2022 Scoping Plan for further description of the Proposed Scenario. The proposed actions set forth in the 2022 Scoping Plan may involve a mix of regulations, programs, voluntary and incentive-based measures, and other mechanisms needed to reduce GHG emissions in California. CARB and other state agencies will work with state and local agencies, stakeholders, Tribes, and the public to develop regulatory measures and other programs to implement the 2022 Scoping Plan. CARB and other state agencies will develop regulations in accordance with established rulemaking guidelines.

The 2022 Scoping Plan contains the GHG reductions, technology, and clean energy mandated by statutes. The 2022 Scoping Plan was developed to achieve carbon neutrality by 2045 through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy. The plan would also reduce emissions of short-lived climate pollutants (SLCPs) and would include mechanical carbon dioxide (CO<sub>2</sub>) capture and sequestration actions, as well as emissions and sequestration from natural and working lands and nature-based strategies.

**Table 2-1: Actions for the Proposed Scenario: AB 32 GHG Inventory Sectors**

Sector	Action
GHG emissions reductions relative to the SB 32 target	40% below 1990 levels by 2030
Smart Growth / Vehicle Miles Travelled (VMT)	VMT per capita reduced 25% below 1990 levels by 2030 and 30% below 1990 levels by 2045
Light-duty vehicle (LDV) Zero Emission Vehicles (ZEVs)	100% of LDV sales are ZEV by 2035
Truck ZEVs	AB 74 Institute of Transportation Studies report: 100% of medium duty/heavy duty vehicle sales are ZEV by 2040
Aviation	20% of aviation fuel demand is met by electricity (batteries) or hydrogen (fuel cells) in 2045  Sustainable aviation fuel meets most or the rest of the aviation fuel demand that has not already transitioned to hydrogen or batteries
Ocean-going Vessels (OGV)	2020 OGV At-Berth regulation fully implemented with most OGVs utilizing shore power by 2027  25% of OGVs utilize hydrogen fuel cell electric technology by 2045
Port Operations	Executive Order N-79-20: 100% of cargo handling equipment is zero-emission by 2037  100% of drayage trucks are zero emission by 2035
Freight and Passenger Rail	100% of passenger and other locomotive sales are ZEV by 2030  100% of line haul locomotive sales are ZEV by 2035  Line haul and passenger rail rely primarily on hydrogen fuel cell technology, and others primarily utilize electricity
Oil & Gas Extraction	Operations to be reduced in-line with petroleum demand
Petroleum Refining	CCS on majority of operations by 2030  Production reduced in line with petroleum demand
Electricity Generation, Transmission and Distribution	100 % zero carbon for retail sales by 2045  Procurement of zero carbon electricity between 2030 and 2045 with an offshore wind target of 20 GW in 2045  Retail sales load coverage

Sector	Action
	Transmission and distribution infrastructure development to complement electrification and grid resiliency efforts
Carbon Dioxide Removal/Carbon Capture and Sequestration	2030 target for carbon dioxide removal and carbon capture of 20 MMT CO <sub>2</sub> e and 2045 target of 100 MMT CO <sub>2</sub> e
New Residential and Commercial Buildings	All electric appliances beginning 2026 (residential) and 2029 (commercial)  3 million climate-ready and climate-friendly homes by 2030  7 million climate-ready and climate-friendly homes by 2035
Existing Residential Buildings	80% of appliance sales are electric by 2030 and 100% of appliance sales are electric by 2035  Appliances are replaced at the end of life
Existing Commercial Buildings	80% of appliance sales are electric by 2030 and 100% of appliance sales are electric by 2045  Appliances are replaced at the end of life
Food Products	7.5% energy demand electrified directly and/or indirectly by 2030 and 75% by 2045
Construction Equipment	25% energy demand electrified by 2030 and 75% by 2045
Chemicals and Allied Products; Pulp and Paper	Electrify 0% of boilers by 2030 and 100% of boilers by 2045  Hydrogen for 25% of process heat by 2035 and 100% by 2045  Electrify 100% of other energy demand by 2045
Stone, Clay, Glass and Cement	CCS on 40% of operations by 2035 and on all facilities by 2045  Some process emissions reduced through alternative materials
Other Industrial Manufacturing	0% energy demand electrified by 2030 and 50% by 2045
Combined Heat and Power	Facilities retire by 2040

Sector	Action
Agriculture Energy Use	25% energy demand electrified by 2030 and 75% by 2045
Low Carbon Fuels for Transportation	Biomass supply used to produce conventional and advanced biofuels, as well as hydrogen
Low Carbon Fuels for Buildings and Industry	In 2030s, RNG blended in pipeline Renewable hydrogen blended in natural gas pipeline at 7% energy (~20% by volume), ramping up between 2030 and 2040 In 2030s, dedicated hydrogen pipelines constructed to serve certain industrial clusters
Non-combustion Methane Emissions	Increase landfill and dairy digester methane capture Some alternative manure management deployed for smaller dairies Moderate adoption of enteric strategies by 2030 Divert 75% of organic waste from landfills by 2025 Oil and gas fugitive methane emissions reduced 50% by 2030 and further reductions as infrastructure components retire in line with reduced natural gas demand
High Global Warming Potential (GWP) Emissions	Low GWP refrigerants introduced as building electrification increases, mitigating hydrofluorocarbon (HFC) emissions

**Table 2-2: Actions for the Proposed Scenario: NWL Sectors**

Sector	Action
Natural and Working Lands	Conserve 30% of the State's natural and working lands and coastal waters by 2030 Implement near- and long-term actions to accelerate natural removal of carbon and build climate resilience in our forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities and in particular vulnerable communities
Forest and Shrublands	2-2.5 million acres treated statewide annually in forests, shrublands/chaparral, and grasslands, comprised of regionally specific management strategies that include prescribed fire, thinning, harvesting, and other management actions. No land conversion of forests, shrublands/chaparral, or grasslands.
Grasslands	The 2-2.5 million acres treatment includes increased management of grasslands interspersed in forests to

Sector	Action
	reduce fuels surrounding communities using management strategies appropriate for grasslands. No land conversion of forests, shrublands/chaparral, or grasslands.
Croplands	Implement climate smart practices for annual and perennial crops on ~50,000 acres annually. Land easements/ conservation on annual crops at ~6,000 acres annually. Increase organic agriculture to 20% of all cultivated acres by 2045 (~65,000 acres annually).
Developed Lands	Urban forestry investment increase of 20% above current levels, and utilize tree watering that is 30% less sensitive to drought. Establish defensible space that accounts for property boundaries.
Wetlands	Restore 60,000 acres of Delta wetlands
Sparsely Vegetated Lands	Land conversion at 50% of Reference Scenario land conversion rate

The baseline, for purposes of this Recirculated Draft EA, consists of the existing environmental conditions and regulations described in Attachment A of this document.<sup>3</sup> The reasonably foreseeable compliance responses, presented below, are described in terms of actions included in the 2022 Scoping Plan that would reach carbon neutrality by 2045. The environmental effects of these reasonably foreseeable compliance responses are evaluated in Chapter 4 of this Recirculated Draft EA.

### 1. Increase in Renewable Energy and Decrease in Oil and Gas Use Actions

The Scoping Plan includes various actions and concepts that would, if implemented, lead to an increase in renewable energy capacity, and a decrease in oil and gas production and refining. For example, recently passed SB 1137 (Gonzalez, 2021-2022 legislative session), if signed into law, may result in the shutting-down of existing oil and gas activities and SB 846 (Dodd, 2021-2022 legislative session), will extend the life of the Diablo Canyon nuclear power plant. The rate at which these actions and concepts may progress is unprecedented, and permitting remains a challenge. To conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and potential actions reflected in the Scoping Plan are fully realized.

Reasonably foreseeable compliance responses would include many renewable energy actions. The actions could include operation of new facilities, including wind, solar thermal, solar photovoltaic, geothermal, solid-fuel biomass, biogas, solar thermal

<sup>3</sup> The baseline for purposes of this Recirculated Draft EA is the environmental setting during approximately July 2021, when the Notice of Preparation was released, unless noted otherwise.

steam production, hydrogen, pumped storage, battery storage, dispatchable zero-carbon resources such as Allam-Cycle CCS technology<sup>4</sup>, and hydroelectric systems (i.e., electricity generation associated with dams, run-of-river, or pumped storage facilities).<sup>5</sup> With respect to hydroelectric systems, the modeling for the 2022 Draft Scoping Plan indicates the need for additional long-duration energy storage capacity such as pumped storage, which could involve modifications to existing pumped storage facilities or construction of new facilities that require use of natural or artificial reservoirs, a powerhouse, and water intake and discharge tunnels. New dams constructed solely for hydroelectric power are unlikely to occur, as they are driven by water supply needs rather than electricity demand (EIA 2022). The operation of wind, solar thermal, and solar photovoltaic energy would occur over large but yet-unknown expanses of land and water (for offshore wind energy, described in more detail below). Reasonably foreseeable renewable energy measures such as offshore wind development are described in greater detail elsewhere in this Project Description chapter. Together, these measures would help decrease the use of oil and gas in California.

Oil and gas extraction would decline, consistent with reduced petroleum demand, and could result in an increase over time in the number of idle and orphan wells in the state. Capping or plugging all idle and orphan wells could take years. Prior to wells being capped or plugged, a compliance response could include repair or replacement of leaking equipment at orphan wells.

The reduction in oil and gas extraction could also result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed. Additional

---

<sup>4</sup> Besides hydrogen-based technologies like gas-to-hydrogen turbine retrofits, new hydrogen gas turbines, and hydrogen fuel cells, other clean, firm dispatchable resources could include Allam-Fetvedt Cycle (AFC) CCS, which burns a gaseous carbon-based fuel (e.g., natural gas, gasified solid fuels such as biomass) and pure oxygen in a combustor, along with use of recycled supercritical CO<sub>2</sub> that is heated in the oxyfuel combustor as the main working fluid to drive a turbine generator. The exhaust exiting the turbine (mostly CO<sub>2</sub>, with some water) is cooled in a heat exchanger and then enters a separation unit where water and CO<sub>2</sub> are separated and then CO<sub>2</sub> is compressed. Some CO<sub>2</sub> is recycled back to the heat exchanger for heating and entering back into the combustor; the remaining high-purity CO<sub>2</sub> can be transported for use or subsurface storage.

<sup>5</sup> Generally speaking, small hydroelectric plants are facilities with a capacity less than 30 MW, though there are some facilities larger than 30 MW that qualify under the Renewables Portfolio Standard. California's small hydroelectric facilities range in capacity from 0.15 MW to 118 MW ([https://ww2.energy.ca.gov/almanac/renewables\\_data/hydro/index\\_cms.php](https://ww2.energy.ca.gov/almanac/renewables_data/hydro/index_cms.php)). See also California Energy Commission's Renewables Portfolio Standard Eligibility Guidebook, Ninth Edition, Publication Number: CEC-300-2016-006-ED9-CMF-REV, <https://efiling.energy.ca.gov/getdocument.aspx?tn=217317>.



compliance responses might include the decommissioning of some natural gas processing plants and power plants as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response. Downstream natural gas pipeline decommissioning could occur in utility service areas that are able to fully electrify, which would involve removing sections of pipeline and disconnecting the buildings and sections of communities currently reliant on them.

## **1. Low Carbon Fuels Actions**

The Proposed Scoping Plan calls for the production and deployment of low carbon fuels across all modes of transportation. Some of this ambition may be met through a more stringent Low Carbon Fuel Standard and additional programs or policies may need to be developed to push low carbon fuels into the sectors as modeled in the plan. The unprecedented rate of production of hydrogen faces both policy and market barriers that must be overcome as part of implementation. To conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and potential actions reflected in the Scoping Plan are fully realized.

Reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, ethanol, hydrogen, alternative jet fuel, renewable propane, sustainable aviation fuels, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increased collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of solar and wind electricity generation projects; construction and operation of additional hydrogen stations and electric vehicle charging stations; deployment and use of additional electric drivetrain, natural gas, and propane fueled vehicles; modifications to existing crude production facilities (including decommissioning<sup>6</sup> and consolidation of refineries), food products facilities, pulp and paper facilities, chemical and allied products, and other industrial manufacturing facilities to accommodate solar and wind electricity, solar heat, and/or solar steam

---

<sup>6</sup> Actions taken after the operational shutdown will depend on what is going to replace the refinery, if anything. Options may include conversion to a renewable diesel facility, conversion to a lubricant oil production facility, redevelopment of the site for conversion to another use, or shutdown with no conversion.

generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries, alternative fuel production facilities, food products facilities, pulp and paper facilities, chemical and allied products, and other industrial manufacturing facilities; land use changes and changes to fuel-associated shipment patterns.

## **2. Expansion of Electrical Infrastructure Actions**

The Proposed Scoping Plan calls for a shift in relying on fossil energy to clean electricity across many sectors. While incentive programs can help deploy clean technology for consumers, there is still the need for some infrastructure to ensure clean electricity is available for use. Due to the expansive modeled need for electrification across major economic sectors, there is no one policy or select few policies that will achieve the outcomes called for in the Proposed Scoping Plan. To conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and potential actions reflected in the Scoping Plan are fully realized through some combination of building codes, incentives, or other.

Reasonably foreseeable compliance responses would be associated with actions requiring that non-electric energy consumption associated with space and water heating, space cooling, cooking, clothes drying, and pool and spa heating only be served by combustion-free technology (e.g., heat pump water heaters, heat pump space conditioners, electric ranges for cooking, electric resistance or heat pump clothes dryers, and electric resistance or heat pump pool and spa heaters). Heat pump systems are two to five times more energy efficient than traditional gas heating and electric resistance technology. However, transitioning to combustion-free technology in new and existing buildings may result in greater electricity demand compared to mixed-fuel buildings. Additional electricity demand beyond what the grid is currently capable of serving could result in construction of new infrastructure or modification to existing infrastructure at the distribution level (e.g., lines, transformers, power meters, circuit breaker main cabinets) and transmission level (e.g., transmission towers, high-voltage conductors [power lines], substations) to accommodate increased loads, as well as require new supply-side generation and energy storage resources. Distributed energy strategies could also be installed to support these electric end uses, including rooftop solar photovoltaic systems (beyond those currently required by the Energy Code); load management systems; and energy storage.

Additional compliance responses associated with retrofits would include upgrading or replacing electric panels to accommodate increased load, as well as circuitry for appliance fuel switching; and modifications to the building envelope or internal space involving wall opening modifications to fit and integrate new equipment.

### **3. Climate-Ready and Climate-Friendly Buildings**

For the purposes of the Proposed Scoping Plan, climate-ready and climate-friendly buildings means at a minimum all-electric or electric-ready homes. The goals in the plan encompass both existing and new buildings. This measure involves 3 million climate-ready and climate-friendly homes by 2030, and 7 million homes by 2035, supplemented through the deployment of 6 million heat pumps statewide by 2030. To conservatively disclose the range of potential environmental impacts, the compliance responses below assume all potential actions and outcomes reflected in the 2022 Scoping Plan are fully realized through building codes, incentives, or other means as applicable.

Reasonably foreseeable compliance responses would be associated with upgrades to existing homes to make them all-electric appliance ready, and with installation of heat pumps. The actions related to these compliance responses would be the same as described above under, "Expansion of Electrical Infrastructure Actions."

### **4. Expanded Use of Zero-Emission Mobile Source Technology Actions**

The actions pertaining to this sector include the various mobile source ZEV actions listed in Table 2-2 above. Due to the unprecedented rate and scale of transformation in this sector, there may need to be adjustments to any number of existing regulations, new regulations, and new incentive programs. Permitting and market barriers must be overcome in some sub-sectors. To conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and actions reflected in the 2022 Scoping Plan are fully realized.

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

These compliance responses include the potential for increased mining of various metals and other natural resources that are needed in zero-emission battery technology. Common metals used in electric vehicle batteries include, but are not limited to, lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, and aluminum. Additionally, the production of hydrogen fuel cells commonly requires the use of platinum. CARB does not intend to limit the types of batteries that may be used

to comply with zero-emission vehicle requirements under the 2022 Scoping Plan and recognizes that future zero-emission technologies may be developed that use other minerals, metals, or resources.

This Recirculated Draft EA does not attempt to capture the potential effects of mining the gamut of existing and potential battery materials because it would be speculative to attempt to predict the specific methods, locations, and extent of mining conducted to extract these minerals, metals, and resources in the future. Adding to the speculative nature of such an undertaking, battery technology continues to evolve, and it is not possible to predict new technological breakthroughs or the likely uptake for a given technology. Nevertheless, this Recirculated Draft EA makes a good-faith effort to disclose potentially adverse environmental effects of increased mining activity. Notably, of the aforementioned metals (i.e., lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, aluminum, and platinum), lithium is often mined using brine mining (i.e., pumping and processing of brine water), whereas the other metals are harvested using surface open pit or underground extraction of ores followed by a variety of processing techniques. Where appropriate, the environmental impacts associated with brine, open pit, and underground mining are disclosed, which is intended to reasonably describe the types of impacts associated with the increased mining of these metals.

## **5. Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

The Proposed Scoping Plan envisions an important role for carbon dioxide (CO<sub>2</sub>) removal and carbon capture and sequestration. The recently enrolled legislative bill SB 905 directs CARB to establish a Carbon Capture, Removal, Utilization, and Storage Program. However, a provision within SB 905 (assuming that bill is signed into law by the Governor) would not allow for the transport of concentrated carbon dioxide through pipelines until the conclusion of a federal carbon dioxide pipeline safety rulemaking.<sup>7</sup> Therefore, it is possible that only projects that do not need to transport carbon dioxide would occur, particularly in the near term. However, to conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and actions reflected in the Scoping Plan are fully realized and not limited by any permitting or federal rulemaking processes on pipeline safety regulations.

Reasonably foreseeable compliance responses associated with mechanical carbon dioxide removal (which includes technologies such as direct air capture with sequestration) and other carbon capture and sequestration (CCS) activities could include the construction of new facilities to capture ambient CO<sub>2</sub>, modification of existing or construction of new industrial facilities to capture CO<sub>2</sub> emissions (CCS), and construction of new infrastructure, such as pipelines, wells, and other surface facilities

---

<sup>7</sup> See Cal. Pub. Resources Code, § 71465(a).

to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. Mechanical carbon dioxide removal and other CCS activities may also result in increased transportation, such as truck, rail, and barge transit to transport CO<sub>2</sub> from the direct air capture facilities and industrial facilities to the sequestration sites. The transport distances and pipeline construction requirements for the captured CO<sub>2</sub> would vary depending on the locations of specific direct air capture facilities and industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy generation and storage to power the capture equipment are key mitigation strategies involving photovoltaic electricity generation, battery storage, and microgrid systems. Increased electricity demand would be met by increased generation, both on-site and off-site.

## **6. Improvements to Oil and Gas Facilities Actions**

The 2022 Scoping Plan calls for oil and gas facility operations to decline commensurate with decline in demand for crude. The plan also seeks to replace the combustion of fossil gas with electricity, hydrogen, or renewable gas across several sectors of the economy. Recently passed SB 1137, if signed into law, may result in the shutting-down of existing oil and gas activities and limiting new ones from being built in specific locations. Since these are upstream activities that will also depend on downstream reductions in fossil energy, it is not possible at this stage to identify and design all of the programs, regulations, and policies that would result in the actions and outcomes identified in the Proposed Scoping Plan. However, to conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and potential actions reflected in the 2022 Scoping Plan are fully realized.

Reasonably foreseeable compliance response could include modifications to existing oil and gas facilities to reduce emissions, such as the installation of vapor recovery systems, the installation of low-bleed or zero-bleed pneumatic devices, and the replacement of leaking equipment. This could include construction activities related to the installation or replacement of gathering lines, piping, flanges, valves, and similar features already associated with oil and gas facilities. Collected vapors would be routed to sales gas lines, microturbines, fuel gas systems, low- NO<sub>x</sub> (oxides of nitrogen) flares, or underground injection wells. These equipment construction and installation activities would typically occur within the footprint of existing oil and gas facilities.

Compliance responses at natural gas transmission and distribution pipelines and related equipment and facilities may result in an increase in the rate at which repairs and replacements are made. Emissions from pipeline and compressor blowdowns may be reduced by implementing methods such as using portable compressors, using plugs to isolate sections of pipelines, flaring vented gas, routing gas to fuel gas systems, installing static seals on compressor rods, and installing ejectors (nozzles that can capture blowdown gas and route it to a useful outlet). Any pipeline replacement

or reconstruction activities, leak surveys, and methods to reduce blowdown emissions would likely be limited to work on existing infrastructure.

## **7. Reduced High-GWP Fluorinated Gases Actions**

The 2022 Scoping Plan identifies the need to reduce high-GWP refrigerants. While CARB has a regulation in place<sup>8</sup> that must be evaluated and potentially made more stringent, other policies, incentives, and building code changes may be needed to achieve the outcomes in the 2022 Scoping Plan. In order to conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and potential actions reflected in the 2022 Scoping Plan are fully realized.

High global warming potential (GWP) fluorinated gases such as hydrofluorocarbons (HFCs) are mainly used as refrigerants or heat transfer fluids in refrigeration, air conditioning (AC) and heat pump equipment. To a lesser extent, HFCs are also used as foam-blowing agents, aerosol propellants, solvents, fire suppressants and in metered dose inhalers. Replacement of high-GWP HFCs with lower GWP alternatives is a reasonably foreseeable compliance response. This could result in increased demand for low-GWP alternatives (e.g., increased demand for hydrofluoroolefin [HFO] production). Aggressive building electrification is not expected to lead to new HFO manufacturing facilities in California, because existing chemical manufacturing facilities that historically produced HFCs are expected to switch to producing HFOs, which has already happened in several facilities. Any additional HFO demand due to increasing sales of combustion-free technology (e.g., heat pumps) would likely be met by increasing production capacity at those facilities and increasing imports.

When it comes to their use as refrigerants, in some cases, low- or lower-GWP HFCs could be used as near-drop-in refrigerant replacement, i.e. refrigerant retrofits in existing refrigeration and AC equipment, which would require relatively minor modifications, such as changes in the types of lubricants and compressor calibrations. However, if systems using high-GWP refrigerants are replaced with systems that use non-fluorinated refrigerants such as CO<sub>2</sub>, hydrocarbon, or ammonia, a complete replacement of equipment would likely be necessary. Local permitting agencies may apply additional oversight on the planning and operations of refrigeration equipment using flammable refrigerants such as hydrocarbons, and toxic refrigerants such as ammonia.

Generally, as low-GWP alternatives replace high-GWP gases, those actions would increase transportation of high-GWP HFCs for reclamation or destruction by vehicle.

---

<sup>8</sup> The Refrigerant Management Program, codified at 17 CCR § 95380 et seq.

Finally, it is important to note that under the *American Innovation and Manufacturing (AIM) Act* of 2020,<sup>9</sup> a national HFC phasedown is now underway in the United States.<sup>10</sup> Under the phasedown, a nationwide shift away from high-GWP HFCs to lower-GWP and HFC-free alternatives is expected to occur. The national phasedown mirrors the global HFC phasedown already in effect under the Kigali Amendment to the Montreal Protocol.<sup>11</sup> These measures have paved the way for a global technological shift towards lower-GWP and HFC-free alternatives in all sectors that rely on HFCs. Thus, any major shifts in the HFC market – such as increased production and imports of lower GWP alternatives, modifications to facilities where these gases are produced and used, and enhanced transportation of high-and low-GWP gases – will be driven predominantly by the global and national HFC phasedowns currently underway, not by California’s measures.

## 8. Manure Management Actions

The 2022 Scoping Plan includes various actions that are currently being implemented or that, if implemented in the future, would lead to an increase in emissions reductions in this sector to meet or exceed the methane emission reductions requirements established by Senate Bill (SB) 1383 (Lara, Chapter 395, Statutes of 2016). These actions would reduce GHG emissions from manure management, and may be incentivized or regulated through CARB or other agencies (for example, through CDFA’s Dairy Digester Research and Development or Alternative Manure Management Program). To conservatively disclose the range of potential environmental impacts, the compliance responses below assume all potential outcomes and actions reflected in the 2022 Scoping Plan are fully realized. As reasonably foreseeable compliance responses, many of the state’s existing dairies may modify their manure management strategies to implement either an anaerobic digester, an alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Some dairies may convert flush-water lagoon manure management systems, which are currently used at most dairies, to “dry” or “solid” manure management systems. This conversion to dry manure management

---

<sup>9</sup> 42 U.S.C. § 7675; Pub. L. 116-260, § 103.

<sup>10</sup> U.S. Environmental Protection Agency. *AIM Act*. Available online at: <https://www.epa.gov/climate-hfcs-reduction/aim-act>; <https://www.epa.gov/climate-hfcs-reduction>.

<sup>11</sup> The Kigali Amendment (2016): The amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer (agreed by the Twenty-Eighth Meeting of the Parties (Kigali, Oct. 10-15, 2016)), UNEP/OzL.Pro.28/12, Annex I; United Nations Industrial Development Organization. The Montreal Protocol Evolves to Fight Climate Change. Available online at: <https://www.unido.org/our-focus-safeguarding-environment-implementation-multilateral-environmental-agreements-montreal-protocol/montreal-protocol-evolves-fight-climate-change>.

systems could potentially involve construction activities related to installing scrape systems or using equipment such as manure vacuums, storage silos and tanks, manure drying pads, and related manure handling equipment and storage facilities. Solid scrape or vacuum manure management could be used with on-site, above-ground tank or plug-flow anaerobic digestion systems to capture biogas that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Similarly, covered lagoon digesters systems could be used to capture biogas from flush manure management systems. The installation of anaerobic digesters would result in the installation and operation of a variety of industrial-type equipment and infrastructure at dairies. This may include electricity generation equipment, biogas storage tanks, compression and cleaning equipment, above-ground pipeline systems, transmission poles and wires, and vehicle fueling stations.

Alternatively, some dairy and livestock operations may transport raw, or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network. In some cases, collected manure could be transported to centralized digesters, and potentially co-digested with other feedstocks (such as food waste) for increased fuel production. These pathways would be most feasible at large dairies in close proximity to one another that collectively could connect to a natural gas pipeline at lower cost than could occur individually. Implementation of digesters and associated equipment could provide small-scale electricity production, distributing biogas via pipeline, and providing fuel for on- or off-site vehicle fleets. Digesters can include flares, which are intended for emergency purposes and would not be expected to be used on a regular basis, if ever.

In some instances, dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility by avoiding its creation. Example alternative manure management strategies include solid scrape or vacuum collection of manure as described above, as well as implementation of solid-liquid separation systems that reduce the amount of manure stored in anaerobic conditions. These alternative manure management strategies involve the subsequent drying of separated manure solids rather than anaerobically treating, storing, or digesting them, reducing overall methane generation. Implementation of solid-liquid separation systems may require installation of new manure processing equipment and structures like storage silos, tanks, weeping walls, and pads for drying and storage of manure solids. Additionally, converting dairies to pasture-based management systems may be an option to avoid methane production, in which manure is left in the field and decomposes aerobically (versus anaerobically in a lagoon). Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter).

Methane emissions from enteric fermentation in ruminant animals can potentially be reduced through selective breeding, dietary modifications that improve production



efficiency, and the introduction of feed additives. Of these, feed additives offer the greatest potential for sector-wide methane emissions reductions because they potentially deliver considerable methane emissions reductions shortly after adoption. At least one feed additive is currently undergoing U.S. Food and Drug Administration approval and may become available within the next few years. In comparison, strategies like diet modifications, feed efficiency improvements, and selective breeding require a long time to achieve significant emissions reductions.

Reasonably foreseeable compliance responses associated with the introduction of methane-reducing feed additives include actions associated with on-site farm feed preparation and feed-additive manufacturing and delivery. Regarding farm use of feed additives, the dosage rate is estimated to be a small fraction of the total daily feed weight per animal and would be mixed in during regular feed preparation activities. Therefore, it is not expected to result in any substantial changes to existing feed preparation operations. On the upstream manufacturing side, ubiquitous use of feed additives by the sector could potentially affect production operations. Demand for feed additives is expected to be met by existing chemical manufacturing facilities but could also result in some new chemical manufacturing facilities being constructed, particularly in regions of the U.S. with higher concentrations of dairy and livestock facilities, as well as transport-related impacts associated with delivery of feed additive products. On the downstream side, trace amounts of feed additives could be deposited on land as a result of land application of manure or exported offsite through manure export, consistent with regular manure management activities involved with the operation of dairy and livestock operations.

The 2022 Scoping Plan does not itself require these manure management actions to occur; rather, it describes potential actions that could be taken by dairy and livestock operators and CARB and other agencies to help achieve the State's climate goals. The 2022 Scoping Plan is, ultimately, a source of science-based and policy-informed guidance in this area, rather than a source of mandates. CARB is not setting regulatory requirements for manure management in the 2022 Scoping Plan, instead, strategies to reduce GHG emissions from manure management may be incentivized through State or other agencies (for example, through CDFA's Dairy Digester Research and Development or Alternative Manure Management Program). The authority to reduce GHG emissions from manure management largely lies with state, regional, and local agencies, along with the Legislature and its budgeting choices. These independent actors may or may not make choices consistent with the recommendations of the 2022 Scoping Plan and have considerable discretion in most regards. Because the 2022 Scoping Plan provides expert information on how manure management strategies can be implemented, its recommended measures may be influential, though they are not controlling.

## **9. Forest, Shrubland, and Grassland Management Actions**

The 2022 Scoping Plan includes various actions and concepts that would, if implemented, lead to an increase in forest, shrubland, and grassland management actions. For example, the 2022 Scoping Plan recommendations as well as the recently passed AB 1757 (Garcia, 2021-2022 legislative session), if signed into law, may result in the increase in forest, shrubland, and grassland management. It is not possible at this stage to identify and design all of the programs, regulations, incentives, and policies that would be needed to implement AB 1757 or to meet the management levels identified in the 2022 Scoping Plan. However, to conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and potential actions reflected in the 2022 Scoping Plan are fully realized.

The proposed forest, shrubland, and grassland management measures set forth in Table 2-2 above involve land management action for forests, grasslands, and shrublands that would be the responsibility of other agencies to undertake (including the California Natural Resources Agency and the California Department of Food and Agriculture). These actions, if undertaken by those agencies, would be reasonably expected to substantially increase activities in several regions of the State through such practices as prescribed fire, mechanical thinning and harvesting, undergrowth clearing, mastication, dead wood removal or clearing, reforestation, restoration of shrubland, chaparral, oak woodland, and riparian areas through controlling vegetation via chemical or mechanical means and planting desired species, targeted herbicide uses, prescribed herbivory, application of compost to grasslands, and other methods. Some of these practices could be employed in establishing shaded and unshaded fuel breaks. These increased activities could also increase the development of temporary or permanent access roads in forests, shrublands, and grasslands, and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, portable carbonators, portable gasifiers, and transport trucks. Establishment of defensible space surrounding structures would use similar practices and equipment as listed above.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of compost or biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as mass timber, woodchips, biochar, and mulch.

Practices including compost application to rangelands/grasslands, or prescribed herbivory, could increase the use of trucks to transport materials, tractors, or other off-road vehicles to spread compost, and may increase nitrogen application and/or ecosystem productivity.

The natural and working lands sector, to which these actions relate, is complex, and the 2022 Scoping Plan does not require these actions to occur; rather, it describes potential actions that could be taken by other agencies to help further the State's climate goals. The 2022 Scoping Plan is, ultimately, a source of science-based and policy-informed guidance in this area, rather than a source of mandates. CARB is not setting regulatory requirements for natural and working lands in the 2022 Scoping Plan, instead, the authority to reduce GHG emissions via measures relating to natural and working lands largely lies with state, regional, and local agencies, along with the Legislature and its budgeting choices. These independent actors may or may not make choices consistent with the recommendations of the 2022 Scoping Plan and have considerable discretion in most regards. Because the 2022 Scoping Plan provides expert information on how natural and working lands can be improved to provide GHG reductions that help further California's climate targets, and provides advice and information on policy mechanisms that, if implemented, entities with authority over natural and working lands may choose to rely upon, its recommended targets may be influential, though they are not controlling.

## **10. Agricultural Actions**

The 2022 Scoping Plan includes various actions and concepts that would, if implemented, lead to an increase in climate-smart agricultural management actions. For example, the 2022 Scoping Plan recommendations as well as the recently passed AB 1757, if signed into law, may result in the increase in practices that reduce GHG emissions from agricultural activities. It is not possible at this stage to identify and design all of the programs, regulations, incentives, and policies that would be needed to implement AB 1757 and the meet the management levels identified in the 2022 Scoping Plan. However, the compliance responses below assume all outcomes and potential actions reflected in the 2022 Scoping Plan are fully realized.

The proposed agricultural actions set forth in Table 2-2 above involve setting land management levels for the agricultural sector that would be the responsibility of other agencies to undertake (e.g., the California Department of Food and Agriculture). If these actions are undertaken, reasonably foreseeable compliance responses on annual and perennial croplands that address soil conditions include increasing no till or reduced till practices; cover cropping; improved nitrogen fertilizer use efficiency to manage the rate, source, placement, and timing of plant nutrients and soil amendments; transitioning to organic agriculture; and compost application. Climate-smart irrigation may also increase on croplands, which would reduce energy use for irrigation purposes. These practices may occur independently or in combination with one another on cropland areas. It is expected that the 2022 Scoping Plan, in addition

to other state-level strategies such as CNRA's Climate Smart Strategy, will lead to the implementation of these compliance responses across California agricultural lands through incentive programs and regionally led efforts.

Implementing certain soil management practices could increase the use of on-farm mechanical equipment (e.g., tractors or other off-road vehicles to apply compost, , mulching, and whole orchard recycling). Additionally, compost application would require increased use of trucks to transport the compost. Other types of practices (e.g., cover crops, windbreak/shelter belt establishment, tree/shrub establishment) may require increased water use to establish and or/maintain plant or trees.

The natural and working lands sector, to which these actions relate, is complex, and the Scoping Plan does not require these actions to occur; rather, it describes potential actions that could be taken by other agencies to help further the State's climate goals. CARB, for instance, is not in the Scoping Plan setting regulatory requirements for natural and working lands. The Scoping Plan is, ultimately, a source of science-based and policy-informed guidance in this area, rather than a source of mandates. CARB is not setting regulatory requirements for natural and working lands in the 2022 Scoping Plan, instead, the authority to reduce GHG emissions via measures relating to natural and working lands largely lies with state, regional, and local agencies, along with the Legislature and its budgeting choices. These independent actors may or may not make choices consistent with the recommendations of the 2022 Scoping Plan and have considerable discretion in most regards. Because the 2022 Scoping Plan provides expert information on how natural and working lands can be improved to provide GHG reductions that help further California's climate targets, and provides advice and information on policy mechanisms that, if implemented, entities with authority over natural and working lands may choose to rely upon, its recommended targets may be influential, though they are not controlling.

## **11.Organic Waste Diversion and Composting Actions**

The 2022 Scoping Plan includes various actions currently being implemented or that, if implemented in the future, would lead to an increase in emissions reductions in this sector to meet or exceed the methane emission reductions requirements established by SB 1383. These actions reduce GHG emissions from organic waste diversion, composting, and landfill methane reduction. These actions may be incentivized or regulated through CalRecycle, CARB or other agencies. To conservatively disclose the range of potential environmental impacts, the compliance responses below assume all potential outcomes and actions reflected in the 2022 Scoping Plan are fully realized. Reducing landfill disposal of organic waste to less than 6 million short tons by 2025 as required under SB 1383 would result in the development of new or expanded organic material composting, digestion, and/or other facilities throughout the State to recover and recycle the diverted organic waste. It is anticipated that new facilities would be sited near or at existing waste disposal sites or landfills. Much of the material processed at these facilities would consist of residential and commercial food wastes

and urban landscaping wastes that are diverted from landfill disposal and typically transported by truck, but may also include other regional sources of organic wastes such as industrial food waste/by-products or agricultural residues (these wastes are not typically landfilled, and may largely continue to be used for animal feed or managed at wastewater treatment facilities).

The typical kinds of equipment that would be installed and operated at compost facilities include tractors, compost turners, and grinders. Composted material would potentially be transported from composting facilities and spread on open space lands, particularly agricultural land, as a soil supplement.

It is anticipated that some organic waste diverted from landfill disposal would be processed at anaerobic digestion facilities, which break down organic waste in the absence of oxygen to produce biogas. The captured biogas could potentially be used for on or off-site electricity generation, or cleaned and compressed for use as a vehicle fuel or pipeline injected for use elsewhere as a natural gas substitute. New anaerobic digestion facilities would involve the installation and operation of a variety of industrial-type equipment and infrastructure which potentially may include electricity generator sets, biogas storage tanks and compression and cleaning equipment, above ground pipeline systems, transmission poles and wires, and vehicle fueling stations. It is anticipated that some anaerobic digestion facilities could also include composting operations to manage digestate (digested solids). Some landfill-diverted food waste would be processed at existing wastewater treatment facilities with excess digester capacity, referred to as co-digestion, which would limit the addition of new facilities, but would increase certain operations at wastewater treatment plants.

In addition to compost and anaerobic digestion, other material recovery and recycling operations would process landfill-diverted organic waste. These include new and expanded food rescue for human consumption, chipping and grinding of primarily dry, woody wastes, and specialty recycling operations for materials such as paper and textiles which are less suitable for compost and digestion.

The 2022 Scoping Plan does not require these actions to occur; rather, it describes actions that could be taken via organic waste diversion as required by SB 1383 to help achieve the State's climate goals. The 2022 Scoping Plan is, ultimately, a source of science-based and policy-informed guidance in this area, rather than a source of mandates. Instead, strategies to reduce GHG emissions from organic waste diversion and composting strategies may be incentivized through State or other agencies as a result of SB 1383. The 2022 Scoping Plan provides expert information on how organic waste diversion and composting strategies can, if implemented, provide GHG reductions that help further California's climate targets.

## **12. Afforestation, Urban Forestry Expansion, Urban Greening, Avoided Natural and Working Land Use Conversion, and Wetland Restoration Actions**

The 2022 Scoping Plan includes various actions and concepts that would, if implemented, lead to an increase in urban forestry, wetlands restoration, avoided land conversion, and other climate-smart land management actions. For example, the 2022 Scoping Plan recommendations as well as the recently passed AB 1757, if signed into law, may result in the increase in practices that increase urban forest tree canopies or restore delta wetlands. It is not possible at this stage to identify and design all of the programs, regulations, incentives, and policies that would be needed to implement AB 1757 and meet the NWL carbon stock targets identified in the 2022 Scoping Plan. However, to conservatively disclose the range of potential environmental impacts, the compliance responses below assume the NWL carbon stock targets are achieved and that all outcomes and potential actions reflected in the 2022 Scoping Plan are fully realized.

Achieving the NWL carbon stock targets under the 2022 Scoping Plan includes actions that would be reasonably anticipated to increase or retain vegetation across all natural and working land types and restore wetland conditions in California. These actions would result in planting of trees and other vegetation (e.g., hedgerows and greening projects) in urban areas (e.g. schoolyards, urban farms, community gardens, etc.), within cropland (as hedgerows, wind/shelterbelts, alley crops), along waterways in riparian zones within croplands, in sparsely vegetated lands where invasive have been removed, and surrounding areas of cultivation. Wetland restoration activities could occur on agricultural lands in the Sacramento/San Joaquin Delta as well as in coastal and tidal wetlands, eelgrass, and mountain meadows as a compliance response. Avoided conversion of natural and working lands to another land use is also anticipated. These anticipated actions could result in an increase in construction activities related to wetland restoration and an increase in tree maintenance (e.g. pruning/trimming, fertilizing, tree felling, chipping/grinding, biomass transportation) within urban areas and croplands. Equipment used for these activities include tractors, backhoes, aquatic craft, portable chippers/grinders, and chip trucks.

The natural and working lands sector, to which these actions relate, is complex, and the 2022 Scoping Plan does not require these actions to occur; rather, it describes potential actions that could be taken by other agencies to help further the State's climate goals. The 2022 Scoping Plan is, ultimately, a source of science-based and policy-informed guidance in this area, rather than a source of mandates. CARB is not setting regulatory requirements for natural and working lands in the 2022 Scoping Plan, instead, the authority to reduce GHG emissions via measures relating to natural and working lands largely lies with state, regional, and local agencies, along with the Legislature and its budgeting choices. These independent actors may or may not make choices consistent with the recommendations of the 2022 Scoping Plan and have considerable discretion in most regards. Because the 2022 Scoping Plan provides expert information on how natural and working lands can be improved to provide

GHG reductions that help further California's climate targets, and provides advice and information on policy mechanisms that, if implemented, entities with authority over natural and working lands may choose to rely upon, its recommended targets may be influential, though they are not controlling.

### **13. Offshore Wind Actions**

Offshore wind facilities have been integrated into the 2022 Scoping Plan as an additional renewable energy measure to address a July 2022 letter to CARB's Chair from Governor Newsom, which requested establishment of an offshore wind planning goal of at least 20 GW by 2045 (Newsom 2022). Relatedly, the California Energy Commission has also established a preliminary planning goal of 25 GW of new offshore wind energy by 2045 (CEC 2022).

Potential actions under SB 100 (De León, Chapter 312, Statutes of 2018) and SB 1020 (Laird, 2021-2022 legislative session), if signed into law, will drive the need to build offshore wind. Permitting barriers may impact the final achievement of the target in 2045, but to conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and actions reflected in the 2022 Scoping Plan are fully realized.

Currently, California offshore wind energy development is primarily focused on five areas totaling 373,268 acres off the State's central and northern coast in the Morro Bay and Humboldt areas (Moore 2022). Wind turbines would typically be stationed beyond three nautical miles (most likely 20 or more miles) from the California coast in federal waters, though some projects could occur in state waters (e.g., applications for these projects are currently being considered at the California State Lands Commission in the waters west of Vandenberg Air Force Base in Santa Barbara County) (CSLC 2021). The Outer Continental Shelf off California's coast has steep drop-offs that require offshore wind turbines to be installed on floating platforms (Lackner 2021).<sup>12</sup> A floating wind turbine operates similarly to other land-based wind turbines, and involves wind turning the blades to drive a generator that produces electricity; however, rather than having its tower anchored to the ground, the wind turbine sits on a platform with mooring lines that connect to anchors on the seabed below. The mooring lines hold the turbine in place against the wind and keep it connected to an electric cable. The floating platform provides stability against tipping in strong winds or storms, with the hollow platform often being made of large steel or concrete structures that provide buoyancy to support the weight of the turbine.

Floating wind turbines are configured in an array to optimize capture of wind energy. The energy captured by the turbines moves through the cable to a floating substation, which collects and stabilizes the power generated by the turbines to prepare it for

---

<sup>12</sup> To date, most offshore wind energy projects have used fixed-bottom foundations, which are more suited for shallow waters of about 200 feet or less.

transmission to shore; an export cable then transmits the electricity from the floating substation to shore where it is connection to the onshore power grid (BOEM 2017). The average commercial utility-scale onshore wind turbine capacity in the U.S. was 2.75 MW in 2020, with a hub height of 295 feet; the average hub height for offshore turbines is projected to increase from 330 feet in 2016 (with a capacity of 6 MW) to about 500 feet by 2035 (with a capacity of 15 MW or greater). Using a projected generating capacity of 15 MW per turbine, the 20 GW of offshore wind capacity envisioned in the proposed Scoping Plan could equate to about 1,300 turbines (Office of Energy Efficiency & Renewable Energy 2021), though a greater number of turbines could be installed if the individual generating capacity of some or all of the deployed turbines is less than 15 MW.

Reasonably foreseeable compliance responses would include installation of new offshore wind turbine components, floating platform foundation structures, array cables, offshore substations, high-voltage export cables, and other related infrastructure. Onshore modification activities likely involving areas in and around California ports would be needed to support offshore wind and could include actions related to grid interconnection and capacity expansion, substation upgrades, and additional transmission lines. Offshore wind installation methods could involve cable-laying vessels, transportation of components by vessel and/or helicopter, robotic equipment, and automated strategies (CEC 2021). The operation of offshore wind energy facilities would occur in ocean waters off the California coastline, including the areas the federal Bureau of Ocean Energy Management announced for proposed sale of commercial energy leases for wind power in the Outer Continental Shelf in the Humboldt Wind Energy Area (two leases in the North Coast Region) and Morro Bay Wind Energy Area (three leases in the Central Coast Region).

#### **14.Reduced VMT Actions**

The 2022 Scoping Plan models vehicle miles travelled (VMT) reductions of 25% per capita below 1990 levels by 2030 and 30% per capita below 1990 levels by 2045. These targets are not regulatory requirements, but would inform future planning processes. Functionally, achieving these targets would require more sustained action than the prior targets to further shift the transportation system away from dependency on personal vehicles and broaden choice. The transportation system, for which VMT is a metric, is complex, and CARB's direct authority over this system is limited. The Scoping Plan is, ultimately, a source of science-based and policy-informed guidance in this area, rather than a source of mandates. CARB is not setting regulatory limits on VMT in the 2022 Scoping Plan, instead, the authority to reduce VMT largely lies with state, regional, and local transportation, land use, and housing agencies, along with the Legislature and its budgeting choices. These independent actors may or may not make choices consistent with the recommendations of the Scoping Plan, and they have considerable discretion.



Because the 2022 Scoping Plan provides expert information on how much VMT should be reduced to meet California's climate targets, and provides advice and information on policy mechanisms that, if implemented, entities with authority over VMT may choose to rely upon, its recommended targets may be influential, although they are not controlling. Actions specifically within CARB's authority that may influence VMT are generally related to the SB 375 regional planning process. They include the likely setting, after appropriate public process and analysis, of consistent regional greenhouse gas reduction targets under SB 375 for regional planning that may be followed by relevant jurisdictions. Under SB 375, metropolitan planning organizations must develop sustainable communities strategies as part of their regional transportation plans that include transportation and land use actions that if implemented would meet the regional targets. Metropolitan planning organizations (MPOs) have discretion in which actions they identify to meet the targets, and MPOs may amend their plan at any time. As a result, both the actions and the potential ensuing environmental impacts of the specific strategies are unknown but would be evaluated by the appropriate regional and local agency upon adoption and implementation as required by CEQA. These planning targets are not binding on implementation for the regions, however, so the planning targets do not themselves have clear environmental impacts. Actions CARB could undertake to support implementation of an MPO's sustainable communities strategy/regional transportation plan include allocating grant funds to support activities that reduce VMT, such as the installation of pedestrian and bicycling infrastructure, or greater use of transit or bicycling. CARB could also advocate in other political processes for actions consistent with the 2022 Scoping Plan.

Meeting the regional greenhouse gas reduction targets established under SB 375 is unlikely to fulfill the level of VMT reduction called for in the 2022 Scoping Plan. The 2022 Scoping Plan describes at a high level a series of policies and investments that state and regional agencies could take to reduce vehicle travel and support implementation of the sustainable communities strategies, though the 2022 Scoping Plan does not commit any of those agencies to undertake any of these policies or investments. The adoption and implementation of these targets, however, relies on other actors who may make a range of choices given the complexity of the transportation system and the many options available to lower VMT. These may include, for instance, decisions to site and construct relatively more housing, particularly affordable housing for low-income households and communities of color, in transit or service-rich areas to reduce the need for automobile use and address historic inequities, to prioritize the funding and expansion of transit, the use of various roadway pricing designs that can help shift transportation choices while generating funds for alternatives to driving, and perhaps other mechanisms identified as options in the relevant appendices and main document of this 2022 Scoping Plan. Jurisdictions may also set planning targets for transportation and climate actions plans consistent with these targets, though the implementation of any such plans would depend on funding choices and other implementation and siting decisions. These impacts are thus

foreseeable at a high level, but cannot be regionally specified at this time, or described in more than programmatic detail.

## **16. Guidance for Agencies Consistent with the 2022 Scoping Plan**

In addition to the measures expressly included and modeled as part of the 2022 Scoping Plan (which are assumed to be likely to occur due to statutory or gubernatorial direction), Appendices D through F to the 2022 Scoping Plan contain guidance that local and state governments may choose to consider in developing and improving their communities reducing vehicle miles traveled, and in reducing emissions from buildings. Many of these appendices focus on areas where CARB itself cannot or is not imposing particular regulatory requirements, but in which further action to implement actions consistent with the 2022 Scoping Plan can and should be taken as part of the discretion of other government bodies. Thus, though some actions in the appendices may well be taken, they are not foreseeable consequences of the 2022 Scoping Plan itself and are, except as noted specifically in this document and the main 2022 Scoping Plan, beyond CARB's immediate control. We summarize each of these appendices in the following paragraphs.

### Appendix D: Local Actions

This appendix provides guidance to local governments regarding how they can help reduce GHG within their jurisdictions, including: general GHG reduction principles, information regarding the various types of available GHG mitigation, and guidance regarding quantifying, analyzing and mitigating GHG emissions under CEQA. This appendix does not commit any agency to any particular approach regarding any of the practices listed above, nor does it set forth any requirements. It is purely advisory in nature, and recognizes local agency discretion to consider GHG emissions as appropriate, though it makes best efforts to provide science-based and policy-informed recommendations. It is advisory in nature and there are not reasonably foreseeable compliance responses or emission reductions attributed to its guidance.

### Appendix E: Sustainable Communities

Overall, Appendix E presents four strategy areas for State action that would support a successful transition away from a driving-first model by building communities and infrastructure that enable a wider range of choices. The four strategy areas for action discussed consist of: promoting transportation planning and funding, transportation system management, new mobility, and land use and development. For each strategy area, the section identifies the vision, objectives, and potential actions to be considered for further public processes and potential implementation. The guidance does not commit any agency to any particular approach and does not set forth any requirements. Rather, it complements existing guidance sources, and is purely advisory in nature. Because it is advisory in nature, there are no reasonably foreseeable compliance responses or emission reductions attributed to its guidance.

### Appendix F: Building Decarbonization

This appendix provides background information related to the importance of building decarbonization. As background and guidance, it discusses the technical feasibility of electric appliances, workforce readiness, costs and cost-savings, and consumer adoption and awareness. This appendix outlines several potential actions and areas of increased emphasis moving forward to support building decarbonization. While the appendix itself is not anticipated to result in compliance responses, the reasonably foreseeable compliance responses associated with building decarbonization in general, addressed throughout this Recirculated Draft EA, include upgrading electrical panels and wiring, adding dedicated circuits, and making other infrastructure improvements to support future installation of technology such as heat pumps. The guidance in this appendix complements existing guidance sources, and is advisory in nature. Because it is advisory in nature, there are no reasonably foreseeable compliance responses or emission reductions attributed to its guidance.

### **3.0 ENVIRONMENTAL AND REGULATORY SETTING**

The California Environmental Quality Act (CEQA) Guidelines require an environmental impact report (EIR) to include an environmental setting section, which discusses the current environmental conditions in the vicinity of the project. This environmental setting constitutes the baseline physical conditions against which an impact is normally compared to determine whether or not it is significant. (Cal. Code Regs., tit. 14 § 15125.) As discussed above in Chapter 1, the California Air Resources Board (CARB or Board) has a certified regulatory program and prepares an environmental analysis (EA) in lieu of an EIR. This Recirculated Draft EA is a functional equivalent to an EIR under CEQA. Therefore, in an effort to comply with the policy objectives of CEQA, an environmental setting, as well as a regulatory setting with relevant environmental laws and regulations, has been included as Attachment A to this document.

This page intentionally left blank

## **4.0 IMPACT ANALYSIS AND MITIGATION MEASURES**

### **A. Approach to the Environmental Impacts Analysis and Significance Determination**

This chapter contains an analysis of environmental impacts and mitigation measures associated with implementation of the 2022 Scoping Plan. CEQA states that the baseline for determining the significance of environmental impacts would normally be the existing conditions at the time the environmental review is initiated (Title 14 CCR Section 15125(a)). Therefore, significance determinations reflected in this Recirculated Draft EA are based on a comparison of the potential environmental consequences of the 2022 Scoping Plan with the regulatory setting and physical conditions in 2021 (see Attachment A). For determining whether the 2022 Scoping Plan may have a potential effect on the environment, CARB evaluated the potential physical changes to the environment resulting from the reasonably foreseeable compliance responses described in further detail in Chapter 2 of this Recirculated Draft EA. The CEQA baseline for purposes of this Recirculated Draft EA is the environmental setting during approximately July 2021, when the Notice of Preparation was released, unless noted otherwise. A table summarizing all the environmental impact significance conclusions for each resource area discussed below is included in Attachment B to this document.

The potential environmental effects of reasonably foreseeable compliance responses associated with the 2022 Scoping Plan are analyzed in a programmatic manner because it consists of a series of actions that can be characterized as one large project and are related in connection with the issuance of the 2022 Scoping Plan to govern the conduct of a continuing program under AB/SB 32. (Title 14 CCR Section 15168(a)(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 EA, the public agency with approval authority over the later activity may need to conduct additional environmental review as required by CEQA or other applicable law.

The impact analysis is based on foreseeable compliance responses that rely on a set of reasonable assumptions. While the compliance responses described in this Recirculated Draft EA are not the only conceivable ones, they provide credible, representative potential development activities to assess the 2022 Scoping Plan's impact conclusions and are consistent with available evidence. As discussed in Chapter 2 of this Recirculated Draft EA, the evaluation of certain compliance responses would be speculative under CEQA. CEQA does not require evaluation of speculative impacts (Title 14 CCR Section 15145). For that reason, an evaluation of speculative effects of these responses is not required and is not included in this analysis. The analysis also addresses actions that could likely occur under a reasonable range of potential scenarios. The impact discussions reflect a conservative assessment of the type and magnitude of effects that may occur (i.e., the conclusions seek to avoid the risk of

understating adverse effects) because the specific location, extent, and design of potential new and/or modified facilities cannot be known at this time.

As described in Chapter 2 above, the 2022 Scoping Plan is a very high level statewide planning document that assesses the State's progress toward achieving the 2030 target for reduced greenhouse gas (GHG) emissions and lays out a path for achieving carbon neutrality no later than 2045. Its approval would not lead directly to any adverse impacts on the environment, because CARB's 2022 Scoping Plan approval, by itself, does not authorize any activities that would change the physical environment. Rather, it is the first step in a potential sequence of public agency decisions that may lead to implementation of the reasonably foreseeable compliance responses. If approved, this statewide plan could be followed by future CARB rulemaking efforts, as well as other efforts at multiple levels of government (at the discretion of the agencies with jurisdiction over the relevant sectors), to further define requirements for plan components within each agency's respective jurisdiction. Local or regional lead agencies would then need to consider actions (if they so choose) to approve any physical projects proposed to implement the adopted rules or strategies. Given the multi-level decision-making necessary in many sectors, and given the overall high-level nature of the 2022 Scoping Plan, there is inherent uncertainty in whether, when, or where many measures included in the 2022 Scoping Plan would occur. Nevertheless, in the following pages, CARB has analyzed the full range of reasonably foreseeable environmental impacts that could result from the potential compliance responses, in the interest of public disclosure and transparency.

## **1. Adverse Environmental Impacts**

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

This Recirculated Draft EA takes a conservative approach and considers some environmental impacts as potentially significant because of the inherent uncertainties in the relationship between physical actions that are reasonably foreseeable under the 2022 Scoping Plan and environmentally sensitive resources or conditions that may be affected. This conservative approach is effective because it helps avoid the risk of understating environmental impacts in light of these uncertainties and is intended to satisfy the good-faith, full-disclosure intention of CEQA. When specific later activities are proposed and subjected to project-level environmental review, many of the impacts recognized as potentially significant in this Recirculated Draft EA may 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 Recirculated Draft EA also acknowledges potential beneficial effects on the environment in each resource area that may result from implementation of the 2022 Scoping Plan. Any beneficial impacts associated with the 2022 Scoping Plan are included in the impact analysis for each resource area listed below.

## **2. Mitigation Measures**

This Recirculated Draft EA recognizes that a degree of uncertainty exists regarding the implementation of feasible mitigation measures for potentially significant impacts, because CARB has limited authority for mitigation enforcement outside its statutory mandates and mitigation implementation by other public agencies approving later activities is not assured or reasonably predictable. "'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 2022 Scoping Plan, it does not have authority to approve the potential later activities, such as infrastructure and development projects, that could be carried out in response to the 2022 Scoping Plan.

Other agencies are responsible for the review and approval, including any required environmental analysis, of any facilities and infrastructure that are reasonably foreseeable compliance responses to the 2022 Scoping Plan, including any definition and adoption of feasible project-specific mitigation measures, and any monitoring of mitigation implementation. For example, local cities or counties must review and decide to approve proposals to construct new facilities; CARB does not have jurisdiction over land use permitting of any potential development associated with the compliance responses, such as new manufacturing or recycling facilities (Cal. Const., Article XI, Section 7 ["A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws."]; *California Building Industry Assn. v. City of San Jose* (2015) 61 Cal.4th 435, 455; *Big Creek Lumber Co. v. County of Santa Cruz* (2006) 38 Cal.4th 1139, 1151–1152; Health and Safety Code Sections 39000–44474 [CARB's statutory authority provides no authority to regulate local land use permitting]). Additionally, State and/or federal permits may be needed for specific environmental resource impacts, such as take of endangered species, filling of wetlands, and streambed alteration.

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



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 2022 Scoping Plan, CARB's implementation of the identified mitigation measures is infeasible, based on the following: (1) the lack of certainty of the scope, siting, and specific design details of compliance-response development projects, which prevents CARB from being able to determine the projects' significant environmental impacts, and (2) the fact that even if there was certainty with respect to compliance-response development projects and associated significant environmental impacts, CARB lacks the legal authority and jurisdiction to permit these projects or implement them, which inherently prevents CARB from legally imposing any enforceable mitigation measures on the projects. Therefore, while the mitigation measures identified below in this Recirculated Draft EA are considered by CARB to be feasible for project proponents to implement and in many cases for other agencies to enforce, CARB cannot legally enforce them.

Consequently, this Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusions (i.e., avoiding the risk of overstating the enforceability of feasible mitigation to reduce an impact to less than significant) and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable, where appropriate, because of the lack of jurisdiction by the lead agency to enforce the mitigation measures. It is also possible that the amount of mitigation necessary to reduce environmental impacts to a level below significant may be far less than disclosed in this Recirculated Draft EA on a case-by-case basis. It is expected that many potentially significant impacts of facility and infrastructure projects would be avoidable or mitigable to a less than significant level as an outcome of their project-specific environmental review processes, conducted by the appropriate approval agency with jurisdiction as the lead agency under CEQA.

## **B. Resource Area Impacts and Mitigation Measures**

The following discussion provides a programmatic analysis of the reasonably foreseeable compliance responses that could result from implementation of the 2022 Scoping Plan, described in Chapter 2 of this Recirculated Draft EA. 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.

Impact discussions are presented as short-term construction-related impacts and long-term operational-related impacts. Generally, short-term construction-related impacts address the physical changes to the environment that are related to development of facilities and other actions that occur over a discrete period (e.g., converting an area of farmland to other uses could occur only once). Long-term operational-related impacts would occur during the lifetime of an action (e.g., manure management

actions would continue indefinitely). For some resource sections, both short-term construction and long-term operational-related impacts are combined, and for some sections a given impact may be both a short-term and long-term impact.

## **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.a: Short-Term Construction-Related Effects on Aesthetics***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

Short-term construction-related activities associated with the reasonably foreseeable compliance responses would involve typical off-road construction equipment (e.g., backhoes, graders, dozers) and on-road heavy-duty vehicles for transport of materials to and from construction sites. Earth moving, paving, or other activities could create temporary mounds or piles of dirt or biomass or require staging areas where materials

or equipment would be temporarily stored. Depending on the hours when construction is conducted, sources of glare or lighting could be present. Although there is uncertainty regarding the locations of these activities, scenic vistas or views from a State scenic highway could be degraded by the presence of heavy-duty equipment, glare, lighting, or disturbed earth.

When constructing future offshore wind projects, construction-related vessels operating between dusk and dawn would be required to use navigation lights. In addition, temporary work lighting would illuminate work on vessel decks or service platforms of wind turbine generators (WTGs) or electrical service platforms (ESPs). Cable laying activities could occur within the nighttime hours, which would also require nighttime lighting for safety. A number of factors affect light transmission, both in air and water. In air, these factors include atmospheric moisture levels, cloud cover, and type and operation of lights. In water, this includes turbidity levels and waves and types of lights. Depending on the location of future wind energy project, these sources of nighttime lighting could adversely affect the visual quality of a coastal area.

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

### **Impact Significance Determination**

Short-term construction-related effects on aesthetics associated with implementation of the 2022 Scoping Plan would be potentially significant.

### **Mitigation Measures**

#### ***Mitigation Measure 1.a***

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

following recognized practices are among those routinely required to avoid and/or minimize impacts on aesthetic resources:

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

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 1.a, significant impacts on aesthetics 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 Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related scenic and nighttime lighting effects resulting from the 2022 Scoping Plan would be **potentially significant and unavoidable**.

***Impact 1.b: Long-Term Operational-Related Effects on Aesthetics***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on aesthetics resources may be related to the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; direct air capture and other CCS actions; improvements to oil and gas facilities actions; manure management actions; forest, shrubland, and grassland management actions; agricultural actions; organic waste diversion and composting actions; and afforestation, urban forestry expansion, avoided land use change, and wetland restoration actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 1.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

**a) Increase in Renewable Energy and Decrease in Oil and Gas Use Actions**

As described in more detail in Chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. Depending on the size and location of these types of systems, operations may affect the quality of scenic vistas and damage scenic resources. The operation of wind, solar thermal, and solar PV energy systems would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

Renewable energy supplies include wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, and small hydroelectric systems. Depending on the size and

location of these types of systems, operations may affect the quality of scenic vistas and damage scenic resources. The operation of wind, solar thermal, and solar PV energy would occur over large expanses of land (i.e., acres). These types of facilities generally consist of the following features:

- Wind development would introduce into the visual environment large, vertical towers, turbines with revolving turbine blades, access roads, transmission lines, substations, rights-of-way, and other associated facilities.
- Operation of solar thermal facilities may create substantial sources of light or glare related to certain project components, including power towers, and parabolic dishes and troughs. The levels of light and glare may dominate the landscape, which in some cases may include minimal or no existing lighting. These facilities would also require the use of nighttime lighting for safety and security reasons, which may also result in glare.
- Development of solar PV energy would occur in various locations throughout the state. Solar PV installations may create new sources of substantial light or glare, thereby affecting day and nighttime views. Levels of light or glare may dominate the project landscape. These facilities would also require the use of nighttime lighting for safety and security reasons, which may also result in glare. Depending on specific locations of development, the views of motorists, residents, and recreationists may be affected.
- Hydroelectric Systems would involve modifications to existing pumped storage facilities or construction of new facilities that require use of natural or artificial reservoirs, a powerhouse, and water intake and discharge tunnels. New dams constructed solely for hydroelectric power are unlikely to occur, as they are driven by water supply needs rather than electricity demand.

Operation of geothermal, solid-fuel biomass, biogas, and small hydroelectric power generation facilities would not require the large areas of land required for wind- and solar-based facilities and would generally be conducted in buildings (see Impact 1.a for a description of these types of impacts). Operation of new facilities could be used during nighttime hours and could introduce new sources of nighttime lighting for operational safety and security. Glare from the surfaces of geothermal project facilities during the day may also occur.

Development of new facilities for the manufacture of zero- and near zero-emission vehicle-related equipment and infrastructure would be expected to occur in areas appropriately zoned; however, such facilities could conceivably introduce or increase the presence of visible artificial elements (e.g., heavy-duty equipment, new or expanded buildings, electric charging and hydrogen fueling stations) in areas of scenic importance, such as views from State scenic highways. The visual impact of such

development would depend on several variables, including the type and size of facilities, the distance and angle of view, visual prominence (including presence of visual obstructions), and placement in the landscape. In addition, facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime lighting for safety and security purposes. This impact would be potentially significant.

#### **b) Low Carbon Fuel Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, ethanol, hydrogen, alternative jet fuel (AJF<sup>13</sup>), renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-fueled, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

Projects that would require the use of biomass, such as the collection of forest materials or agricultural wastes for cellulosic ethanol, renewable gasoline, renewable diesel, AJF, and renewable propane facilities, are likely to involve regular silvicultural, forest thinning and harvest, plantation of oilseed crops, and farmland soil preparation activities. These activities could result in areas where an unnatural appearance would be created that is out of character with adjacent forested areas and that could be visible from residences, highways and roadways, and recreational areas. However, this appearance would be similar in character to activities already typical of these environments (e.g., soil maintenance for agricultural lands, and fuel treatment and

---

<sup>13</sup> Alternative jet fuel (AJF) is also sometimes referred to as sustainable aviation fuel (SAF).

timber harvest procedures). As a result, fuel pathways associated with biomass feedstocks would not be expected to substantially alter existing aesthetic resources.

However, development of new facilities, although expected to occur in areas appropriately zoned, could conceivably introduce or increase the presence of visible artificial elements (e.g., heavy-duty equipment, vegetation removal, new or expanded buildings, solar farms, wind turbines, and pipelines) in areas of scenic importance, such as views from State scenic highways. The visual impact of such development would depend on several variables, including the type and size of facilities, the distance and angle of view, visual prominence, and placement in the landscape. In addition, facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime lighting for safety and security purposes. This impact would be potentially significant.

### **c) Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with mechanical carbon dioxide removal and CCS actions include the modification of existing or new industrial facilities to capture carbon dioxide (CO<sub>2</sub>) emissions and construction of new infrastructure, such as pipelines, wells, and other surface facilities within or near the emitting facility, to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. Mechanical carbon dioxide removal and CCS actions may also result in increased transportation, such as truck, rail, and barge transit, to transport CO<sub>2</sub> from the industrial facilities to the sequestration sites. The transport distances and pipeline construction requirements for the captured CO<sub>2</sub> would vary depending on the locations of specific industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand will be met by increased generation, both on-site and off-site.

Development of new CCS facilities and infrastructure, although expected to occur in areas appropriately zoned, could conceivably introduce or increase the presence of visible artificial elements (e.g., heavy-duty equipment, vegetation removal, new or expanded buildings and pipelines) in areas of scenic importance, such as views from State scenic highways. The visual impact of such development would depend on several variables, including the type and size of facilities and infrastructure, the distance and angle of view, visual prominence, and placement in the landscape.

Development of direct air capture facilities could introduce new visual elements to a landscape, including large buildings coupled with compressed CO<sub>2</sub> gas storage tanks and extensive piping systems. While there are currently three direct air capture facilities in the world, this technology is evolving. The design of future facilities could vary considerably, ranging from tall, multi-story structures to low-profile structures covering a potentially large area of land. These visual elements, which are industrial in



nature, could introduce conceivably adverse visual elements to a natural landscape. This impact would be potentially significant.

#### **d) Improvements to Oil and Gas Facilities Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses include modifications to existing facilities, such as the installation of vapor recovery systems, installation of low-bleed or zero-bleed pneumatic devices, and replacement of leaking equipment, could involve construction activities related to installing or replacing gathering lines, piping, flanges, valves, and similar features associated with oil and gas facilities. Compliance responses at natural gas transmission and distribution pipelines and related equipment and facilities may result in an increase in the rate at which repairs and replacements are made. Emissions from pipeline and compressor blowdowns may be reduced by implementing methods such as using portable compressors; using plugs to isolate sections of pipelines; flaring vented gas; installing ejectors (nozzles that can capture blowdown gas and route it to a useful outlet); routing collected vapors to fuel gas systems, sales gas lines, microturbines, or underground injection wells; and installing static seals on compressor rods. Any pipeline replacement or reconstruction activities, leak surveys, and methods to reduce blowdown emissions would typically occur within the footprint of existing oil and gas facilities.

These features are consistent with the existing visual character of an oil and gas facility. Implementation of the 2022 Scoping Plan would potentially result in installation of new low-NO<sub>x</sub> (oxides of nitrogen) combustion devices. The flame on a low-NO<sub>x</sub> combustion device is completely enclosed; therefore, these devices would not generate new sources of light to an area or generally be inconsistent with the existing character of an individual facility. For facilities currently operating a vapor control device (e.g., a flare with an open flame) that must process additional vapors as a result of the 2022 Scoping Plan, the vapor control device may be required to be replaced with a new low-NO<sub>x</sub> combustion device (e.g., a device with a completely enclosed flame). Compliance with the 2022 Scoping Plan could result in a reduction of visible flares at oil and gas facilities that currently use flares, potentially improving both daytime and nighttime views, and resulting in a beneficial impact.

#### **e) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure

management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce biogas that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network. In some cases, collected manure could be transported to centralized digesters and potentially codigested with other feedstocks (such as food waste) for increased fuel production.

New or expanded alternative manure management systems or the construction of anaerobic digesters would occur within the boundaries of existing agricultural areas that currently support flush-water lagoon manure systems. 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, such as residents, motorists, and recreation users. Dairy farms are located throughout California, the majority of which exist in the Central Valley and coastal counties. Typically, agricultural sites are level areas of relatively large landholdings (e.g., hundreds of acres) that are separated from urban centers. Dairy structures include a main dairy barn, residences and offices, shaded corrals, water tanks, ponds, and lagoons. Conversion of flush-water manure management to scrape or other alternative manure management practices at a dairy could require alterations to barns to support the use of scrape or vacuum equipment. Installation of an anaerobic digester would require construction of digesters, buildings, biogas upgrading and conditioning equipment, onsite electricity generation equipment, and electricity or natural gas delivery equipment. During these activities, the presence of construction equipment, as well as activities associated with remodeling of barns, could alter the visual character of a site by introducing features that may not be expected. This impact would be potentially significant.

#### **f) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would

require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch.

Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and

mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

The proposed actions would impact aesthetic appearance of forests, shrublands, and grasslands through the removal of vegetation, though varying amounts of vegetation will be retained. Varying degrees of temporary degradation of public views could result during active implementation of the proposed vegetation treatment activities. Under certain management actions where not all the existing vegetation would be cleared and large trees would remain, the vividness, intactness, and unity of views would remain, and the presence of the fuel breaks would not substantially affect views from a scenic vista or from a State scenic highway. Herbicide application and prescribed herbivory would occur intermittently, and the location of these activities would move throughout a project site. These types of activities would not block any views, dominate a viewshed, or substantially disrupt views from a scenic vista or State scenic highway. Equipment and vehicles associated with manual and mechanical treatments and prescribed burning could be visible to public viewers at scenic vistas, along a State scenic highway, or at other public viewpoints. However, activities would likely be temporary, lasting from 1 week to 6 months, and avoiding staging of equipment/materials within the viewshed<sup>14</sup> would avoid and minimize visual impacts related to the presence of treatment equipment. In addition, smoke from prescribed burns would not result in substantial short-term aesthetic impacts, because burning would be temporary, lasting up to 1 week but typically only 1 day, and so preparation of a smoke management and a burn plan<sup>15</sup> that prescribe the conditions under which prescribed burning can occur to reduce the generation and visibility of smoke (BOF 2019).

Long-term effects on aesthetics would occur from implementing forest, shrubland, and grassland management actions. Because ecological restoration would be designed to improve habitat quality and create a landscape appearance closer to natural conditions, it would result in long-term beneficial visual impacts. WUI fuel reduction and defensible space activities would reduce vegetation near communities and structures. However, it would not generally be noticeable, because sufficient vegetation would remain and could aid in the visual transition from wildlands to an urban environment. Prescribed burning in the grass fuel type would result in the most substantial visual change because grasses would turn a dark charcoal/black color directly following prescribed burning. However, grasses would regrow during the next growing season(s), and wildfire and prescribed burning currently occur throughout the State; thus, burned vegetation of all types is already occasionally visible. Public notifications<sup>16</sup> prior to commencement can occur to raise awareness of potential changes in aesthetics resulting from prescribed burning.

---

<sup>14</sup> See CalVTP Standard Project Requirement AES-2.

<sup>15</sup> See CalVTP Standard Project Requirement AQ-2 and AQ-3.

<sup>16</sup> See CalVTP Standard Project Requirement AD-4 and REC-1.

In the case of fuels reduction treatments, such as shaded fuel breaks, because not all the existing vegetation would be cleared, and large trees would remain, the vividness, intactness, and unity of views would remain, and the presence of the fuel breaks would not substantially affect views from a scenic vista or from a State scenic highway. Vegetation thinning and edge feathering<sup>17</sup> as well as vegetation screening<sup>18</sup> can be incorporated into vegetation treatments to break up or screen linear edges of a clearing and screen views from public viewpoints as feasible. With implementation of these mitigation measures, these treatment types should not result in a long-term or substantial degradation of views from a scenic vista, substantially damage resources visible from a State scenic highway, or degrade the existing visual character and quality of a site (BOF 2019).

Implementation of nonshaded fuel breaks would remove all the vegetation in a treatment area and could be visible from scenic vistas, State scenic highways, or other public viewpoints. Because nonshaded fuel breaks remove all vegetation, this treatment type could lead to a long-term adverse visual change in the landscape by resulting in a contrasting linear element in an otherwise natural environment. This change would constitute substantial degradation of views from a scenic vista or the visual character and quality of public views, or substantial damage to scenic resources visible from a State scenic highway to the extent that a nonshaded fuel break is visible to the public (BOF 2019).

#### **g) Organic Waste Diversion and Composting Actions**

As described in detail in Chapter 2, reducing landfill disposal of organic waste to less than 6 million short tons by 2025, as required under Senate Bill (SB) 1383, would result in the development of new or expanded organic material composting, digestion and/or other facilities throughout the state to recover and recycle the diverted organic waste. It is anticipated that new facilities would be sited at or near existing waste disposal sites or landfills or in urban areas zoned for industrial or solid waste-handling facilities.

Organic waste diversion and composting actions associated with implementation of the 2022 Scoping Plan would be conducted consistent with SB 1383 Short-Lived Climate Pollutant (SLCP) Regulation, a program developed by the California Department of Resources Recycling and Recovery (CalRecycle) to reduce disposal of organic waste by 50 percent of 2014 levels by 2020 and 75 percent by 2025. Materials that cannot be effectively recovered for human consumption would be directed to organic waste recovery or recycling facilities to make useful products, including compost, fertilizer, fuel, energy, or other products (e.g., paper). These facilities may be developed at existing landfills, other waste management sites, or at new stand-alone sites. Because SB 1383 represents State policy regarding organic waste diversion and

---

<sup>17</sup> See CalVTP Standard Project Requirement AES-1.

<sup>18</sup> See CalVTP Standard Project Requirement AES-3.

composting actions, it can be reasonably assumed that these types of activities associated with the 2022 Scoping Plan would be consistent with the SB 1383 SLCF Regulation EIR.

New or expanded organic waste-handling facilities developed in response to the 2022 Scoping Plan would be colocated at or near existing solid waste facilities or located at new stand-alone site in areas zoned for industrial or solid waste-handling facilities; it is more likely that new facilities would be colocated at existing solid waste-handling facilities in urbanized areas. Edible food recovery and community-scale composting facilities are likely to be located in urban areas. Existing solid waste-handling facilities are largely located in areas with industrial or solid waste zoning that takes into account the scenic character of such uses. Facilities associated with future compliance responses would not substantially conflict with applicable zoning or other regulations governing scenic quality.

Substantial light or glare that would adversely affect day or nighttime views could be generated by construction activities or during operation of new or expanded organic waste-handling facilities developed in response to the 2022 Scoping Plan. Construction activities would not be anticipated to result in new sources of substantial light or glare, because of the short-term and temporary nature of those activities. However, operation of new or modified facilities in rural areas could include infrastructure containing reflective surfaces and could require safety lighting that would be noticeable in those areas. Implementation of new development would result in potentially significant impacts related to permanent new sources of substantial light or glare that would adversely affect day or nighttime views in areas near specific organic waste-handling facilities. This impact would be potentially significant.

New organic waste recovery and processing facilities located in agricultural or other areas not previously developed for solid waste, agricultural, or wastewater treatment facilities could degrade public views from a scenic vista, degrade the visual character or quality of public views of the site, or disrupt views from a State scenic highway. The long-term operational impacts on scenic vistas, the visual character or quality of public views, or views from a State scenic highway associated with operation of facilities in response to the 2022 Scoping Plan would be potentially significant.

#### **h) Afforestation, Urban Forestry Expansion, Avoided Natural and Working Land Use Conversion, and Wetland Restoration Actions**

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with afforestation, urban forestry expansion, and wetland restoration actions would involve planting vegetation and restoring wetland in California. Trees and other vegetation (e.g., hedgerows) would be planted in urban areas, within cropland (as hedgerows, wind/shelterbelts, alley crops), along waterways in riparian zones within croplands, and around cultivated areas. Wetland restoration actions would occur on agricultural lands in the Sacramento-San Joaquin Delta as well

as in other coastal wetlands and mountain meadows. Avoided conversion of natural and working lands to another land use is also anticipated.

These anticipated actions could result in an increase in construction activities related to wetland restoration and an increase in tree maintenance (e.g. pruning/trimming, fertilizing, tree felling, chipping/grinding, biomass transportation) within urban areas and croplands. Equipment used for these activities include tractors, backhoes, aquatic craft, portable chippers/grinders, and chip trucks.

Planting of trees and other vegetation in urban areas, on cropland, and along waterways could alter some localized views. However, vegetation, particularly trees and hedgerows, would be consistent with the general character of these land use types, are typical within urban and agricultural settings, and often are considered features that would enhance the long-term quality of a scenic vista and visual character.

With regard to wetland restoration actions occurring on agricultural lands, agricultural lands and wetland areas are both generally regarded as important aesthetic resources within the Sacramento-San Joaquin Delta and in other wetland locations throughout the state. Thus, restoring wetlands on agricultural lands, both being important visual resources, would not constitute a substantial degradation of a scenic vista, visual character, or quality. Furthermore, agriculture and wetland conservation areas are both prominent throughout the Sacramento-San Joaquin Delta; thus, wetland restoration actions would not substantially change the scenic quality or character of the Sacramento-San Joaquin Delta. Therefore, these activities would have a less than significant impact on the environment.

#### **i) Offshore Renewable Wind Actions**

As described in more detail in Chapter 2, offshore renewable wind turbine projects would be installed and operated to support the decarbonization of the electrical sector. Turbines could be located within both shallow and deeper portions of the oceans and would be supported by floating platforms. Turbines would be approximately 350 to 500 feet high, on average, and would be configured to optimize capture of wind energy. Energy captured by these turbines is transmitted to floating substations, which collect and stabilizes the power generated by the turbines, and is then transmitted to the onshore power grid.

While the majority of offshore wind development is expected to develop beyond three nautical miles (most likely 20+ miles) from the coast in federal waters, there are currently two smaller projects proposed for state waters. Applications for these projects are currently being considered at the California State Lands Commission within Humboldt County, Morro Bay, and Diablo Canyon. Operation of these wind turbines could cause scenic impacts to previously undisturbed areas of high visual quality depending on the proximity of wind farms to the coast (i.e., the horizon is

typically the visible area from shore, approximately 3 miles, though given wind turbines' height, they are visible well beyond 3 miles). At this time, it is anticipated that new wind turbines would be concentrated in five major locations (two leases in the North Coast Region and three leases in the Central Coast Region) where meteorological conditions are most suitable to generate wind energy. Coastal areas receiving wind energy may require the construction and operation of new land-based electrical infrastructure to transmit electricity regionally and throughout the state.

New turbines and their associated components (e.g., floating and land-based substations, array cables, electrical infrastructure) have the potential to degrade public views from a scenic vista, degrade the visual character or quality of public views of the site, or disrupt views from a State scenic highway such as Highway 1 along the California Coast. In addition, lighting on offshore renewable wind farms may include lighting that would affect nighttime views from shore or within marine vessels. The potential for this to occur is primarily within State waters, defined as 3 miles from shore, though given their height wind turbines can be visible well beyond 3 miles. The long-term operational impacts on scenic vistas, the visual character or quality of public views, or views from a State scenic highway associated with operation of facilities in response to the 2022 Scoping Plan would be potentially significant.

### Summary of Impact Significance Determination

Implementing the improvements to oil and gas facilities (e.g., reduction in use of visible flares) actions would potentially result in a beneficial impact, and implementing afforestation, urban forestry expansion, and wetland restoration actions would result in a less than significant impact. Implementing the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; mechanical carbon dioxide removal and CCS actions; manure management actions; forest, shrubland, and grassland management actions; organic waste diversion and composting actions; and offshore renewable wind actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on aesthetic resources.

### Mitigation Measures

Table 4-1 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-1: Mitigation Measures Applicable to Long-Term Operational Impacts on Aesthetic Resources**

Actions	Mitigation Measure
Increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; mechanical carbon dioxide removal and carbon capture and sequestration actions; and manure	1.b.1



management actions; offshore renewable wind actions	
Forest, shrubland, and grassland management actions	1.b.2a and 1.b.2b
Organic waste diversion and composting actions	1.b.3

***Mitigation Measure 1.b.1: Implement Mitigation Measure 1.a***

***Mitigation Measure 1.b.2a: Implement CalVTP PEIR Mitigation Measure AES-3***

***Cal VTP EIR Mitigation Measure AES-3: Conduct Visual Reconnaissance for Non-Shaded Fuel Breaks, and Relocate or Feather and Screen Publicly Visible Non-Shaded Fuel Breaks***

The project proponent will conduct a visual reconnaissance of the treatment area prior to implementing non-shaded fuel breaks to observe the surrounding landscape and determine if public viewing locations, including scenic vistas, public trails, and State scenic highways, have views of the proposed treatment area. If none are identified, the non-shaded fuel break may be implemented without additional visual mitigation.

If the project proponent identifies public viewing points, including heavily used scenic vistas, public trails, recreation areas, and State scenic highways with lengthy views (i.e., longer than a few seconds) of a proposed non-shaded fuel break treatment area, the project proponent will, prior to implementation, attempt to identify any feasible change in location of the fuel break to reduce its visibility from public viewpoints. If no feasible location changes exist that would reduce impacts on public viewers and achieve the intended wildfire risk reduction objectives of the proposed non-shaded fuel break, the project proponent will implement, where feasible, a shaded fuel break rather than a non-shaded fuel break, if the shaded fuel break would achieve the intended wildfire risk reduction objectives. With the shaded fuel break, the project proponent will thin and feather adjacent vegetation to break up the linear edges of the fuel break and strategically preserve vegetation at the edge of the fuel break, as feasible, to help screen public views and minimize the contrast between the fuel break and surrounding vegetation.

***Mitigation Measure 1.b.2b: Implement CalVTP PEIR SPRs Applicable to Aesthetic Resources***

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference herein (BOF 2019):

- SPR AD-3: Consistency with Local Plans, Policies, and Ordinances
- SPR AD-4: Public Notifications for Prescribed Burning
- SPR AES-1: Vegetation Thinning and Edge Feathering

- SPR AES-2: Avoid Staging within Viewsheds
- SPR AES-3: Provide Vegetation Screening
- SPR AQ-2: Submit Smoke Management Plan
- SPR AQ-3: Create Burn Plan
- SPR REC-1: Notify Recreational Users of Temporary Closures

***Mitigation Measure 1.b.3: Implement SB 1383 SLCP Regulation EIR Mitigation Measures 3.1-2 and 3.1-4***

***SB 1383 SLCP Regulation EIR Mitigation Measure 3.1-2***

Consideration of a project's long-term aesthetic effects is typically subject to the purview of a local jurisdiction, based on its planning policies, ordinances, and/or design guidelines. Conditions of approval in a solid waste facility permit would not extend to regulating aesthetic impacts on a scenic vista, the visual character, or the quality of a public view of scenic resources from a State scenic highway system. Site-specific project impacts and mitigation measures would be identified during a project's local review process. A proposed project would be approved by a local government and potentially another permitting agency that can apply conditions of approval.

The following mitigation measures can and should be required by agencies with project approval authority to avoid or minimize impacts on aesthetic resources:

- Proponents of new facilities constructed as a result of reasonably foreseeable compliance responses would coordinate with State or local land use agencies to seek entitlements for development. This process would involve 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 development project.
- All feasible mitigation identified during the environmental review to reduce or substantially lessen the potentially significant scenic or aesthetic impacts of the project would be implemented. Actions may include facility or equipment siting within a property, visual screening by vegetation, fencing or walls to prevent views of operating areas, exterior paint colors that blend with landscapes, and lowest feasible height of visible equipment and structures.
- The color and finish of the surfaces of all project structures and buildings visible to the public would be carried out to (1) minimize visual intrusion and contrast by blending with the landscape and (2) comply with local design policies and ordinances. The project proponent would submit a surface treatment plan to the lead agency for review and approval.
- All operation and maintenance areas would be kept clean and tidy, areas where construction materials and equipment are stored would be screened from view or located in areas generally not visible to the public, and disturbed soil would be revegetated, where feasible.

### ***SB 1383 SLCP Regulation EIR Mitigation Measure 3.1-4***

Consideration of a project's long-term aesthetic effects is typically subject to the purview of a local jurisdiction, based on its planning policies, ordinances, and/or design guidelines. Conditions of approval in a solid waste facility permit would not extend to regulating issues such as the potential for new sources of light and glare to affect day or nighttime views. Site-specific, project impacts and mitigation measures would be identified during a project's local review process. A proposed project would be approved by a local government and potentially another permitting agency that can apply conditions of approval.

The following mitigation measures can and should be required by agencies with project approval authority to avoid or minimize light and glare impacts:

- Proponents of new facilities constructed as a result of reasonably foreseeable compliance responses would coordinate with State or local land use agencies to seek entitlements for development. This process would involve 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 development project.
- All feasible mitigation identified during the environmental review to reduce or substantially lessen the potentially significant light and glare impacts of the project would be implemented. Actions may include low-height lighting design, window glazing design, or minimized reflective surfaces.
- The color and finish of the surfaces of all project structures and buildings visible to the public would be carried out to (1) minimize glare and (2) comply with local design policies and ordinances. The project proponent would submit a surface treatment plan to the lead agency for review and approval.
- 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.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measures 1.b.1, 1.b.2a, 1.b.2b, and 1.b.3, significant impacts on aesthetics could occur as a result of implementing increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; mechanical carbon dioxide removal and CCS

actions; manure management actions; forest, shrubland, and grassland management actions; organic waste diversion and composting actions; and offshore renewable wind actions.

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

## 2. Agriculture and Forest Resources

### ***Impact 2.a: Short-Term Construction-Related Effects on Agriculture and Forest Resources***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments,, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

Short-term construction-related impacts on agriculture and forestry resources may occur. New or expanded manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, other electricity generation facilities, and infrastructure, as well as increased lithium mining would likely occur in areas of compatible zoning (e.g., industrial). While it is reasonable

to anticipate that land use policies controlling the location of new facilities would generally avoid conversion of important agricultural land, the potential cannot be entirely dismissed. Thus, there exists the potential that Prime Farmland, Unique Farmland, Farmland of Statewide Importance, land under a Williamson Act contract, and land designated forestland or timberland could be converted to industrial uses. Construction of new offshore wind energy projects would be located in oceanic environments and would not be likely to affect the availability of farmland or forestry resources.

In response to proposals for development of renewable energy projects on important farmland, local governments and State agencies have faced the challenge of balancing competing public interests in conserving agricultural land and meeting goals for expanding renewable energy generation. Utility scale solar and wind energy facilities proposed to be located on Important Farmland and/or property under Williamson Act contracts have resulted in land use conversions. In 2013, a California appellate court upheld an EIR's evaluation of agricultural land impact and mitigation for a proposed solar project on grazing land and Williamson Act contract land where a contract cancellation was proposed. The mitigation measures adopted by the lead agency in the case included agricultural conservation easements and measures to restore the site after conclusion of the project's useful life. The court decision confirmed that it was appropriate for the local lead agency to consider the State's interest in increasing renewable energy generation as a reason to permit the cancellation of a Williamson Act contract (*Save Panoche Valley v. San Benito County*, 2013, 217 Cal.App.4th 503). Consequently, conversion of Important Farmland could occur in response to the measures in the 2022 Scoping Plan. Because CARB has no land use authority, mitigation is not within its purview to reduce potentially significant impacts to a less than significant level. While compliance with existing land use policies, ordinances, and regulations would serve to moderate this impact, because of local priorities for protection of agricultural land, the record of recent project approvals in the State demonstrates that the impact has not been avoided. This impact would be potentially significant.

### **Impact Significance Determination**

Short-term construction-related effects on agriculture and forestry resources associated with implementation of the 2022 Scoping Plan would be potentially significant.

### **Mitigation Measures**

#### ***Mitigation Measure 2.a***

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

purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would 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 on agriculture and forestry resources include:

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

- 1:1. Preservation may include the purchase of agricultural conservation easement(s); purchase of credits from an established agricultural farmland mitigation bank; contribution of agricultural land or equivalent funding to an organization that provides for the preservation of Important Farmland.
- Participate in any agricultural land mitigation program, including local government maintained or administered, that provides equal or more effective mitigation than the measures listed.
  - Any mitigation for permanent conversion of forest land or timberland caused by facility construction or modification shall be completed prior to the issuance of a grading or building permit by providing the permitting agency with written evidence of completion of the mitigation. Mitigation may include but is not limited to permanent preservation of forest land or timberland of equal or better quality at a ratio of 1:1 or 1.5:1 because some lost ecological value may not be replaceable. Preservation may include purchase of easements or contribution of funds to a land trust or other agency.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 2.a, significant impacts resulting from conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Williamson Act conservation contracts, and forest land or timberlands could occur.

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

### ***Impact 2.b: Long-Term Operational-Related Effects on Agriculture and Forestry Resources***

As described in more detail in Chapter 2, operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and

working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on agriculture and forestry resources may be related to the low carbon fuels actions; manure management actions; forest, shrubland, and grassland management actions; agricultural actions; and afforestation, urban forestry expansion, and wetland restoration actions. Impacts related to actions not discussed below are addressed previously in the discussion of Impact 2.a. See Section 4.B for additional information related to the approach to the environmental impact analysis.

#### **a) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-fueled, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

Changes to cultivation of feedstock could change agricultural production in some areas or result in changes to crop types. Fuels used for transportation would be subject to carbon intensity (CI) evaluation under the Low Carbon Fuel Standard (LCFS) regulation to assess the direct and indirect greenhouse gas emissions over the fuel's life cycle. The direct emissions that are a result of fuel production, transportation, distribution, and consumption are calculated for each step in the fuel pathway. Direct and indirect emissions that result from the change in land use or other market-mediated outcomes of fuel production or consumption are also evaluated and reflected in the fuel CI value. A fuel that is more likely to cause changes to land use would have a higher land use change (LUC) value, making it less attractive for use in complying with the LCFS regulation. However, while the models consider effects



related to land use changes, they do not explicitly prohibit expansion or changes to agricultural production, and increased feedstock production could alter the location and extent of fuel-based agricultural feedstock cultivation and production. Demand for feedstock could displace food-based production on agricultural land currently used for row crops, orchards, and grazing. This increased demand could potentially result in indirect land use changes where food-based agriculture could shift to other areas, thereby increasing pressure for conversion of rangeland, grassland, forests, and other uses to agriculture.

Because the LCFS program is market-driven, it is not possible to determine the exact locations where feedstocks may be cultivated. Feedstocks may be sourced from forest and agricultural resources and would be dependent on available quantities and location of processing facilities. The productivity is, in turn, governed by a wide variety of physiological factors, including genetic diversity, agronomic practice, and environmental factors, such as soil quality, water availability, and climate. Thus, predicting the amount of land required to produce enough low-carbon biofuel to affect existing agricultural practices could result in variable conclusions. In addition, the use of residual biomass from agricultural, forestry, and municipal activities decreases the amount of land needed for energy crops. Likewise, the development of energy crops adapted to be highly productive on lands marginal for other agricultural uses could reduce the potential impact of biofuel production on non-fuel crop production. Decisions regarding land use and feedstock choices would have an impact on how much biofuel could be produced in each area. However, because the recommended use of biofuels could change the production of certain agricultural feedstocks to produce low-carbon biofuels, such a change could contribute to potential land use changes that could adversely affect agriculture and forestry resources. This impact would be potentially significant.

#### **b) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce RNG that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized

upgrading and compression facilities for injection into the common carrier natural gas pipeline network. In some cases, collected manure could be transported to centralized digesters and potentially codigested with other feedstocks (such as food waste) for increased fuel production.

Implementation of the reasonably foreseeable compliance responses associated with the methane reduction measures related to modification of facilities (e.g., changes in manure management practices and installation of anaerobic digesters) would be anticipated to occur within areas currently zoned for agricultural purposes. Installation of an anaerobic digester would require construction of digesters, buildings, biogas upgrading and conditioning equipment, onsite electricity generation equipment, and electricity or natural gas delivery equipment. Therefore implementation of the reasonably foreseeable compliance responses could result in conversion of agricultural land to non-agricultural uses. Pasturing of cattle is likely to occur in areas designated for grazing; however, if it were to occur on Important Farmland, it would not require conversion of agricultural land to non-agricultural uses. Thus, conversion of Important Farmland (i.e., Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) would not be anticipated for these types of compliance responses. Likewise, these compliance responses would not be expected to affect, or be located on, forest land. This impact would be potentially significant.

### **c) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch.

The proposed actions would include treatments such as fuels reduction and ecological restoration treatments using various methods, which would inherently retain some vegetation within treatment areas. Some treatment, such as establishing a non-shaded fuel break, would require complete removal of vegetation within the limited area of the fuel break. Untreated vegetation surrounding the fuel break within forest land would remain intact. Other treatments would generally be focused on restoring forest health and improving ecological resilience to climate change impacts through removal of certain tree species and size classes, depending on local conditions and objectives. Although treatment activities would alter forest land through vegetation removal, forest health and resilience would generally be improved through the proposed activities and the area would generally support 10 percent of native tree cover, thereby maintaining consistency with the definition of forest land as defined by PRC Section 12220(g). Within WUI areas, vegetation surrounding structures would be cleared to varying distances to create defensible space. Areas closer to structures would be cleared more intensively, but would retain some vegetation. Treatment activities under the 2022 Scoping Plan would not result in the loss of forest land or conversion of forest land to a non-forest use. This impact would be less than significant.

#### **d) Agricultural Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses that address practices related to soil conditions include encouraging no till or reduced till practices, planting cover crops, transitioning to organic agriculture, and applying compost. Implementing certain soil management practices could increase the use of on-farm mechanical equipment (e.g., compost application, mulching, and whole orchard recycling). Additionally, compost application would require increased use of trucks to transport the compost. Other types of practices (e.g., cover crops, windbreak/shelter belt establishment, tree/shrub establishment) may require increased water use to establish and or/maintain plant or trees.

Changes to agricultural practices would not affect land uses within the state and therefore would not result in the conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, land under a Williamson Act contract, or land designated forest land or timberland to other uses. The activities under the 2022 Scoping Plan would generally increase soil health and climate resilience through beneficial management practices to add in nutrients or diversify flora. This impact would be less than significant.

#### **e) Afforestation, Urban Forestry Expansion, Avoided Natural and Working Land Use Conversion, and Wetland Restoration Actions**

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with afforestation, urban forestry expansion, and wetland restoration actions would involve planting vegetation and restoring wetland in California. Trees and other vegetation (e.g., hedgerows) would be planted in urban areas, within cropland (as hedgerows, wind/shelterbelts, alley crops), along waterways

in riparian zones within croplands, and around cultivated areas. Wetland restoration actions would occur on agricultural lands in the Sacramento-San Joaquin Delta as well as in other coastal wetlands and mountain meadows. Avoided conversion of natural and working lands to another land use is also anticipated.

These anticipated actions could result in an increase in construction activities related to wetland restoration and an increase in tree maintenance (e.g. pruning/trimming, fertilizing, tree felling, chipping/grinding, biomass transportation) within urban areas and croplands. Equipment used for these activities include tractors, backhoes, aquatic craft, portable chippers/grinders, and chip trucks. Planting of trees and other vegetation within urban areas would not affect forest or agricultural land, because it would occur within developed areas. Agricultural lands and forest lands do not coincide with urban areas; thus, urban forestry expansion would not affect agricultural or forest resources. Avoided conversion of NWLs would retain lands in their current use and therefore would not affect agricultural or forest resources.

Afforestation within cropland and around cultivated areas could decrease agricultural production rates through reducing the area of arable land. In circumstances in which afforestation occurs on cropland, conversion of prime farmland to non-agricultural uses would be considered a potentially significant impact. In addition, wetland restoration project could permanently convert prime farmland to non-agricultural uses. This impact would be potentially significant.

### Impact Significance Determination

Implementing the forest, shrubland, and grassland management actions, and organic waste diversion and composting actions would result in less than significant long-term operational impacts on agriculture and forestry resources. Implementing the low carbon fuels actions, manure management actions and afforestation, urban forestry, avoided natural and working land use conversion and wetland restoration actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on agriculture and forestry resources.

### Mitigation Measures

Table 4-2 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-2: Mitigation Measures Applicable to Long-Term Operational Impacts on Agriculture and Forestry Resources**

Actions	Mitigation Measure
Low carbon fuels actions, manure management actions, and afforestation, urban forestry, avoided natural and working land use conversion and wetland restoration activities	2.b

***Mitigation Measure 2.b: Implement Mitigation Measure 2.a***

**Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 2.b, significant impacts on agriculture and forestry resources could occur as a result of implementing the low carbon fuels actions and afforestation, urban forestry, and wetland restoration actions.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval, this EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational-related effects on agriculture and forestry resources associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

**3. Air Quality**

***Impact 3.a: Short-Term Construction-Related Effects on Air Quality***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects and associated pipelines and infrastructure.

Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries,

construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

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

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

Generally, it is expected that during the construction phase for any facilities, criteria air pollutants and toxic air contaminants could be generated from a variety of activities and emission sources. These emissions would be temporary and would occur intermittently depending on the intensity of construction on a given day. Site grading and excavation activities would generate fugitive particulate matter (PM) dust emissions, which is the primary pollutant of concern during construction related to earth-moving activities. Fugitive PM dust emissions (e.g., respirable particulate matter [PM<sub>10</sub>] and fine particulate matter [PM<sub>2.5</sub>]) vary as a function of several parameters, such as soil silt content and moisture, wind speed, acreage of disturbance area, and the intensity of activity performed with construction equipment. Exhaust emissions from off-road construction equipment, material delivery trips, and construction worker-commute trips could also contribute to short-term increases in PM emissions, but to a lesser extent. It is probable that transport of light equipment and personnel for construction activities would take place using light-duty trucks, while transport of heavy equipment or bulk materials would be hauled in heavy-duty trucks. Exhaust emissions from construction-related mobile sources also include reactive organic gases

(ROG) and oxides of nitrogen (NO<sub>x</sub>). These emission types and associated levels fluctuate greatly depending on the type, number, and duration of use for the varying pieces of equipment. CARB implements several regulations with the purpose of reducing NO<sub>x</sub>, PM, and imposing limits on idling from in-use vehicles and equipment, including: the Truck and Bus Regulation, the Regulation for In-Use Off-Road Diesel Fueled Fleets, and the Portable Engine Airborne Toxic Control Measure. Much of the equipment used during the construction phase would be subject to these regulations.

The site preparation phase of construction typically generates the most substantial emission levels because of the on-site equipment and ground-disturbing activities associated with grading, compacting, and excavation. Site preparation equipment typically includes 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 is expected that the primary sources of construction-related emissions would be soil disturbance- and equipment-related activities (e.g., use of backhoes, bulldozers, excavators, and other, related equipment). Based on typical emission rates and other parameters for above-mentioned equipment and activities, construction activities could result in hundreds of pounds of daily NO<sub>x</sub> and PM 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, short-term construction-related activities associated with implementation of new, or amended, regulations and/or incentives could generate levels that conflict with applicable air quality plans, exceed or contribute substantially to an existing or projected exceedance of State or national ambient air quality standards, or expose sensitive receptors to substantial pollutant concentrations.

Construction of offshore wind energy projects could generate exhaust emissions from the operation of vehicles, vessels and helicopters accessing construction site as well as from the use of heavy-duty construction equipment. The quantities of pollutants would be small in relation to other pollution sources in California; however, given the meteorological characteristics of California (i.e., wind blows predominantly from the west to the east across the state), these pollutants could be transported on land and could contribute to regional air quality depending on the location.

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

## **Impact Significance Determination**

Short-term construction-related air quality impacts associated with the 2022 Scoping Plan would be potentially significant.

## **Mitigation Measures**

### ***Mitigation Measure 3a***

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 on 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 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.



### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 3.a, significant impacts on air quality 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 Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related air quality effects resulting from compliance responses associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

### ***Impact 3.b: Long-Term Operational-Related Effects on Air Quality***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

As detailed in Chapter 2, several objectives of the proposed 2022 Scoping Plan aim to reduce the long-term generation of criteria air pollutants and precursors and the exposure to TACs either directly (e.g., ensure, to the extent feasible, that activities undertaken pursuant to the measures complement, and do not interfere with, efforts to achieve and maintain national and California AAQS and to reduce TAC emissions); or indirectly (e.g., pursue actions and outcomes covering the State's GHG emissions in furtherance of executive and statutory direction to continue progress reducing GHG emissions to at least 40 percent below 1990 levels by 2030, at least 80 percent below 1990 levels by 2050, and achieve carbon neutrality no later than 2045; continue actions such that 100 percent of in-State sales of new passenger cars and trucks are zero-emission by 2035, 100 percent of medium- and heavy-duty vehicles in the State are zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks, and transition off-road vehicles and equipment to 100 percent zero-emission by 2035 where feasible). The 2022 Scoping Plan was developed to achieve carbon neutrality by 2045 through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy which also has criteria air pollutant and precursor benefits alongside reducing the exposure of sensitive receptors to TAC emissions. In addition, implementation of natural and working lands management strategies to mitigate and adapt to climate change will result in air quality and health benefits.

### **AB 32 GHG Inventory Sectors**

A statewide air quality and public health analysis was conducted for the AB 32 GHG Inventory Sectors using an integrated modeling approach to quantify and value the air pollution-related public health benefits of the Proposed Scenario to the Reference Scenario. Using output from the PATHWAYS model, projections of pollutant emissions to 2045 were developed for stationary, area, and mobile source emissions using a detailed 2020 base year CARB pollutant emissions inventory.<sup>19</sup> Further, the emissions were processed, including for where and when they occur in California, using the Sparse Matrix Operator Kernels Emissions (SMOKE) model. Next, emission changes were translated into impacts on atmospheric pollution levels, including ground-level ozone and PM<sub>2.5</sub>, using an advanced photochemical air quality model called the Community Multiscale Air Quality (CMAQ) model that accounts for atmospheric chemistry and transport. The months of July and January were chosen for assessment as the conditions during these months typically result in the highest concentrations of ozone and PM<sub>2.5</sub>, and allow for a comparison of the maximum air quality impact the Proposed Scenario may achieve. Health benefits were estimated using the U.S. Environmental Protection Agency's BenMAP model to translate pollutant changes into avoided incidence of mortality, hospital admissions, emergency room visits and other

---

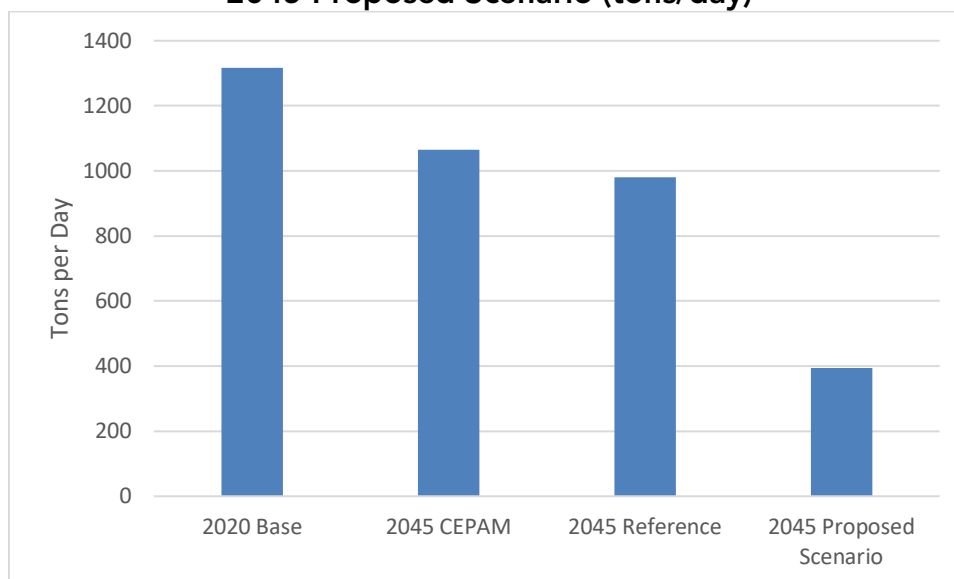
<sup>19</sup> 2020 CARB planning inventory (CEPAM2019v1.02).

outcomes as a result of reduced exposure to ozone and PM<sub>2.5</sub>. Additional detail about the models, assumptions, and methodology are included in the 2022 Scoping Plan.

### **Emissions**

The Proposed Scenario achieves significant air pollutant emission reductions in 2045 from the Reference Scenario due to the measures impacting technologies, fuels, and energy demands within AB 32 GHG Inventory Sectors. The following tables show the air quality benefits resulting from the Proposed Scenario.<sup>20</sup> Table 4-3 provides the total reductions in NO<sub>x</sub>, PM<sub>2.5</sub>, and ROG for January and July 2045 from the Reference Scenario. The total NO<sub>x</sub> emissions for the 2020 base year inventory, the 2045 Reference, and 2045 Proposed Scenario is shown in Figure 4-1. Even under a business-as-usual trajectory, emissions are reduced from current levels by 26 percent in the 2045 Reference Scenario, demonstrating the impact of current regulations and trends in the AB 32 GHG Inventory Sectors. From the Reference Scenario, the Proposed Scenario achieves reductions in NO<sub>x</sub> of 60 percent.

**Figure 4-1: Total NO<sub>x</sub> Emissions for the 2020 Base Year, 2045 Reference, and 2045 Proposed Scenario (tons/day)**



<sup>20</sup> As stated in Chapter 2 above, the proposed modifications to the original draft 2022 Scoping Plan work together to make the Scoping Plan even more ambitious, achieving deeper reductions compared to the reference scenario (2021 conditions / CEQA baseline) across sectors. CARB has not yet completed the modeling to show these further reductions, and will include them in the final proposed Scoping Plan. There is no evidence to suggest that any of the revisions made to the Scoping Plan could lead to an increase in air pollutant or GHG emissions compared to the reference scenario.

Note: CEPAM is the California Emissions Projection Analysis Model.<sup>21</sup>

**Table 4-3: Total Reductions in NO<sub>x</sub>, PM<sub>2.5</sub>, and ROG in 2045 for the Proposed Scenario**

	Proposed Scenario in 2045	
	January	July
Reductions in NO <sub>x</sub> (tons/day)	578.9	578.6
Reductions in PM <sub>2.5</sub> (tons/day)	94.6	92.1
Reductions in ROG (tons/day)	197.1	257.9

---

<sup>21</sup> CEPAM starts with a base year, which is pulled from CEIDARS (<https://ww3.arb.ca.gov/ei/drei/maintain/dbstruct.htm>), and forecasts emissions for point and area sources using the most current growth and control data available at the time of the development of the model version. For mobile sources, CEPAM integrates the emission estimates from CARB's EMFAC and OFFROAD mobile source emission models to provide a comprehensive anthropogenic emission inventory.

### ***Air Quality Improvement***

It is estimated that the emission reductions within the Proposed Scenario would subsequently achieve significant improvements in air pollution in California relative to the Reference Scenario, including reductions in concentrations of ground-level ozone and PM<sub>2.5</sub>. To demonstrate this, two different metrics (peak and population-weighted average reductions) for 24-hour average PM<sub>2.5</sub> and maximum daily 8-hour average (MD8H) ozone were quantified and shown in Table 4-4. Peak reductions represent the single largest reduction predicted for any one point – providing an estimate of the maximum impact on air pollution that one location may experience in California. Population-weighted average reductions provide a more refined estimate of how changes in pollution impact California populations by considering both the spatial distribution of reductions and the spatial distribution of populations to quantify changes in exposure. Within the context of the National Ambient Air Quality Standard (NAAQS) for 24-h PM<sub>2.5</sub> of 35 ug/m<sup>3</sup>, reductions in PM<sub>2.5</sub> in January are particularly large due to the conditions that result in higher PM<sub>2.5</sub> levels in the Reference Scenario. Similarly to PM<sub>2.5</sub>, reductions in peak MD8H ozone in July are large (i.e., 28 ppb) when considering the NAAQS is 70 parts per billion (ppb).

**Table 4-4: Estimated Air Quality Improvement from Peak and Population-Weighted Reductions in 24-hour PM<sub>2.5</sub> and Ozone for the Proposed Scenario**

	Proposed Scenario in 2045	
	January	July
Peak Reductions in 24-hour PM <sub>2.5</sub> (ug/m <sup>3</sup> )	-14.9	-5.9
Population-weighted Reductions in 24-hour PM <sub>2.5</sub> (ug/m <sup>3</sup> )	-5.4	-1.8
Peak Reductions in MD8H Ozone (ppb)	N/A	-27.9
Population-weighted Reductions in MD8H Ozone (ppb)	N/A	-8.1

### ***Health Benefits***

The estimated health benefits associated with the reductions in pollutant exposure to PM<sub>2.5</sub> during January 2045 and to PM<sub>2.5</sub> and ozone in July 2045 are shown in Tables 4-5 and 4-6.

**Table 4-5: Avoided Incidence of Health Endpoints from Reduced Exposure to PM<sub>2.5</sub> during January 2045**

Endpoint	Pollutant	Proposed Scenario
Avoided Mortality, All Cause	PM <sub>2.5</sub>	236
Hospital Admissions, Alzheimers Disease	PM <sub>2.5</sub>	5,799
Hospital Admissions, Parkinsons Disease	PM <sub>2.5</sub>	559
Incidence, Lung Cancer	PM <sub>2.5</sub>	981
Incidence, Asthma Onset	PM <sub>2.5</sub>	22,963
Acute Myocardial Infarction, Nonfatal	PM <sub>2.5</sub>	121
Asthma Symptoms	PM <sub>2.5</sub>	268,079
Hospital Admissions, Cardiovascular	PM <sub>2.5</sub>	202
Emergency Room Visits, Cardiovascular	PM <sub>2.5</sub>	316
Hospital Admissions, Respiratory	PM <sub>2.5</sub>	32
Emergency Room Visits, Respiratory	PM <sub>2.5</sub>	447
Work Loss Days	PM <sub>2.5</sub>	96,060

**Table 4-6: Avoided Incidence of Health Endpoints from Reduced Exposure to PM<sub>2.5</sub> and Ozone during July 2045**

Endpoint	Pollutant	Proposed Scenario
Avoided Mortality, All Cause	PM <sub>2.5</sub>	177
Hospital Admissions, Alzheimers Disease	PM <sub>2.5</sub>	2,584
Hospital Admissions, Parkinsons Disease	PM <sub>2.5</sub>	226
Incidence, Lung Cancer	PM <sub>2.5</sub>	364
Incidence, Asthma Onset	PM <sub>2.5</sub>	8,778
Acute Myocardial Infarction, Nonfatal	PM <sub>2.5</sub>	41
Asthma Symptoms	PM <sub>2.5</sub>	92,699
Hospital Admissions, Cardiovascular	PM <sub>2.5</sub>	66
Emergency Room Visits, Cardiovascular	PM <sub>2.5</sub>	105
Hospital Admissions, Respiratory	PM <sub>2.5</sub>	10
Emergency Room Visits, Respiratory	PM <sub>2.5</sub>	153
Work Loss Days	PM <sub>2.5</sub>	32,911
Avoided Mortality, Respiratory	Ozone	155
Incidence, Asthma Onset	Ozone	1,394
Emergency Room Visits, Respiratory	Ozone	909

Endpoint	Pollutant	Proposed Scenario
Asthma Symptoms	Ozone	587,897
Hospital Admissions, Respiratory	Ozone	71

### **Natural and Working Lands**

For the natural and workings lands sector, CARB conducted a health analysis focused on PM<sub>2.5</sub> wildfire-related emissions for forests, shrublands, and grasslands. The higher level of management actions that reduces tree or shrub densities, protects large trees, reintroduces fire to the landscape, and diversifies species and structures in the Proposed Scenario results in the estimated decreased wildfire-related PM<sub>2.5</sub> emissions shown in Table 4-7.

**Table 4-7: Estimated Average Annual GHG and Criteria Pollutant Emissions for forests, grasslands, and shrublands relative to the Reference Scenario for the Proposed Scenario from 2025-2045**

Measure	GHG Reductions (MMTCO <sub>2e</sub> /year)	PM <sub>2.5</sub> Reductions (MT/year)
Forests/Shrublands/Grasslands	0.12	17,500

The PM<sub>2.5</sub> emissions reductions in Table 4-7 were used to understand potential health impacts using the incidence-per-ton (IPT) methodology to quantify the health benefits of emission reductions. Under the IPT methodology, changes in emissions are approximately proportional to the resulting changes in health outcomes. IPT factors are derived by calculating the number of health outcomes associated with exposure to PM<sub>2.5</sub> for a baseline scenario using measured ambient concentrations and dividing by the emissions of PM<sub>2.5</sub> or a precursor. To estimate the reduction in health outcomes, the emission reductions are multiplied by the IPT factor. For future years, the number of outcomes is adjusted to account for population growth.

CARB calculated the annual health endpoints associated with the wildfire emissions changes resulting from the implementation of management strategies on forests, shrublands, and grasslands. The annual health endpoints associated with emission reductions for the Proposed Scenario were estimated for the entire state of California. Table 4-8 compares the average annual health endpoints of wildfire emission reductions associated with the Proposed Scenario over the period 2025–2045.

**Table 4-8: Estimated average annual avoided incidence of hospital admissions, emergency room visits, and mortality relative to the Reference Scenario for the Proposed Scenario resulting from forest, shrubland, and grassland wildfire emissions**

<b>Health Endpoints from Forest, Shrubland, and Grassland Wildfire Emissions</b>	<b>Average Annual Avoided Incidence</b>
Hospital admissions from asthma	16
Hospital admissions from chronic obstructive pulmonary disease without asthma	14
Hospital admissions from all respiratory outcomes	47
Emergency room visits from asthma	115
Emergency room visits from all respiratory outcomes	311
Emergency room visits from all cardiovascular outcomes	116
All cause mortality	292

Overall, the implementation of the 2022 Scoping Plan is expected to considerably reduce emissions across the state, as set forth in detail in the 2022 Scoping Plan and, in this EA. These emissions reductions would lead to substantial net improved health outcomes across the state, as described in the 2022 Scoping Plan.

Implementation of actions associated with the outcomes outlined in the 2022 Scoping Plan would minimize wildfire PM<sub>2.5</sub> emissions and emissions associated with the AB 32 GHG Inventory Sectors and would assist the State in meeting the NAAQS and CAAQS both regionally and statewide. As discussed in the 2022 Scoping Plan, emission reductions resulting from the implementation of the actions associated with outcomes outlined in the plan 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 those actions.

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

### ***Impact 3.c: Long-Term Operation-Related Effects on Odor Effects***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on odors may be related to manure management actions; forest, shrubland, and grassland



management actions; and organic waste diversion and composting actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 3.a and Impact 3.b. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

#### **a) Manure Management Actions**

As described in more detail in Chapter 2, manure management at dairies typically involves flushing and/or scraping manure into on-site storage ponds or stockpiles. Manure in these storage ponds and stockpiles naturally undergoes decomposition and releases odorous compounds (e.g., ammonia and hydrogen sulfide). Many of the state's existing dairies may implement anaerobic digesters or an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. These strategies could include solid liquid separation, solid scrape or vacuum manure management, or conversion to pasture-based operations. Solid liquid separation, solid scrape or vacuum manure management could divert manure solids to drying or use on-site, covered lagoon, aboveground tank or plug-flow anaerobic digestion systems to capture biogas that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Dairies could also pursue conversion of dairy operations to pasture-based management which may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Some dairy and livestock operations that implement anaerobic digestion may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network. In some cases, collected manure could be transported to centralized digesters and potentially codigested with other feedstocks (such as food waste) for increased fuel production.

Odors associated with these facilities are associated with gases released during the breakdown of organic materials, such as hydrogen sulfide (i.e., rotten egg smell) and ammonia. Generally, odor from dairy and livestock operations is considered a perceived nuisance and an environmental impact. Factors that would affect odor impacts include the design and manure management strategy of the facility, and the duration of exposure. The implementation of alternative manure management strategies at existing livestock operations would result in less manure being placed into anaerobic treatment and storage lagoons but additional manure being placed into stockpiles for drying. The implementation of new digester facilities at existing livestock operations would result in some or all of the manure being placed into the digester, reducing the amount of manure placed into on-site storage ponds or stockpiles. While digesters constructed for manure would perform anaerobic digestion in a closed system, emissions of odorous compounds, such as ammonia and hydrogen sulfide, could be released into the environment. While digesters typically result in more control over facility odor emissions, these fugitive emissions of odorous compounds could be offensive to sensitive receptors, depending on their proximity, the design of anaerobic digesters, and exposure duration.

Further, the collection, transport, storage, and pre-processing activities of potentially odiferous organic substrates for digestion (e.g., manure, compost), in addition to the resulting digestate, could produce nuisance odors at or near anaerobic digesters. While implementation of an alternative manure management strategy or anaerobic digestion typically has beneficial or no impact on odors, there is potential for impacts that would be unlikely but potentially significant.

#### **b) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks. The proposed actions would reduce wildfire emissions from forests, shrublands, and grasslands. These benefits would outweigh the relatively minor emissions from equipment used during operations.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch. New or existing facilities could impact air quality locally to varying extents.

Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

Diesel exhaust emissions would be temporary, would not be generated at any one location for an extended period, and would dissipate rapidly from the source with an increase in distance. Additionally, treatment activities are generally in less populated, rural, or undeveloped areas, where human receptors are sparse. Furthermore, SPR HAZ-1 requires that all diesel- and gasoline-powered equipment would be properly maintained to comply with all State and federal emissions requirements, which would prevent the occurrence of higher emissions of diesel exhaust related to poorly functioning equipment. Also, SPR NOI-4 requires that vegetation treatment activities and staging areas would be located as far as possible from noise-sensitive receptors (e.g., residential land uses, schools, hospitals, places of worship), and SPR NOI-5 restricts equipment idling time would be restricted. These SPRs would reduce exposure of receptors to diesel exhaust odors because they require diesel-powered equipment to be located away from receptors and also reduce the amount of time that engines would be idling and producing odorous emissions. In addition, prescribed burns and pile burning conducted under the CalVTP could result in temporary odorous smoke emissions, which could be perceived as objectionable depending on the frequency and intensity of the resultant smoke, wind speed and direction, and the proximity and sensitivity of exposed individuals.

Prescribed burns could result in the short-term exposure of a substantial number of people to diesel exhaust emissions and odorous smoke. This impact would be potentially significant.

### **c) Organic Waste Diversion and Composting Actions**

As described in detail in Chapter 2, reducing landfill disposal of organic waste to less than 6 million short tons by 2025, as required under SB 1383, would result in the development of new or expanded organic material composting, digestion and/or other facilities throughout the state to recover and recycle the diverted organic waste. It is anticipated that new facilities would be sited at or near existing waste disposal sites or landfills or in urban areas zoned for industrial or solid waste-handling facilities.

Organic waste diversion and composting actions associated with implementation of the 2022 Scoping Plan would be conducted consistent with the SB 1383 SLCP Regulation, a program developed by CalRecycle to reduce disposal of organic waste by 50 percent of 2014 levels by 2020 and 75 percent by 2025. Materials that cannot be effectively recovered for human consumption would be directed to organic waste recovery or recycling facilities to make useful products, including compost, fertilizer, fuel, energy, or other products (e.g., paper). These facilities may be developed at existing landfills, other waste management sites, or at new stand-alone sites. Because SB 1383 represents State policy regarding organic waste diversion and composting actions, it can be reasonably assumed these types of activities associated with the 2022 Scoping Plan would be consistent with the SB 1383 SLCP Regulation EIR.

In response to the 2022 Scoping Plan, new and expanded organic waste recovery facilities would be operated throughout the state. Adverse odors could be generated by activities performed at these facilities, including the handling of feedstock materials, and from the off-gassing of odors generated during the decomposition of organic materials. Finished compost applied to agricultural and other land uses could also create objectionable odors. Odor impacts related to the 2022 Scoping Plan would be potentially significant.

### **Impact Significance Determination**

Implementing the manure management actions; forest, shrubland, and grassland management actions; and organic waste diversion and composting actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on odors.

### **Mitigation Measures**

Table 4-9 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-9: Mitigation Measures Applicable to Long-Term Operational Impacts on Odors**

Actions	Mitigation Measure
Manure management actions	3.c.1
Forest, shrubland, and grassland management actions	3.c.2
Organic waste diversion and composting actions	3.c.3

Considering that actions taken by the public to reduce exposure to odors from prescribed burns are voluntary, there are no additional feasible methods to compel the public to reduce its exposure. Although all feasible precautions and notifications have been included in SPRs, the potential remains that short-term exposure to odorous smoke emissions from unpredictable weather changes could occur.

### ***Mitigation Measure 3.c.1***

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

- Proponents shall implement an Odor Management Plan (OMP) as part of each application submitted to establish digester facilities. The OMP shall specifically address odor control associated with digester operations and include:
  - a list of potential odor sources;
  - identification and description of the most likely sources of odor;
  - identification of the potential for, probable intensity of, and frequency of odor from likely sources; and
  - a list of odor control technologies and management practices that could be implemented to minimize odor releases, which shall include: the establishment of criteria for time limits related to on-site retention of undigested co-substrates (e.g., organic co-substrates must be put into the digester within 48 hours of receipt); installation of negative-pressure

buildings for indoor unloading; treatment of collected foul air in a biofilter or air scrubbing system; establishment of contingency plans for operating downtime (e.g., equipment malfunction, power outage); management of the delivery schedule to facilitate the prompt handling of odorous co-substrates; identification of a protocol for monitoring and recording odor events; and identification of a protocol for reporting and responding to odor events.

***Mitigation Measure 3.c.2: Implement CalVTP PEIR SPRs Applicable to Odors***

The project proponent will implement the following CalVTP PEIR SPRs, which are incorporated by reference herein (BOF 2019):

- SPR AQ-2: Submit Smoke Management Plan
- SPR HAZ-1: Maintain All Equipment
- SPR NOI-4: Locate Staging Areas Away from Noise-Sensitive Land Uses
- SPR NOI-5: Restrict Equipment Idle Time

***Mitigation Measure 3.c.3: Implement SB 1383 SLCP Regulation EIR Mitigation Measures 3.3-5a and 3.3-5b***

***SB 1383 SLCP Regulation EIR Mitigation Measure 3.3-5a: Comply with Appropriate Local Land Use Plans, Policies, and Regulations***

The authority of CalRecycle and Local Enforcement Agencies (LEAs) is statutorily limited. They do not have authority to require implementation of mitigation measures that would require compliance with appropriate local land use plans, policies, and regulations. Local agencies can and should require individual projects to be consistent with appropriate local land use plans, policies, and regulations, including any applicable setbacks or buffer zones around sensitive land uses for potentially odiferous processes, as part of project approval requirements.

***SB 1383 SLCP Regulation EIR Mitigation Measure 3.3-5b: Prepare an Odor Impact Minimization Plan or Odor Management Plan***

Pursuant to 14 CCR 17863.4 and 17896.31, future project proponents of compost and anaerobic digestion facilities shall prepare an Odor Impact Minimization Plan (OIMP) to mitigate adverse odor impacts as a condition of approval. Project proponents of other organic waste recovery facilities (e.g., material recovery facilities and rendering facilities) not subject to 14 CCR 17863.4 or 17896.31 shall develop and implement an Odor Management Plan that includes odor control strategies similar to those that would be included in an OIMP, such as the following possible strategies:

- Prepare a list of potential odor sources.
- Identify and describe the most likely sources of odor.
- Identify the potential for, probable intensity of, and frequency of odor from likely sources.

- Prepare a list of odor control technologies and management practices that could be implemented to minimize odor releases. These management practices shall entail the establishment of, but shall not be limited to, the following criteria:
  - Require that substrate hauled to facilities is within sealed containers.
  - Provide enclosed, negative-pressure buildings for indoor receiving and preprocessing.
  - Treat collected odiferous air in a biofilter or air scrubbing system.
  - Establish a time limit for on-site retention of undigested substrates (e.g., substrates must be digested within 24 hours of reaching a site).
  - Combine organic feedstocks with coarse, dry building amendments to aerate feedstock.
  - Blend fresh organic feedstocks with finished compost, or apply a compost blanket of finished compost to fresh piles.
  - Manage the delivery schedule to facilitate the prompt handling of odorous substrates.
  - Handle digestate within enclosed buildings and/or directly pump it to sealed containers for transportation.
  - Identify a protocol for monitoring and recording odor releases.
  - Identify a protocol for reporting and responding to odor releases.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measures 3.c.1 and 3.c.3, significant air quality impacts could occur related to implementing the manure management actions; forest, shrubland, and grassland management actions; and organic waste diversion and composting actions. Implementation of Mitigation Measure 3.c.2 would reduce odor impacts, but not to a less than significant level. While additional mitigation measures could potentially feasibly reduce significant odor impacts related to forest, shrubland, and grassland management actions, it is infeasible to suggest additional mitigation measures since specific project-level details are unknown at this time.

Consequently, while impacts could be reduced to a less than significant level by land use and/or permitting agency conditions of approval when presented with specific project proposal details, this EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational-related air quality effects associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

#### 4. Biological Resources

##### ***Impact 4.a: Short-Term Construction-Related Effects on Biological Resources***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, small hydroelectric systems, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

Short-term construction-related impacts on biological resources may occur. Construction of new facilities and modifications to existing facilities would result in ground disturbance that could adversely affect biological resources, and the biological resources affected would depend on the specific location of the compliance responses. These impacts would occur from modifications to existing habitat, including the removal, degradation, and fragmentation of riparian systems, wetlands, and/or other sensitive natural wildlife habitats and plant communities; interference with wildlife movement or wildlife nursery sites; loss of or disturbance to special-status species; and/or conflicts with local ordinances or the provisions of adopted habitat conservation plans, natural community conservation plans, or other conservation plans or policies to protect natural resources.

New, expanded, or otherwise modified facilities would likely occur in areas of compatible zoning (e.g., industrial). While it is reasonable to anticipate that land use policies controlling the location of new industrial facilities would generally avoid conversion of wildlife habitat, the potential cannot be entirely dismissed. Additionally,



there are some plant and animal species that occur in developed or disturbed areas, and impacts on these species would not be entirely avoided through siting project construction in appropriately zoned areas. Direct mortality of individual plants and animals could result from destruction of dens, burrows, or nests through ground compaction, ground disturbance, debris, or vegetation removal. Construction noise disturbance could cause nest or den abandonment and loss of reproductive or foraging potential around the site during construction, transportation, or destruction of equipment and existing structures.

Construction of offshore renewable wind projects may result in impacts on marine wildlife species and benthic and pelagic marine habitats. Construction activities associated with offshore renewable wind projects may include pile driving and the use of vessels and helicopters. The construction phase of these facilities is expected to have the greatest effect on marine mammals due to noise generated from pile driving and increased vessel traffic (Bailey et al. 2014; Kraus et al. 2019; Thomsen et al. 2006). Noise generated from pile driving can result in hearing damage in marine mammals, changes in behavior due to masking of vocalizations, or spatial displacement (Bailey et al. 2014). The magnitude of impacts resulting from noise generated from pile driving differs depending on species, and can affect certain species (e.g., odontocetes [i.e., toothed whales like dolphins, porpoises, and killer whales] and phocids [i.e., seals]) disproportionately (Thomson et al. 2006). Fish may also be adversely affected by noise, and due to the large diversity in hearing structures and auditory capabilities across fish species, these impacts would vary based on species (Thomson et al. 2006). Increased vessel traffic could result in whale collisions, especially if offshore renewable wind projects are sited within migratory or other movement corridors for marine mammals and if construction activities are conducted during the migration season. Increased vessel traffic may also result in pollution or accidental release of contaminants in the marine environment (Bailey et al. 2014). Construction of offshore renewable wind projects could result in disturbance or loss of sensitive benthic habitats if these facilities are sited in areas where these habitats are present. Loss of sensitive benthic habitat could result in loss of important foraging or breeding habitat for multiple marine species.

Short-term construction-related impacts on biological resources would be potentially significant.

### **Impact Significance Determination**

Short-term construction-related impacts on biological resources associated with the 2022 Scoping Plan would be potentially significant.

## Mitigation Measures

### ***Mitigation Measure 4.a***

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to biological resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would 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 on biological resources include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the 2022 Scoping Plan would coordinate with State or local land use agencies to seek entitlements for development, including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant impacts on biological resources associated with the project.
- Actions required to mitigate potentially significant biological impacts may include the following; however, any mitigation specifically required for a new or modified facilities or other activities would be determined by the local lead agency:
- Retain a qualified biologist to prepare a biological inventory of site resources prior to ground disturbance or construction. If protected species or their habitats are present, comply with applicable federal and California Endangered Species Acts and regulations. Construction and operational planning will require that important fish or wildlife movement corridors or nursery sites are not impeded by project activities.
- Implement all feasible measure to reduce disturbance to wildlife resulting from construction activities, including but not limited to biological monitoring, physical avoidance (e.g., no-disturbance buffers), temporal avoidance (e.g., limited operating periods), or disturbance reduction techniques (e.g., bubble curtains for pile driving).
- Consider sensitive terrestrial or marine habitats and important habitats for wildlife (e.g., migration corridors, mating or spawning habitats, foraging habitat,

rookeries) during the planning and siting stages of a project, and avoid these habitats as feasible.

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

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 4.a, significant impacts on biological 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 Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that construction-related impacts on biological

resources associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

***Impact 4.b: Long-Term Operational-Related Effects on Biological Resources***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on biological resources may be related to the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expansion of electrical infrastructure actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and CCS actions; improvements to oil and gas facilities actions; reduced high-global warming potential (GWP) actions; manure management actions; forest, shrubland, and grassland management actions; agricultural actions; and afforestation, urban forestry expansion, and wetland restoration actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 4.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

**a) Increase in Renewable Energy and Decrease in Oil and Gas Use Actions**

As described in more detail in Chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. The operation of wind, solar thermal, and solar PV energy systems would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

Operation of wind farms is likely to result in the direct mortality of birds and bats through collision with rotating turbines or transmission lines or trauma from turbulence or pressure changes surrounding the moving turbines. Direct mortality of many avian and bat species from turbines and transmission lines has been well documented. In some cases, high levels of avian mortality have resulted from

operation of wind farms. Diurnal raptors are particularly susceptible to mortality from collision with wind turbines and transmission lines because of their large size and flight characteristics (Erickson et al. 2002). Better siting and turbine design have reduced wildlife mortality (CEC and DFG 2007); however, operation of wind-generating projects could result in the direct mortality of bird and bat species.

Wind farms could increase the risk of fire and result in impacts on biological resources. Major fire hazards include hardware and conductor failure, dropping of collection lines, turbine malfunction or mechanical failure, construction-related accidents, and access vehicle or electrocuted wildlife contact with dry vegetation.

The central environmental issue surrounding solar energy development is direct effects and habitat loss for desert tortoise and other sensitive desert wildlife. In addition, human activities in previously undeveloped areas potentially provide food or other attractants in the form of trash, litter, or water, which draw unnaturally high numbers of predators, such as the common raven, kit fox, and coyote. Common raven populations in some areas of the Mojave Desert have increased approximately 700 percent from 1969 to 2004 (Boarman and Kristan 2006). Additional traffic along roadways may result in high numbers of wildlife mortality, which would provide an additional attractant for opportunistic predators/scavengers, such as ravens.

Biomass is waste and byproducts that can be used as fuel for producing energy instead of being put in landfills or burned. The three principal sources of biomass fuels are (1) agricultural residues, such as removed or pruned orchard trees, pits, or nut shells; (2) forestry residuals, including limbs, treetops, small trees, and other slash removed during timber harvesting, forest fire fuel reduction, or forest thinning projects; and (3) urban and industrial wastes, such as construction/demolition wood, pallets, or landscaping tree trimming.

In general, forest projects that could create a biomass fuel source (e.g., timber harvest, fuel reduction or thinning project) can affect biological resources in the following ways. Habitat for special-status plants and animals may be altered by removal of understory vegetation, and the forest community composition may change over time as a result of forest treatments. During vegetation removal, special-status plants or animals may be crushed or entombed during operation of mechanized equipment. Roads created to access the project site may result in habitat loss or degradation from erosion, soil compaction, and increased human disturbance. Sensitive habitats, including jurisdictional waters of the United States, may also be adversely affected during vegetation removal or creation of roads. Erosion and runoff may result in degradation of sensitive habitats. Important movement corridors or use of native nursery sites (such as a maternal bat colony) may be impeded during implementation of forest projects.

In addition, operation of hydroelectric facilities and transmission lines may also affect biological or forest resources by altering natural hydrographs of streams, changing

water temperature or water quality, inundating uplands by creating reservoirs or other water storage facilities, increasing nonnative species populations (e.g., bass or other warmwater fishes and bullfrogs), and altering the predator-prey relationships. This impact would be potentially significant.

#### **b) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-fueled, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

Potential impacts on biological resources would primarily result from operation of new facilities (e.g., feedstock processing facilities, production facilities, anaerobic facilities, infrastructure, solar and wind generation facilities). Depending on the size and location of these types of systems, operations may adversely affect biological resources. 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.

CARB estimates the indirect land use change effects of biofuel crop production using the Global Trade Analysis Project (GTAP) model, which is a computer model developed and supported by researchers at Purdue University. Within the GTAP's scope, there are 111 world regions, some of which consist of single countries, others of which are composed of multiple neighboring countries. For each region, data tables describe every national economy in that region, as well as all substantial intra- and

inter-regional trade relationships. The data for this model are contributed and maintained by more than 6,000 local experts.

GTAP model analysis considers life cycle CI impacts related to potential or actual deforestation and conversion of other land use types. When a life cycle pathway is developed for a crop-based biofuel, a land use change (LUC) value is developed using the GTAP model for land that would be converted to agricultural production because of increased demand for that crop. The approach accounts for land conversions in all regions of the world based on available land and likelihood of land to be converted as demand for land goes up. The methodology attributes new land to come from forest lands, pastureland, and cropland. A fuel that is more likely to displace sensitive lands, such as forests, would have a higher LUC value, making it less attractive for use in complying with the LCFS regulation. However, while the models consider effects related to land use changes, they do not explicitly prohibit adverse effects on habitat or biodiversity, and there could still be substantial environmental impacts on biological resources.

Waste-derived biofuels would not require land conversion, because they use waste biomass material from existing agricultural, industrial, or other operations (i.e., no attendant deforestation) and are assigned “zero” LUC values. The LCFS incentivizes the production and use of fuels from renewable, non-land based resources, such as waste-derived biomass, which may decrease the potential for deforestation and other conversion of lands not currently in agricultural production. Continued implementation of the LCFS program will continue to send market signals that incentivize use of fuels with less potential for land conversion and associated effects on biological species.

Depending on the type of crop, location, and need to convert lands, habitat destruction could occur, resulting in the loss of biodiversity. The location of new crop lands may affect conservation plans or disrupt important migratory routes. Indirect effects could occur as well, such as increased pesticide and nutrient use, the runoff of which could be detrimental to individual species. This impact would be potentially significant.

### **c) Expansion of Electrical Infrastructure Actions**

As described in more detail in Chapter 2, compliance responses would be associated with actions requiring that energy consumption associated with space and water heating, space cooling, cooking, clothes drying, and pool and spa heating be served only by combustion-free technology (e.g., heat pump water heaters, heat pump space conditioners, electric ranges for cooking, electric resistance or heat pump clothes dryers, and electric resistance or heat pump pool and spa heaters). Transitioning to combustion-free technology in new and existing buildings may result in greater electricity demand compared to mixed-fuel buildings. Additional electricity demand beyond what the grid is currently capable of serving could result in construction of new infrastructure or modification to existing infrastructure at the distribution level (e.g., lines, transformers, power meters, circuit breaker main cabinets) and

transmission level (e.g., transmission towers, high-voltage conductors [power lines], substations) to accommodate increased loads, as well as require new supply-side generation and energy storage resources. Distributed energy strategies could also be installed to support these electric end uses, including rooftop solar PV systems (beyond those currently required by the Energy Code); load management systems; and energy storage.

Additional compliance responses associated with retrofits would include upgrading or replacing electric panels to accommodate increased load, as well as circuitry for appliance fuel switching, and modifications to the building envelope or internal space involving wall opening modifications to fit and integrate new equipment.

Potential impacts on biological resources would primarily result from operation of new infrastructure (e.g., lines, transformers, transmission towers, high-voltage conductors, substations). Depending on the size and location of these types of systems, operations may adversely affect biological resources. Operation of these facilities may 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 new transmission lines and substations could drive wildlife from surrounding habitat or impede wildlife movement through the area if the infrastructure is improperly sited. This impact would be potentially significant.

#### **d) Expanded Use of Zero-Emission Mobile Source Technology Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the expanded use of zero-emission mobile source technology include increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste disposal or recycling from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Anticipated operation-related impacts on biological resources from the reasonably foreseeable compliance responses listed above would likely occur primarily from operation of new facilities and increased mining activity associated with increased demand for lithium-ion and nickel-metal hydride (NiMH) batteries. Long-term operation of manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, and other electricity generation facilities would often include the presence of workers; movement of automobiles, trucks, and heavy-duty equipment; and operation of stationary equipment. This environment would generally not be conducive to the presence of



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

Increased mining activity would include some methods with relatively small areas of disturbance, such as underground and continental brine mining activities, and potential surface/open pit mining operations, which could disturb relatively larger areas. In any case, increased mining activity could directly alter the character of a sensitive habitat that may support special-status species or serve as a wildlife corridor. Impacts could include reduction in habitat, loss of special-status species, increased water consumption, water contamination, and conflict with a habitat conservation plan or natural community conservation plan. Long-term operational impacts on biological resources associated with the 2022 Scoping Plan would be potentially significant.

#### **e) Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with direct air capture and other CCS actions include the construction of new facilities to capture ambient CO<sub>2</sub>, modification of existing or new industrial facilities to capture CO<sub>2</sub> emissions, and construction of new infrastructure, such as pipelines, wells, and other surface facilities, to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. Direct air capture and other CCS actions may also result in increased transportation, such as truck, rail, and barge transit, to transport CO<sub>2</sub> from the industrial facilities to the sequestration sites. The transport distances and pipeline construction requirements for the captured CO<sub>2</sub> would vary depending on the locations of specific industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand will be met by increased generation, both on-site and off-site.

While there are currently three direct air capture facilities in the world, this technology is evolving. The design of future facilities could vary considerably, ranging from tall, multi-story structures to low-profile structures covering a potentially large area of land. Depending on the height, size, and location of these facilities, intake fans and high-profile structures may pose a risk of wildlife collision or capture by intake fans. Species that are particularly at risk include insects, birds, and bats. If individuals collide with structures or encounter fans, there could be direct mortality. This impact would be potentially significant.

#### **f) Improvements to Oil and Gas Facilities Actions**

As described in more detail in Chapter 2, modifications to existing facilities, such as the installation of vapor recovery systems, installation of low-bleed or zero-bleed pneumatic devices, and replacement of leaking equipment, could involve construction activities related to installing or replacing gathering lines, piping, flanges, valves, and similar features associated with oil and gas facilities. Compliance responses at natural gas transmission and distribution pipelines and related equipment and facilities may result in an increase in the rate at which repairs and replacements are made. Emissions from pipeline and compressor blowdowns may be reduced by implementing methods such as using portable compressors; using plugs to isolate sections of pipelines; flaring vented gas; installing ejectors (nozzles that can capture blowdown gas and route it to a useful outlet); routing collected vapors to fuel gas systems, sales gas lines, microturbines, or underground injection wells; and installing static seals on compressor rods. Any pipeline replacement or reconstruction activities, leak surveys, and methods to reduce blowdown emissions would typically occur within the footprint of existing oil and gas facilities. This impact would be less than significant.

#### **g) Reduced High-GWP Fluorinated Gases Actions**

As described in more detail in Chapter 2, replacement of high-GWP fluorinated gases such as HFCs with lower-GWP alternatives could result in increased demand for the latter (e.g., increased demand for HFOs as well as non-fluorinated low-GWP alternatives like CO<sub>2</sub>) and modification to existing production facilities. Local permitting agencies may apply additional oversight on the planning and operations of refrigeration equipment using flammable refrigerants, such as hydrocarbons, and toxic refrigerants, such as ammonia. As HFC use is discontinued, those actions would increase the vehicular transportation of HFCs for destruction or reclamation. However, any major shifts in the HFC market – such as increased production and imports of HFOs or other non-fluorinated low-GWP alternatives, and enhanced transportation of high-and low-GWP gases – will be driven predominantly by the global and national HFC phasedowns currently underway, and not by California's measures.

Incorporation of low-GWP refrigerants or heat transfer fluids to existing residences and commercial buildings and facilities would not result in disturbance to plant and animal habitat or direct mortality of individuals as a result of construction-related activities.

A potential environmental impact of HFOs is their atmospheric decomposition to trifluoroacetic acid (TFA). Because of its high water solubility, TFA is deposited on the earth's surface during precipitation events and is mild to moderately toxic to a range of organisms. Other fluorinated gases, e.g., the HFCs currently in use, also produce TFA upon oxidation; however, the rate of that process is much slower for HFCs than HFOs. Thus, the use of HFOs would increase rates of TFA formation, which could potentially accumulate in aquatic environments, including wetlands (Cahill et al. 2001). HFOs and the impact of their degradation products like TFA continue to remain a topic of concern and active study (Behringer et al., 2021).

However, before any low-GWP alternatives can be used in California, they must first be listed as acceptable under the U.S. EPA's SNAP<sup>22</sup> program (Section 612 of the Clean Air Act, 42 U.S.C. sec. 7671k; Code of Federal Regulations (CFR), title 40, part 82, subpart G), where the U.S. EPA evaluates substitutes to ozone-depleting substances (ODS) to reduce overall risk to human health and the environment within a comparative risk framework. The SNAP program determines if the new substitute poses more risk than already-approved alternatives for the same use. As such, HFO use would not pose a greater risk to the environment or human health than use of the chemical it is replacing and thus would not pose a substantial hazard to people or the environment. This impact would be less than significant.

#### **h) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce RNG that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network.

Alternatively, collected manure could be transported to centralized digesters and potentially co-digested with other feedstocks (such as food waste) for increased fuel production. This would be feasible at large dairies in close proximity to one another that collectively could connect to a natural gas pipeline at lower cost than could occur individually. Implementation of digesters and associated equipment could provide small-scale electricity production, distributing biogas via pipeline and providing fuel for on- or off-site vehicle fleets. Digesters typically include flares, which are intended for emergency purposes and would not be expected to be used on a regular basis, if ever.

---

<sup>22</sup> U.S.EPA's Significant New Alternatives Policy (SNAP) Program. More information available online at: <https://www.epa.gov/snap>.

Potential impacts on biological resources could result from operation of new infrastructure (e.g., dry manure management systems, anaerobic digestion systems). Depending on the size and location of these facilities, operations may adversely affect biological resources. Operation of these facilities could 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 these systems could drive wildlife from the surrounding habitat or could impede wildlife movement through the area.

In some instances, converting dairies to pasture-based management systems may be an option to avoid methane production, in which manure is left in the field and decomposes aerobically (versus anaerobically in a lagoon). Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Depending on the location of new pasture-based management systems, special-status plants, special-status wildlife, and sensitive habitats (e.g., vernal pools, seasonal wetlands) have potential to occur within land typically used as pastureland (e.g., annual grasslands). Changes in land use associated with this compliance response, including increased foraging of plants, trampling, and installation of fencing, could result in direct loss of special-status species or impediments to wildlife movement. This impact would be potentially significant.

#### **i) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch.

Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

The proposed actions could impact biological resources during operations and following operations in the short-term; however, the benefit of increased forest, shrubland, and grassland health and ecological resilience would endure over the long-term. This would protect habitats and associated wildlife from deleterious effects of climate change and wildfires. Relevant SPRs and mitigation measures would be implemented to avoid and minimize treatment-related disturbances to special-status species and sensitive habitats and long-term habitat loss. Prior to operations, a data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site would be conducted to determine whether there is potential for special-status species

and other sensitive resources to occur<sup>23</sup>. If it is determined that sensitive biological resources may occur, additional SPRs and mitigation measures that require focused or protocol-level surveys would be implemented<sup>24</sup>. Additional SPRs would require environmental awareness training<sup>25</sup>, maintenance of habitat function for sensitive habitats<sup>26</sup>, and use of wildlife-friendly fencing.<sup>27</sup> Other SPRs regulate the use of herbicides in sensitive habitats and require compliance with water quality requirements<sup>28</sup>. Where potentially significant impacts on biological resources would remain despite implementation of SPRs, additional mitigation measures included in the CalVTP Program EIR would be required to avoid loss of biological resources, maintain habitat function, or compensate for unavoidable impacts.

Several tree-nesting special-status wildlife species require specific protocol-level surveys to determine occupancy, including marbled murrelet and northern spotted owl. Crew members and contractors would receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects<sup>29</sup>. Project proponents would identify sensitive natural communities<sup>30</sup> and retain the habitat function of riparian habitat<sup>31</sup> in order to reduce the likelihood of impacts on tree- and cavity-nesting species within these habitats. Type conversion within native coastal sage scrub and chaparral would be avoided to reduce environmental effects and the likelihood of impacts (e.g., habitat loss) on special-status species that nest and otherwise use these habitats.<sup>32</sup> Treatments within ESHAs in the coastal zone would be limited, reducing likelihood of impacts on tree- and cavity-nesting species in these areas of the coastal zone.<sup>33</sup> The use of wildlife-friendly fencing during prescribed herbivory treatments would reduce the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision).<sup>34</sup> Protocol-level surveys for special-status plants would occur, if warranted<sup>35</sup>. Safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations would be required for the application of herbicides<sup>36</sup>. Potential impacts on riparian tree-nesting species and special-status

---

<sup>23</sup> See CalVTP Standard Project Requirement BIO-1.

<sup>24</sup> See CalVTP Standard Project Requirement BIO-3, BIO-7, BIO-10.

<sup>25</sup> See CalVTP Standard Project Requirement BIO-2.

<sup>26</sup> See CalVTP Standard Project Requirement BIO-4, BIO-5, BIO-8.

<sup>27</sup> See CalVTP Standard Project Requirement BIO-11.

<sup>28</sup> See CalVTP Standard Project Requirement HAZ-5, HAZ-6, HYD-1, HYD-3, HYD-5.

<sup>29</sup> See CalVTP Standard Project Requirement BIO-2.

<sup>30</sup> See CalVTP Standard Project Requirement BIO-3.

<sup>31</sup> See CalVTP Standard Project Requirement BIO-4.

<sup>32</sup> See CalVTP Standard Project Requirement BIO-5.

<sup>33</sup> See CalVTP Standard Project Requirement BIO-8.

<sup>34</sup> See CalVTP Standard Project Requirement BIO-11.

<sup>35</sup> See CalVTP Standard Project Requirement BIO-7.

<sup>36</sup> See CalVTP Standard Project Requirement HAZ-5, HAZ-6.

aquatic species would be reduced by limiting herbicide use within riparian habitat.<sup>37</sup> Compliance with applicable water quality requirements, prohibiting prescribed herbivory treatments within aquatic and riparian habitat, and implementation of WLPZs on each side of watercourses identified within treatment areas would protect aquatic habitat<sup>38</sup>. Potentially sensitive natural communities and other sensitive habitats would be identified and protected prior to implementing treatments.<sup>39</sup> For vegetation treatment projects that would use the CalVTP Program EIR, SPRs would minimize impacts; however, treatment activities could still result in the direct or indirect adverse effects on special-status plant species, special-status wildlife species, riparian habitat or other sensitive natural communities, State or federally protected wetlands, and nursery sites. This impact would be potentially significant.

#### **j) Agricultural Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses that address practices related to soil conditions include encouraging no till or reduced till practices, planting cover crops, transitioning to organic agriculture, and applying compost. Implementing certain soil management practices could increase the use of on-farm mechanical equipment (e.g., compost application, mulching, and whole orchard recycling). Additionally, compost application would require increased use of trucks to transport the compost. Other types of practices (e.g., cover crops, windbreak/shelter belt establishment, tree/shrub establishment) may require increased water use to establish and or/maintain plant or trees.

Impacts on biological resources resulting from implementation of these compliance responses would likely be minor, because ground disturbance and adverse habitat modification would not occur. No till or reduced till practices and planting of cover crops could have a beneficial effect on special-status and common wildlife, including pollinators, by potentially extending the period during which floral resources would be available and introducing additional floral resources. Additionally, special-status wildlife species that occur in agricultural habitats (e.g., burrowing owl) may benefit from a decrease in ground disturbance in areas where no till or reduced till practices are implemented. Because potential impacts resulting from implementation of agricultural actions would be limited and would largely be beneficial, this impact would be less than significant.

#### **k) Afforestation, Urban Forestry Expansion, Avoided Natural and Working Land Use Conversion, and Wetland Restoration Actions**

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with afforestation, urban forestry expansion, and wetland restoration actions would involve planting vegetation and restoring wetland in

---

<sup>37</sup> See CalVTP Standard Project Requirement HYD-5.

<sup>38</sup> See CalVTP Standard Project Requirement HYD-1, HYD-3, HYD-4.

<sup>39</sup> See CalVTP Standard Project Requirement BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-9, HYD-4.

California. Trees and other vegetation (e.g., hedgerows) would be planted in urban areas, within cropland (as hedgerows, wind/shelterbelts, alley crops), along waterways in riparian zones within croplands, and around cultivated areas. Wetland restoration actions would occur on agricultural lands in the Sacramento-San Joaquin Delta as well as in other coastal wetlands and mountain meadows. Avoided conversion of natural and working lands to another land use is also anticipated.

These anticipated actions could result in an increase in construction activities related to wetland restoration and an increase in tree maintenance (e.g. pruning/trimming, fertilizing, tree felling, chipping/grinding, biomass transportation) within urban areas and croplands. Equipment used for these activities include tractors, backhoes, aquatic craft, portable chippers/grinders, and chip trucks. Afforestation and urban forestry expansion would likely be beneficial to special-status wildlife by providing nesting habitat (e.g., trees, shrubs) where this habitat did not occur previously. Avoided conversion would also benefit special-status wildlife. However, if nonnative, invasive tree or other plant species are selected, adverse effects on natural habitats could occur if these invasive species establish outside of initial planting areas.

Wetland restoration activities would likely result in a net beneficial effect on biological resources, including special-status wildlife and special-status plants that occur in wetland habitats, as well as sensitive habitats (e.g., State and federally protected wetlands, riparian habitat, sensitive natural communities). However, wetland restoration activities may include in-water work, vegetation removal, and ground disturbance (e.g., removal of levees and dikes, dredging), which could result in direct or indirect short-term impacts on special-status wildlife, special-status plants, or sensitive habitats.

While afforestation, urban forestry expansion, avoided conversion, and wetland restoration actions would likely result in net benefits to biological resources, adverse effects could occur if invasive plant species are included in afforestation and urban forestry expansion efforts, and during wetland restoration activities, as described above. This impact would be potentially significant.

### **l) Offshore Renewable Wind Action**

As described in more detail in Chapter 2, offshore renewable wind turbine projects would be installed and operated to support the decarbonization of the electrical sector. Turbines could be located within shallow and deeper portions of the oceans and would be supported by floating platforms. Turbines would be approximately 350 to 500 feet high, on average, and would be configured to optimize capture of wind energy. Energy captured by these turbines is transmitted to floating substations, which collect and stabilizes the power generated by the turbines, and is then transmitted to the onshore power grid.

Operation of offshore renewable wind farms may result in impacts on marine wildlife species, including marine mammals, seabirds, sea turtles, and fish. Operational



activities would entail the presence of a novel structure(s) in the marine environment, operation of large wind turbines, operation of anthropogenic lighting on the turbines (e.g., navigational lights for mariners, obstruction lighting for aviators, work lighting for maintenance and operations), and increased vessel traffic for routine maintenance activities (Bailey et al. 2014; BOEM 2013).

The operation phase of these facilities is expected to have the greatest effect on seabirds (Bailey et al. 2014). Seabirds may be injured or killed due to collision with moving turbine blades, may incur increased energetic costs and stress from physically avoiding the facilities (i.e., flying around, over, or under the turbines), and may be displaced from key foraging or breeding habitat (Bailey et al. 2014; Garthe et al. 2016; Goodale et al. 2019; Peschko et al. 2020). Depending on the siting of offshore wind energy generation facilities (e.g., distance from shore, bathymetry) the magnitude of impacts on seabirds would be dependent on species and the behavior (e.g., foraging ecology) and habitat (i.e., coastal, pelagic) preference of those species (Goodale et al. 2019). Anthropogenic lighting on turbines may adversely affect night-migrating birds by disrupting navigational processes (BOEM 2013). Seabirds and other birds migrating over marine environments may be attracted to lights leading to collisions, disruption of migration, decreased energy reserves, and increased vulnerability to predation (BOEM 2013).

While noise impacts are expected to result primarily from construction of offshore renewable wind farms (i.e., pile driving), noise from operation of turbines is expected to be audible to fish and marine mammals and may disrupt behavior (Thomsen et al. 2006). Additionally, while vessel traffic would likely be greater during construction of these facilities, there would also be increased vessel traffic associated with routine maintenance activities, which could increase the likelihood of whale collisions, especially if offshore wind energy generation facilities are sited within migratory or other movement corridors for marine mammals. Finally, cables transmitting electricity from offshore wind energy generation facilities to shore may emit electromagnetic fields, which could disrupt movement and navigation of species that are sensitive to electromagnetic fields, including fish and sea turtles (Bailey et al. 2014). These cables could also result in physical disruption of movement of marine mammals if sited within migratory or movement corridors. This impact would be potentially significant.

### **Impact Significance Determination**

Implementing the improvements to oil and gas facilities actions, reduced high-GWP compounds actions, and agricultural actions would result in a less than significant impact. Implementing the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expansion of electrical infrastructure actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and CCS actions; manure management actions; forest, shrubland, and grassland management actions; afforestation, urban forestry expansion, and wetland restoration actions; and offshore renewable wind actions under the 2022 Scoping Plan

would result in potentially significant long-term operational impacts on biological resources.

### Mitigation Measures

Table 4-10 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-10: Mitigation Measures Applicable to Long-Term Operational Impacts on Biological Resources**

Actions	Mitigation Measure
Increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expansion of electrical infrastructure actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and carbon capture and sequestration actions; manure management actions; afforestation, urban forestry expansion, and wetland restoration actions; and offshore renewable wind projects actions	4.b.1
Forest, shrubland, and grassland management actions	4.b.2a and 4.b.2b

### **Mitigation Measure 4.b.1**

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

- Proponents of construction activities and fuel reduction treatment activities implemented as a result of reasonably foreseeable compliance responses

associated with the 2022 Scoping Plan would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.

- If a proposed facility project site contains or is likely to contain natural habitat, the agency with approval authority over the project must require project sponsors to incorporate avoidance and minimization measures into the facility design, so that natural habitats and special-status species do not experience significant adverse effects.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant impacts on biological resources associated with the project. The definition of actions required to mitigate potentially significant biological impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency:
- Prohibit vegetation management activities in the vicinity of raptor nests during nesting season or establish protective buffers and provide monitoring as needed to ensure that project activity does not cause an active nest to fail.
- Maintain site design and development plan features that avoid or minimize disturbance of habitat and wildlife resources and prevent stormwater discharge that could contribute to sedimentation and degradation of local waterways during project operation.
- Maintain and replace, as needed, trees and permanently protected suitable habitat identified during the construction phase of the project.
- Implement adaptive management strategies for offshore renewable wind projects that may include avian mortality monitoring and automated shutdown systems.

**Mitigation Measure 4.b.2a:** *Implement CalVTP Program EIR Mitigation Measures BIO-1a, BIO-1b, BIO-1c, BIO-2a, BIO-2b, BIO-2c, BIO-2d, BIO-2e, BIO-2f, BIO-2g, BIO-3a, BIO-3b, BIO-3c, BIO-4, and BIO-5, which are incorporated by reference into this EA (BOF 2019).*

**Mitigation Measure 4.b.2b:** *Implement CalVTP Program EIR SPRs Applicable to Biological Resources As Described below.*

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference into this EA (BOF 2019):

*SPR AD-1, SPR AD-3, SPR AQ-3, SPR AQ-4, SPR BIO-1, SPR BIO-3, SPR BIO-4, SPR BIO-5, SPR BIO-6, SPR BIO-7, SPR BIO-8, SPR BIO-9, SPR BIO-10, SPR BIO-11, SPR BIO-12, SPR GEO-3, SPR GEO-4, SPR GEO-5, SPR GEO-7, SPR HAZ-5, SPR HAZ-6, SPR HYD-1, SPR HYD-3, SPR HYD-4, SPR HYD-5.*

## **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measures 4.b.1, 4.b.2a, and 4.b.2b, significant impacts on biological resources could occur as a result of implementing increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expansion of electrical infrastructure actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and carbon capture and sequestration actions; manure management actions; afforestation, urban forestry expansion, and wetland restoration actions; and offshore renewable wind projects actions.

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

## **5. Cultural Resources**

### ***Impact 5.a: Short-Term Construction-Related and Long-Term Operational-Related Impacts on Cultural Resources***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction

projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

The 2022 Scoping Plan could result in construction of new facilities and modifications to existing facilities, which would require construction and ground disturbance. In general, construction and ground disturbance activities would occur in areas of compatible zoning (e.g., industrial). Regardless, there is a possibility that these activities may occur in or adjacent to a region consisting of known significant prehistoric and/or historic-era cultural resources. Additionally, while it is reasonable to anticipate that land use policies controlling the location of new industrial facilities would generally avoid areas that have not been disturbed that are known to contain or known to likely contain significant cultural resources, these areas may not always be feasibly avoided. It is also possible that ground disturbance will damage previously unknown/undocumented cultural resources. As such, it is foreseeable that known and/or undocumented cultural or paleontological resources could be unearthed or otherwise discovered during ground-disturbing and construction activities. Unique archaeological or historical resources might include stone tools, tool-making debris, stone milling tools, shell or bone items, and fire-affected rock or soil darkened by cultural activities. Paleontological resources include fossils. Historic materials might include metal, glass, or ceramic artifacts. Human remains could also be present outside of dedicated cemeteries. Finally, historic structures could be removed or damaged if present within or adjacent to a proposed construction site. Operational-related impacts resulting from the reasonably foreseeable compliance responses would generally be characterized by operation of new facilities and infrastructure, which would not result in additional ground disturbance beyond that which occurred during construction and modification because operation activities would occur within the footprint of the constructed or modified facility. Therefore, most operational activities would not have the potential to affect archaeological, paleontological, or historical resources. Presence of new facilities and 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 facility associated with the reasonably foreseeable compliance responses may not be consistent with the visual character of a historic district.

Construction of offshore wind projects could disturb ocean beds from the deployment of vessel anchors while stationary. However, the locations of future offshore wind projects would be sited accordingly in consideration of the California State Parks

Underwater Parks Program, which serves to preserve the best representative examples of California's natural resources and human artifacts, such as shipwrecks. It is, nevertheless, foreseeable that the anchoring of vessels and the laying of electrical cables could disturb unknown artifacts embedded in the ocean floor.

The proposed forest, shrubland, and grassland management actions would substantially increase forest fuel reduction activities in several regions of the state through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead tree removal or clearing, herbicide application, and other methods. These increased fuel reduction activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed trees and brush. Most forest-thinning and undergrowth-clearing activities would require increased use of heavy timber removal, transport, and processing equipment, such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and logging transport trucks. Fuel reduction activities could result in ground disturbance and prescribed fire, which could affect archaeological, paleontological, or historical resources. This impact would be potentially significant.

### **Impact Significance Determination**

Short-term construction-related and long-term operational-related impacts on cultural resources associated with implementation of the 2022 Scoping Plan would be **potentially significant**.

### **Mitigation Measures**

#### ***Mitigation Measure 5.a***

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to cultural resources. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would 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 on cultural resources include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the 2022 Scoping Plan would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing

body must follow all applicable environmental regulations as part of approval of a project for development.

- Based on the results of the environmental review, proponents would implement all feasible mitigation to 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 or seek guidance from cultural resources specialists with training and background that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in 36 CFR Part 61.
  - In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find shall cease and a qualified cultural resource specialist (e.g., archaeologist, architectural historian, depending on the resource identified) meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period.
  - If a resource determined to be significant by the cultural specialist, qualified archaeologist or architectural historian (i.e., because the find is determined to constitute either a historical resource, cultural resource, or 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 on archaeological sites. For historically significant structures, if avoidance is infeasible, an appropriate documentation plan (e.g., recordation consistent with Historic American Buildings Survey [HABS] Guidelines) shall be required.
  - Regulated entities shall define the area of potential effects (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 *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (Society of Vertebrate Paleontology 2010).
  - Regulated entities shall conduct initial scoping assessments to determine whether proposed construction activities, if any, could disturb formations

that may contain important paleontological resources. Whenever possible, potential impacts on 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.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 5.a, significant impacts on cultural 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 Recirculated Draft EA takes



the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that construction-related and operational-related impacts on cultural resources associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

## **6. Energy**

### ***Impact 6.a: Short-Term Construction-Related Effects on Energy Resources***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

Temporary increases in energy demand associated with new facilities would include fuels used during construction, and gas and electric demands. Typical earth-moving equipment that may be necessary for construction includes graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. While energy would be required to complete construction for any new or modified facilities or infrastructure projects, it would be temporary and limited in magnitude such that a reasonable amount of energy would be expended. While all aforementioned compliance responses would require the consumption of energy resources, these actions would enable the transition to zero-emission technologies to comply with the provisions of the 2022 Scoping Plan and would not involve the wasteful or inefficient use of energy. A major objective of the 2022 Scoping Plan is to

reduce air pollution, toxic air contaminants, and GHG emissions in the long-term and would require some energy to construct the necessary infrastructure and technical components to support this objective. Temporary increases in energy demand associated with new facilities would include fuels used during construction, and gas and electric demands. Typical earth-moving equipment that may be necessary for construction includes graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. While energy would be required to complete construction for any new or modified facilities or infrastructure projects, it would be temporary and limited in magnitude such that a reasonable amount of energy would be expended. Therefore, while energy demand would increase during the construction of future projects in response to implementation of the 2022 Scoping Plan, these energy expenditures would be necessary to facilitate the actions that would result in environmental benefits, such as reduced air pollution and GHG emissions. 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. This impact would be less than significant.

### **Impact Significance Determination**

Short-term construction-related energy impacts associated with the 2022 Scoping Plan would be **less than significant**.

### **Mitigation Measures**

No mitigation is required.

### ***Impact 6.b: Long-Term Operational-Related Effects on Energy Resources***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on energy resources may be related to the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expansion of electrical infrastructure actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and CCS actions; improvements to oil and gas facilities actions; manure management actions; forest, shrubland, and grassland management actions; and agricultural activities actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 6.a. Appendix G of the State CEQA Guidelines provides criteria for assessing energy impacts. The 2022 Scoping Plan could result in an adverse energy impact if it were to result in a potentially significant environmental effects from the wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a state or local plan that promotes energy efficiency or renewable energy generation or use. The following discussion analyses

the 2022 Scoping Plan's relevant actions by sector against these significance criteria. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

**a) Increase in Renewable Energy and Decrease in Oil and Gas Use  
Actions**

As described in more detail in Chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. The operation of wind, solar thermal, and solar PV energy systems would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

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

Additionally, the efficiency of new buildings 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 promotes building decarbonization by encouraging installation of combustion-free space and water heaters, demand flexibility, and on-site solar generation, consistent with the findings of the 2021 Integrated Energy Policy Report, which identifies decarbonization 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). This impact would be less than significant.

**b) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-fueled, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

The elements of the proposed 2022 Scoping Plan that pertain to low-carbon fuel options include investment in public transit and other mobility options aside from single-occupancy vehicle driving. Expansion of compliance using these options may provide a co-benefit of reduced energy demand (e.g., public transportation reduces the energy demand from private vehicle use). Similarly, the economics of more efficient vehicles (including those using electric drive trains) are improved by the ZEV deployment rates reflected in the proposed 2022 Scoping Plan.

While implementation of the proposed 2022 Scoping Plan may result in a net decrease in energy demand when considered in terms of the California fuel market in certain cases, there could be site-specific increases in energy demand related to electricity and natural gas consumption in new or modified facilities. Increases in energy demand could result from operating new processing plants, during development of innovative technologies, and as shifts in the location and quantity of fuel needed for shipment of fuels (e.g., train depot or shipping ports fueling stations).

Implementation of the proposed 2022 Scoping Plan would decrease per capita energy consumption because the overall fuel mixture would trend toward less energy-intensive sources to reduce CI values. In addition, these regulations have the potential to reduce California's reliance on fossil fuels and increase the amount of renewable energy supplies because lower CI-valued fuels would be incented. Thus, the anticipated reasonably foreseeable compliance responses associated with the proposed 2022 Scoping Plan would reduce overall energy demand and would be considered a beneficial long-term operational-related impact. Overall, low carbon fuel actions would be consistent with the State's long-term GHG reduction goals. This impact would be less than significant.

### **c) Expansion of Electrical Infrastructure Actions**

As described in more detail in Chapter 2, compliance responses would be associated with actions requiring that energy consumption associated with space and water heating, space cooling, cooking, clothes drying, and pool and spa heating be served only by combustion-free technology (e.g., heat pump water heaters, heat pump space conditioners, electric ranges for cooking, electric resistance or heat pump clothes dryers, and electric resistance or heat pump pool and spa heaters). Transitioning to combustion-free technology in new and existing buildings may result in greater electricity demand compared to mixed-fuel buildings. Additional electricity demand beyond what the grid is currently capable of serving could result in construction of new infrastructure or modification to existing infrastructure at the distribution level (e.g., lines, transformers, power meters, circuit breaker main cabinets) and transmission level (e.g., transmission towers, high-voltage conductors [power lines], substations) to accommodate increased loads, as well as require new supply-side generation and energy storage resources. Distributed energy strategies could also be installed to support these electric end uses, including rooftop solar PV systems (beyond those currently required by the Energy Code); load management systems; and energy storage.

Additional compliance responses associated with retrofits would include upgrading or replacing electric panels to accommodate increased electricity load, as well as circuitry for appliance fuel switching, and modifications to the building envelope or internal space involving wall opening modifications to fit and integrate new equipment.

As stated previously, additional energy capacity in the state would be achieved through improved energy efficiency, energy storage, demand response, and generation from renewable and zero-carbon resources. The efficiency of new buildings 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 promotes building decarbonization by encouraging installation of combustion-free space and water heaters, demand flexibility, and on-site solar generation consistent with the findings of the 2021 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). This impact would be less than significant.

**d) Expanded Use of Zero-Emission Mobile Source Technology Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the expanded use of zero-emission mobile source technology include increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste disposal or recycling from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

The state's energy capacity is expected to increase as a result of a menu of GHG-reducing regulations and policies. To meet the statewide targets of 1990 levels of GHG emissions by 2020 (i.e., Assembly Bill [AB] 32) and 40 percent below 1990 levels of GHG emissions by 2030 (i.e., SB 32), reductions will need to be made from several sectors, including the energy and mobile source sectors. Statewide regulations, such as the zero-emission vehicle mandate, proposed Advanced Clean Fleet Regulation, Advanced Clean Transit Regulation, and Innovative Clean Transit Regulation, aim to achieve GHG reductions from the mobile source sector through the deployment of electric and zero- and near zero-emission vehicles, which would replace vehicles powered by internal combustion engines. Utilities are working in coordination with the California Public Utilities Commission (CPUC) to fund infrastructure expansion projects to meet this future demand. CPUC is also responsible for regulating electric power procurement and generation and evaluates the necessity for additional power generation by California utilities in both the short and long term. Overall, expansion of zero-emission mobile source technologies would be consistent with the State's long-term GHG reduction goals. This impact would be less than significant.

**e) Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with mechanical carbon dioxide removal and CCS actions include the modification of existing or new industrial facilities to capture CO<sub>2</sub> emissions and construction of new infrastructure, such as pipelines, wells, and other surface facilities within or near the emitting facility, to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. Mechanical carbon dioxide removal and CCS actions may also result in increased transportation, such as truck, rail, and barge transit, to transport CO<sub>2</sub> from the industrial facilities to the

sequestration sites. The transport distances and pipeline construction requirements for the captured CO<sub>2</sub> would vary depending on the locations of specific industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand will be met by increased generation, both on-site and off-site.

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

#### **f) Improvements to Oil and Gas Facilities Actions**

As described in more detail in Chapter 2, modifications to existing facilities, such as the installation of vapor recovery systems, installation of low-bleed or zero-bleed pneumatic devices, and replacement of leaking equipment, could involve construction activities related to installing or replacing gathering lines, piping, flanges, valves, and similar features associated with oil and gas facilities. Compliance responses at natural gas transmission and distribution pipelines and related equipment and facilities may result in an increase in the rate at which repairs and replacements are made. Emissions from pipeline and compressor blowdowns may be reduced by implementing methods such as using portable compressors; using plugs to isolate sections of pipelines; flaring vented gas; installing ejectors (nozzles that can capture blowdown gas and route it to a useful outlet); routing collected vapors to fuel gas systems, sales gas lines, microturbines, or underground injection wells; and installing static seals on compressor rods. Any pipeline replacement or reconstruction activities, leak surveys, and methods to reduce blowdown emissions would typically occur within the footprint of existing oil and gas facilities.

Various methods could be used to improve existing oil and gas facilities, including collection of vapors. While collection of vapors would generally rely upon the pressure associated with gas to transport, some options for disposal could require changes to energy demand. For instance, pumping gas into underground injection wells would increase energy needs, while routing methane to fuel or sales lines could reduce energy demands by diverting methane to productive use that would have otherwise been vented to the atmosphere. The potential for a change in energy demand would be site-specific and dependent on the particular methods used to reduce emissions. Increased vapor collection and control as a result of the 2022 Scoping Plan may lead to collected vapors being stored temporarily at the collection site and then transferred via truck for disposal in the sales gas system, microturbines, fuel gas system, or underground injection well.

The potential for an increase in fuel consumption would be site-specific and dependent on the particular methods used to improve oil and gas facility operations. However, any increases in energy consumption would be minimal and not substantial in comparison to the demand associated with an oil and gas facility. Furthermore, in the case that vapor disposal methods use microturbines, energy demand could be decreased as these systems produce electricity that could offset energy needs associated with facilities. This impact would be less than significant.

#### **g) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce RNG that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network. In some cases, collected manure could be transported to centralized digesters and potentially codigested with other feedstocks (such as food waste) for increased fuel production.

Implementation of the 2022 Scoping Plan could result in the increased use of alternative fuels such as RNG, which would displace diesel fuel currently used to power generators, engines, and other equipment. Appendix F of the CEQA Guidelines identifies the use of alternative fuels as a measure to reduce energy demand. Moreover, Appendix F also lists increased use of renewable energy as an appropriate strategy to mitigate energy impacts. Use of zero- and near zero-emission technologies, as discussed above, would divert energy from fossil fuel-powered systems and engines to electrical systems, which, as mandated by the Renewables Portfolio Standard and as outlined in SB 100's 100 percent renewable and zero-carbon resources by 2045 target, will become increasingly more renewable in the coming years. Arguably, through the use of alternative fuels and an increasingly more renewable energy grid, implementation of the 2022 Scoping Plan would improve the efficiency of energy usage across the state. This impact would be less than significant.



#### **h) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management actions would substantially increase forest fuel treatment activities in several regions of the state through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead tree removal or clearing, herbicide application, and other methods. These increased fuel reduction activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed trees and brush. Most forest-thinning and undergrowth-clearing activities would require increased use of heavy biomass removal, transport, and processing equipment, such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks.

The proposed fuel reduction measures could result in the burning and use of forest biomass residues for energy production. Holistic forest management strategies such as prescribed fire and mechanized thinning would be used to restore a natural fire regime to ecosystems. Mechanized thinning forest biomass could be collected and processed by biomass plants to produce energy; however, fuel (e.g., diesel) would be required to collect, process, and transport the biomass.

Biomass transport requires the use of large on-road heavy-duty trucks that run on diesel fuel. An increase in the use of fuels reduction treatments would be anticipated to generate more trips traveled for heavy-duty vehicles, which could produce a rise in diesel use. The use of this energy demand would not be excessive, and the minimum required quantities would be expected to be used. This impact would be less than significant.

#### **i) Agricultural Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses that address practices related to soil conditions include encouraging no till or reduced till practices, planting cover crops, transitioning to organic agriculture, and applying compost. Implementing certain soil management practices could increase the use of on-farm mechanical equipment (e.g., compost application, mulching, and whole orchard recycling). Additionally, compost application would require increased use of trucks to transport the compost to fields employing this soil management practice. Other types of practices (e.g., cover crops, windbreak/shelter belt establishment, tree/shrub establishment) may require increased water use to establish and or/maintain plant or trees.

The agricultural actions in the 2022 Scoping Plan reduce the amount of heavy equipment use and thus reduce demand on diesel fuel. In addition, fields managed using no-till for multiple years generally have a higher water-holding capacity than conventionally tilled fields (USDA 2021) and would inherently reduce energy required for agricultural operations since heavy equipment use would not be required to till the fields. This reduced rate of water demand would decrease the need for energy to pump groundwater and operate canals to irrigate the agricultural fields employing no-

till operations. Implementation of certain practices, such as land application of compost, could change the type of heavy equipment and associated energy demand. However, CARB does not have evidence to suggest that use of heavy equipment to transport compost to fields would be conducted in a manner that exceeds existing transport of compost for various applications throughout the state or that it would exceed any truck transport of fertilizer materials being replaced by compost application. Thus, CARB expects that the 2022 Scoping Plan agricultural actions will be implemented at or below existing energy consumption conditions in the agriculture sector. Thus, agricultural actions would result in a less than significant impact on energy demand.

#### **j) Offshore Renewable Wind Actions**

As described in more detail in Chapter 2, offshore renewable wind turbine projects would be installed and operated to support the decarbonization of the electrical sector. Turbines could be located within shallow and deeper portions of the oceans and would be supported by floating platforms. Turbines would be approximately 350 to 500 feet high, on average, and would be configured to optimize capture of wind energy. Energy captured by these turbines is transmitted to floating substations, which collect and stabilizes the power generated by the turbines, and is then transmitted to the onshore power grid.

Operation of wind turbines would supplement additional energy to California's electrical grid. The primary objective of implementing offshore wind projects is to fortify the resiliency of the electrical grid as the state moves to decarbonize the energy and transportation sectors. Increased stringency pertaining to the sale of EVs and restrictions for on-site natural gas in development projects would divert energy previously generated from the burning of fossil fuels such as petroleum, diesel fuel, and natural gas, among others. Turbines of 330 feet have an energy conversion capacity of approximately 6 MW; turbines of 500 feet have an energy conversion capacity of approximately 15 MW or greater. This energy would be transmitted to land-based electrical infrastructure and used to supplement regional electricity demand.

Because offshore wind turbines would result in a decreased reliance on fossil fuels, would strengthen the resiliency of the electrical grid, and would promote renewable energy usage, these actions under the 2022 Scoping Plan would be beneficial with respect to energy impacts.

#### **Impact Significance Determination**

Long-term operational-related effects on energy associated with implementation of the 2022 Scoping Plan would be **less than significant**.

## Mitigation Measures

No mitigation is required.

### 7. Geology and Soils

#### ***Impact 7.a: Short-Term Construction-Related Effects on Geology and Soils***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

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

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

Construction activities resulting from the 2022 Scoping Plan could require disturbance of undeveloped areas on existing oil facilities, such as clearing of vegetation, earth movement and grading, and trenching for piping installation. In general, the potential to result in these types of disturbances would be associated with trenching for new piping or preparation for construction staging areas.

Operation of vessels used to construct offshore wind energy projects could disturb oceanic sediment. When operating in shallow waters (typically 20 feet deep or less), propeller wash from large vessels could contact the bottom of the ocean floor and cause scouring and sediment resuspension. Large construction vessels could be elevated on hydraulic legs that could cause direct impacts to the seabed. The laying of electrical cables, anchoring is the typical method use to move a vessel along the cable route, which could similarly disturb the ocean floor causing temporary scarring of ocean sediment.

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

### **Impact Significance Determination**

Short-term construction-related effects on geology and soils associated with the 2022 Scoping Plan would be potentially significant.

### **Mitigation Measures**

#### ***Mitigation Measure 7.a***

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to geology and soils. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would 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 that are routinely required to avoid and/or minimize impacts to geology and soils include:

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

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 7.a, significant impacts on geology and soils could occur.

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

***Impact 7.b: Long-Term Operational-Related Effects on Geology and Soils***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on geology and soils may be related to the low carbon fuels actions; mineral extraction activities related to renewable energy and vehicle electrification actions; improvements to oil and gas facilities actions; manure management actions; forest, shrubland, and grassland management actions; and agricultural actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 7.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

**a) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and

alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

Soil erosion from farming threatens the productivity of agricultural land and causes several problems elsewhere in the environment. An average of 10 times as much soil erodes from American agricultural fields as is replaced by natural soil formation processes. Because it takes up to 300 years for 1 inch of agricultural topsoil to form, soil that is lost is essentially irreplaceable (Trautmann et al. 2015). The amount of erosion varies considerably from one field to another, depending on soil type, slope of the field, drainage patterns, and crop management practices, and the effects of the erosion vary, also. Areas with deep organic loams are better able to sustain erosion without loss of productivity than are areas where topsoils are shallower.

Even when soil erosion is not excessive, intensive agriculture can impair soil quality by depleting the natural supplies of trace elements and organic matter. In natural ecosystems, soil fertility is maintained by the diverse contributions and recycling of nutrients by a wide range of plant and animal species. When this diversity is replaced by a single species grown year after year, some trace elements are depleted if not replaced by fertilization. The organic content of the soil also diminishes unless crop residues or other organic materials are supplied in sufficient quantities to replace that consumed over time.

Thus, for the reasons described above, long-term operational-related impacts associated with use of crop-based biofuels on soils could be substantial. This impact would be potentially significant.

#### **b) Improvements to Oil and Gas Facilities Actions**

As described in more detail in Chapter 2, compliance responses at oil and gas facilities may include modifications to existing facilities, such as the installation of vapor recovery systems, installation of low-bleed or zero-bleed pneumatic devices, and replacement of leaking equipment, could involve construction activities related to installing or replacing gathering lines, piping, flanges, valves, and similar features associated with oil and gas facilities. Compliance responses at natural gas transmission and distribution pipelines and related equipment and facilities may result in an increase in the rate at which repairs and replacements are made. Emissions from pipeline and compressor blowdowns may be reduced by implementing methods such as using portable compressors; using plugs to isolate sections of pipelines; flaring vented gas; installing ejectors (nozzles that can capture blowdown gas and route it to a useful outlet); routing collected vapors to fuel gas systems, sales gas lines, microturbines, or underground injection wells; and installing static seals on compressor rods. Any pipeline replacement or reconstruction activities, leak surveys, and methods to reduce blowdown emissions would typically occur within the footprint of existing oil and gas facilities.

In the case that an oil and gas facility would need to inject additional gas into an existing well or repurpose an existing extraction well into a gas injection well, Geologic Energy Management Division (CalGEM) analysis and approval would be required. Permitting of a Class II well requires submission of a geologic study and injection plan that identifies all geologic units, formations, freshwater aquifers, and oil or gas zones (Title 14 CCR Section 1724.7(b)). Class II permit requirements ensure that injection of hazardous materials would occur at a depth that would prevent surface contamination of soil and water and minimize risks to the environment. This impact would be less than significant.

### **c) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce RNG that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network. In some cases, collected manure could be transported to centralized digesters and potentially codigested with other feedstocks (such as food waste) for increased fuel production.

Manure management practices under the methane reduction measures would occur within existing dairies sites that are likely to contain substantial disturbance to soils. Changing manure practices, such as creating piles of manure or pasturing, could result in increased disturbance to geologic resources, such as compaction and loss of topsoil due to trampling and reductions in vegetation. However, dairies are generally located in lands designated for agricultural use, where soil disruption is typical. Manure piles would be located in discrete areas and moved once drying is completed. Pasturing cattle typically occurs on a rotational schedule, and maintenance of vegetation is necessary for feeding. Thus, changes in manure management practices would not substantially affect soil resources. This impact would be less than significant.



#### **d) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch.

Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The

impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

Treatment activities implemented under the 2022 Scoping Plan, consistent with the CalVTP, may involve the disturbance of soils, as well as the reduction in vegetative cover, which has the potential to substantially increase rates of erosion and loss of topsoil. Mechanical treatments using heavy machinery are the most likely to cause soil disturbance that could lead to substantial erosion or loss of topsoil, especially in areas of steep slopes. In general, it is highly likely that mechanical treatments (relative to other treatment activities) would be used for all treatment types in tree fuel types, as well as for WUI fuel reduction treatments in shrub fuel types. Additionally, prescribed burning can increase risk of water repellency (Robichaud et al. 2010) and breakdown of soil structure, which can lead to substantial increases in erosion. There is a high likelihood that prescribed burning would be used most for ecological restoration treatments in grass fuel types, a moderate likelihood it would be used to implement fuel break and ecological restoration treatments in tree fuel types, and a moderate likelihood it would be used for fuel break treatments in shrub fuel types. Consistent with the CalVTP, the amount of vegetation in all treated areas has the potential to expose soil to wind and water erosion. Measures to reduce erosion and maintain drainage, such as suspending disturbance during heavy precipitation, limiting high ground pressure vehicles, stabilizing disturbed soil areas, monitoring for and minimizing erosion, constructing water breaks, minimizing burn pile sizes, and assessing steep slope stability, would avoid and minimize the risk of substantial erosion and loss of soil<sup>40</sup>.

Removal of vegetation during treatments activities implemented under 2022 Scoping Plan, consistent with the CalVTP, could affect the root structure in treated areas such that the stability of slopes and soils could decrease, which would increase the risk of landslide. Additionally, by removing vegetation, the soil water content could increase due to lack of uptake and transpiration by the vegetation. Higher soil water content could potentially destabilize slopes and increase the risk of landslide. Landslide risk would increase in areas with steeper slopes and where previous landslide has occurred. Stabilizing disturbed soils, monitoring for and minimizing erosion, and

---

<sup>40</sup> See CalVTP Standard Project Requirement GEO-1, through GEO-8

assessing the stability of steep slopes would avoid or minimize the risk of landslide resulting from treatments<sup>41</sup>.

#### e) Agricultural Actions

As described in more detail in Chapter 2, reasonably foreseeable compliance responses that address practices related to soil conditions include encouraging no till or reduced till practices, planting cover crops, transitioning to organic agriculture, and applying compost. Implementing certain soil management practices could increase the use of on-farm mechanical equipment (e.g., compost application, mulching, and whole orchard recycling). Additionally, compost application would require increased use of trucks to transport the compost. Other types of practices (e.g., cover crops, windbreak/shelter belt establishment, tree/shrub establishment) may require increased water use to establish and or/maintain plant or trees.

Changes to agricultural actions, including no till or reduce till practice and composting would overall reduce the potential for erosion and improve soil quality. In turn, this would reduce the potential for erosion and loss of topsoil. However, in general, similar types of equipment would be used through implementation of the agricultural action (e.g., tractors, balers, and planting equipment). Thus, the reasonably foreseeable compliance responses associated with agricultural actions would be less than significant.

#### Impact Significance Determination

Implementing the agricultural actions, improvements to oil and gas facilities actions; and manure management actions would be less than significant. Implementing the low carbon fuels actions and forest, shrubland, and grassland actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on geology and soils.

#### Mitigation Measures

Table 4-11 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-11: Mitigation Measures Applicable to Long-Term Operational Impacts on Geology and Soils**

Actions	Mitigation Measure
Low carbon fuels actions	7.b.1
Forest, shrubland, and grassland management actions	7.b.2

<sup>41</sup> See CalVTP Standard Project Requirement GEO-3, GEO-4, GEO-7, GEO-8

### ***Mitigation Measure 7.b.1***

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

- Use no-till agriculture to reduce soil erosion.
- Avoid harvesting in areas with steep slopes.
- Identify and avoid areas with unstable slopes and local factors that can cause slope instability (groundwater conditions, precipitation, seismic activity, slope angles, and geologic structure).
- Identify soil properties, engineering constraints, and facility design criteria.
- Develop a site grading and management plan to identify areas of disturbance, areas of cut and fill, slope during and after grading, existing vegetation, and measures to protect slope, drainages, and existing vegetation in the project area.
- Develop an erosion control plan to delineate measures to minimize soil loss and reduce sedimentation to protect water quality.
- Design runoff control features to minimize soil erosion.
- Construct drainage ditches only where necessary.
- Use appropriate structures at culvert outlets to prevent erosion.

### ***Mitigation Measure 7.b.2: Implement CalVTP Program EIR SPRs Applicable to Geology and Soils***

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference into this EA (BOF 2019):

- SPR AD-3: Consistency with Local Plans, Policies, and Ordinances
- SPR AQ-3: Create Burn Plan
- SPR AQ-4: Minimize Dust
- SPR GEO-1: Suspend Disturbance during Heavy Precipitation
- SPR GEO-2: Limit High Ground Pressure Vehicles
- SPR GEO-3: Stabilize Disturbed Soil Areas
- SPR GEO-4: Erosion Monitoring

- SPR GEO-5: Drain Stormwater via Water Breaks
- SPR GEO-6: Minimize Burn Pile Size
- SPR GEO-7: Minimize Erosion
- SPR GEO-8: Steep Slopes
- SPR HYD-3: Water Quality Protections for Prescribed Herbivory
- SPR HYD-4: Identify and Protect Watercourse and Lake Protection Zones

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 7.b.1 and Mitigation Measure 7.b.2, significant impacts on geology and soils could occur.

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

## **8. Greenhouse Gas Emissions**

### ***Impact 8.a: Short-Term Construction-Related and Long-Term Operational-Related Effects on Greenhouse Gas Emissions***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation,

modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

As detailed in Chapter 2 of this Recirculated Draft EA, the main purpose of the Proposed 2022 Scoping Plan is to achieve the maximum technologically feasible and cost-effective reductions in GHG emissions to reflect progress towards the 2030 target and to plan the longer-term trajectory to reduce GHG emissions at least 80 percent below 1990 levels by 2050 and achieve carbon neutrality no later than 2045; and pursue actions and outcomes covering the State's GHG emissions in furtherance of executive and statutory direction to continue progress reducing GHG emissions to at least 40 percent below 1990 levels by 2030, at least 80 percent below 1990 levels by 2050, and achieve carbon neutrality no later than 2045.

Construction activities, which address the building phase of reasonably foreseeable compliance responses, and operations related to management actions on NWLs would require use of vehicles and equipment that would consume fuel and emit GHGs for construction activities, materials transport, and worker commutes. Construction- and operations-related GHG emissions would be temporary and last only for the duration of construction. Local agencies, such as air pollution control districts, are generally charged with determining acceptable thresholds of construction-generated GHG emissions, measured in metric tons of carbon dioxide equivalent per year (MTCO<sub>2e</sub>/year). Quantification of short-term construction-related GHG emissions is generally based on a combination of methods, including the use of exhaust emission rates from emissions models, such as OFFROAD 2007 and EMFAC 2021. These models require consideration of assumptions, including construction timelines and energy demands (e.g., fuel and electricity).

Air districts differ in their treatment of construction emissions. For instance, the Sacramento Metropolitan Air Quality Management District recommends that construction emissions be compared to a bright-line threshold of significance of 1,100 MTCO<sub>2e</sub> per year.<sup>42</sup> Other air districts, such as the Bay Area Air Quality Management District, do not have a numerical threshold for assessing the significance of

---

<sup>42</sup> Sacramento Metropolitan Air Quality Management District. 2021. CEQA Guide. <http://www.airquality.org/LandUseTransportation/Documents/Ch6GHG2-26-2021.pdf>.

construction-generated GHG emissions.<sup>43</sup> 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.<sup>44</sup>

The 2022 Scoping Plan includes actions designed to decrease GHG emissions, and therefore implementation is expected to result in substantial long-term GHG emissions reductions in California as discussed in Chapters 2 and 3 of the 2022 Scoping Plan. The estimated GHG emissions reductions from the Proposed Scenario's AB 32 GHG Inventory Sectors compared to the Reference Scenario in 2021 is summarized in Table 4-12. Average annual GHG emissions reductions from 2025 through 2045 for the NWL sectors are provided in Table 4-13. Depending on project size, the generation of construction emissions are inherently short-term when compared to operational emissions which continue to emit until a project or facility has been decommissioned. Nevertheless, GHGs typically have a long atmospheric lifespan. Therefore, construction emissions must be considered in the overall context of a project. Thus, it is important that the Proposed Projects' benefits outweigh the emissions from the construction level. When construction- and operations-related GHG emissions associated with implementation of actions in the 2022 Scoping Plan are considered in relation to the overall long-term operational GHG emissions reduction benefits associated with drastic reductions in fossil fuel use and improved NWL health discussed in Chapters 2 and 3 of the 2022 Scoping Plan, they are not considered substantial. Some actions in the 2022 Scoping Plan could result in GHG emissions reductions in construction activities over time due to ongoing efforts to increase low-carbon fuels and increase deployment of zero-emission vehicles across all vehicle classes.

**Table 4-12: GHG Emissions Estimates from PATHWAYS Modeling of AB 32 GHG Inventory Sectors (in MMTCO<sub>2</sub>e)**

	Reference Scenario <sup>45</sup>	Proposed Scenario in the 2022 Scoping Plan
Sector	2021	2045
Agriculture	32	14
Electric Power	54	31
High GWP	20	9

<sup>43</sup> Bay Area Air Quality Management District. 2017. CEQA Air Quality Guidelines. [https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa\\_guidelines\\_may2017-pdf.pdf?la=en](https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en).

<sup>44</sup> South Coast Air Quality Management District. 2008. Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold. [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/ghgattachmente.pdf](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf).

<sup>45</sup> Note that the Reference Scenario year used in this table (2021) is the same as the CEQA baseline year used in this EA.

Industrial	75	18
Recycling and Waste	10	8
Residential and Commercial	34	4
Transportation	156	10
Statewide GHG Emissions*	382	95 (remaining emissions for reduction via natural and/or mechanical means for carbon neutrality)
GHG Emissions Reductions	287 (relative to 2021 Reference Scenario)	

Notes:

- Totals may not appear to add up perfectly due to differences in significant figures and rounding convention in individual line items.
- The PATHWAYS modeling was calibrated to the California Greenhouse Gas Emission Inventory, 2021 edition, which includes GHG emissions released from AB 32 sources during 2000-2019 calendar years. In concert with data collected through AB 32 programs, the inventory is the tool for demonstrating the state's progress in achieving the statewide GHG target. The statewide emission estimates in the inventory rely on state, regional, or federal data sources, and on aggregated facility-specific emission reports from CARB's Mandatory GHG Reporting Program. Calculation methodologies are consistent with IPCC Guidelines. CARB staff believes the 2021 Reference Scenario GHG value, as calibrated to the most recent California Greenhouse Gas Emission Inventory, is the best available estimate of current GHG emissions as it is based off the GHG Emission Inventory, though this is a modeled estimate, not measured data.
- In developing the 2022 Scoping Plan, CARB staff forecast a Reference Scenario and estimated GHG emissions outcomes for the AB 32 GHG Inventory Sectors using the PATHWAYS model. There are assumptions that existing policies and programs being implemented, as well as new programs to be developed, will deliver the expected outcomes in the 2022 Scoping Plan. However, it is unlikely that the future will exactly match projections, and therefore each of the assumptions has a level of uncertainty associated with the results. The major factors of uncertainty that affect our ability to stay on a trajectory for long-term achievement of the climate targets include the successful rate of deployment of clean technology and fuels identified in the 2022 Scoping Plan, as well as consumer adoption patterns, and the permitting and build out of necessary new assets and reuse of existing assets to produce and deliver clean energy.

Source: CARB 2022 Scoping Plan.

As referenced in Table 4-12, additional reductions would occur from natural and/or mechanical means. Under the Proposed Scenario, all NWL sectors have reduced emissions relative to the Reference Scenario, except for the Wildland Urban Interface



where vegetation is removed to create defensible space. NWL ecosystems naturally vary between being a source and a sink for GHGs over time, therefore the long-term annual average is used. California's NWL ecosystem carbon stocks are driven primarily by forest, shrubland, and grassland carbon stocks which are currently too high, leading to increased wildfire risk and reduced ecosystem health and resilience. The Proposed Scenario includes activities to reduce carbon stocks on forests, shrublands, and grasslands, resulting in improved ecological health, resilience, and reduced wildfire emissions. Other NWL types, such as perennial croplands and urban forests, are already net sequesterers of carbon, and activities under the Proposed Scenario are expected to increase sequestration rates in these sectors. Annual croplands, delta wetlands, and deserts are currently net emitters, and activities under the Proposed Scenario are expected to reduce emissions from these lands.

**Table 4-13: Average Annual GHG Emissions and Reductions from NWL Modeling of NWL Sectors 2025-2045 (MMT CO<sub>2</sub>e/year)**

	Reference Scenario	Proposed Scenario	GHG Reductions
Forests/Shrublands/Grasslands	8.97	8.85	0.12
Annual Croplands	0.61	0.38	0.23
Perennial Croplands	-2.15	-2.16	0.01
Delta Wetlands	1.25	0.82	0.43
Urban Forests	-0.11	-0.63	0.52
Wildland Urban Interface	0.00	0.75	-0.75
Deserts	0.00	0.00	0.00
Total	8.56	8.00	0.56

Overall, the Proposed 2022 Scoping Plan aims to pursue actions and outcomes covering the State's GHG emissions in furtherance of executive and statutory direction to continue progress reducing GHG emissions to at least 40 percent below 1990 levels by 2030, at least 80 percent below 1990 levels by 2050, and achieve carbon neutrality no later than 2045 and; thus, substantially reducing GHG emissions from activities across the state while increasing carbon sequestration, as set forth in detail in the Staff Report and, in this EA. For these reasons, the contribution of the Proposed 2022 Scoping Plan to the impact of climate change would be **beneficial**.

#### **Mitigation Measures**

No mitigation is required.

## 9. Hazards and Hazardous Materials

### ***Impact 9.a: Short-Term Construction-Related Effects on Hazards and Hazardous Materials***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

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

remains for a substantial release of hazardous materials into the environment. Therefore, short-term construction-related impacts related to hazards and hazardous materials associated with the 2022 Scoping Plan would be potentially significant.

### **Impact Significance Determination**

Short-term construction-related effects related to hazards and hazardous materials associated with the 2022 Scoping Plan would be potentially significant.

### **Mitigation Measures**

#### ***Mitigation Measure 9.a***

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

- Proponents of new or modified facilities constructed as a compliance response to the 2022 Scoping Plan 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.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 9.a, significant impacts related to hazards and hazardous materials could occur.

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

### ***Impact 9.b: Long-Term Operational-Related Effects on Hazards and Hazardous Materials***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts on hazards and hazardous materials may be related to the low carbon fuels actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and CCS actions; improvements to oil and gas facilities actions; manure management actions; forest, shrubland, and grassland management actions; and organic waste diversion and composting actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 9.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

**a) Increase in Renewable Energy and Decrease in Oil and Gas Use  
Actions**

As described in more detail in Chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. Depending on the size and location of these types of systems, operations may affect the quality of scenic vistas and damage scenic resources. The operation of wind, solar thermal, and solar PV energy systems is expected to occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

An idle well is an oil or gas well that has not been used for two years or more and has not yet been properly plugged and abandoned (sealed and closed). Plugging and abandonment involves permanently sealing the well with a cement plug to isolate the hydrocarbon-bearing formation from water sources and prevent leakage to the surface. If a well is not properly sealed and closed, it may provide a pathway for hydrocarbons or other contaminants to migrate into drinking water or to the surface.

While it is the responsibility of operators to properly plug and abandon their wells and decommission attendant facilities, many operators in California may not have the financial health required to support the costs of doing this work, leaving the responsibility and costs of plugging and abandonment, decommissioning, and environmental remediation to the state. The Requirements for Idle Well Testing and Management regulations developed by CalGEM took effect on April 1, 2019. The requirements include testing requirements for idle wells that operators plan to return to use, a testing waiver plan that allows operators to forego testing an idle well if the operator commits to plugging and abandoning the well, an idle well inventory and evaluation that operators of idle wells must submit, engineering analysis for idle wells idle that have been idle for 15 years or longer, filing requirements for idle well management plans, and monitoring requirements for inaccessible idle wells. These idle well regulations provide for the most rigorous testing standards for idle wells in the country and prevent damage to life, health, property, and natural resources. CalGEM anticipates that the new rules will continue to accelerate the elimination of idle wells. Compliance with these regulations would reduce potentially impacts related to release

of hydrocarbons or other contaminants from idle and orphan wells to a less-than-significant level.

Any type of energy infrastructure has an operational life, at the end of which it must be renovated or decommissioned. As such, renewable energy generation, transmission and distribution facilities and infrastructure, when decommissioned, would result in both landfill disposal and recycling of components and materials, most of which would be nonhazardous, but some with potentially hazardous materials, including things like used oils, fluids, **electronics**, and battery-related substances similar to those discussed in the “Expanded Use of Zero-Emission Mobile Source Technology Actions” subsection below. Given the high-level planning nature of the 2022 Scoping Plan, **it is not possible to identify the precise types, volumes, or timing of these types of materials that may be disposed or recycled.**

#### **b) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

Gasoline and diesel fuel blends contain toxic substances that can enter the environment and cause adverse health effects in people. Some of these substances, such as benzene, toluene, and xylenes, are found in crude oil and occur naturally in fuels and their vapors. Other substances, such as 1,3-butadiene and formaldehyde, are formed in engines during combustion and are present only in exhaust. Other harmful pollutants found in engine exhaust include PM (known more commonly as soot), NO<sub>x</sub>,

carbon monoxide, sulfur dioxide, and various hydrocarbons. Ozone, the major component of urban smog, is formed when NO<sub>x</sub> reacts in sunlight with hydrocarbons.

People are exposed to gasoline and diesel exhaust when they drive or ride in a vehicle, jog or bike along roads, or park in a public garage. Motorists are further exposed to gasoline vapors when they fill up their vehicle's fuel tank. People who work in or live near freeways, refineries, chemical plants, loading and storage facilities, or other places that handle crude oil and petroleum products may be exposed to higher levels of fuel components than the general public and face higher health risks.

Both liquid gasoline and motor vehicle exhaust contain chemicals that can cause cancer. Benzene, a fundamental component of gasoline and diesel fuel, as well as vehicle exhaust, causes cancer in humans. Gasoline exhaust also contains cancer-causing 1,3-butadiene, formaldehyde, and acetaldehyde. Diesel exhaust contains several dozen toxic substances, and scientific studies have shown that workers exposed to diesel exhaust are more likely to develop lung cancer. Long-term exposure to particles in diesel exhaust poses the highest cancer risk of any toxic air contaminant (Office of Environmental Health Hazard Assessment 2007).

All internal combustion engine vehicles have the potential to release chemicals into the environment. These releases may occur as emissions to the air during fuel combustion, as well as through spills and leaks during fueling and vehicle use. Low-carbon fuels and alternative diesels that would be imported into California would require storage. Underground storage tanks can degrade over time and could result in accidental release into the environment.

However, regulations limit the amount of fuel-related chemicals that may be released in the environment. EPA regulates diesel fuel under two programs: One is administered under the Office of Pollution Prevention and Toxic Substances, which requires that all chemicals produced in the United States be registered under the Toxic Substances Control Act, and the other is administered under the Transportation and Air Quality group as the Fuels and Fuel Additive program, which requires that all fuels sold for ground transportation purposes in the United States be registered with EPA and the volume produced reported on a quarterly basis. SWRCB regulates the storage of fuels in underground storage tanks. The Office of the State Fire Marshal regulates diesel and biodiesel storage, dispensing, and vapor recovery. All diesel and biodiesel facilities must follow California's Building Standards Code and Fire Code and adhere to the specific provisions regarding diesel and biodiesel.

Regardless of the location of origin, transportation route, or end use, hazardous materials related to the low carbon fuels are regulated through various programs, as described above. Thus, implementation of the 2022 Scoping Plan is not anticipated to increase potential hazards and hazardous materials impacts associated with the transportation, use, and disposal of fuels. This impact would be less than significant.

### **c) Expanded Use of Zero-Emission Mobile Source Technology Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the expanded use of zero-emission mobile source technology include increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste disposal or recycling from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

There could be an increase in the use of facilities that manufacture, recycle, and refurbish batteries and fuel cells related to increased demand. While it is reasonable to anticipate that land use policies controlling the location of new industrial facilities would generally avoid locations near existing or proposed schools or airports, the potential cannot be entirely dismissed. Hazardous materials are used during and created by operations of such facilities. For example, smelting is used to recycle batteries and creates hazardous emissions, although those are generally treated. Chemical leaching processes uses chemicals such as hydrochloric acid and sulfuric acid (Jacoby 2019). These activities would be more likely to occur indoors in a contained area and with proper equipment, limiting the potential effects of spills and accidents as activities involving the use of hazardous materials would occur within the confines of facilities. Risk of outdoor release of hazardous materials would be highest during the movement of raw goods to manufacturing facilities or the export of finished goods containing hazardous materials following the manufacturing process. The transport, use, and disposal of hazardous materials would be required to comply with all applicable federal, State, and local laws that would reduce the potential for accidents and require certain actions should a spill or release occur; however, the potential remains for the release of hazardous materials into the environment.

Lithium metal batteries contain potentially toxic metals, such as copper and nickel, and organic chemicals, like toxic and flammable electrolytes (Zeng et al. 2015). 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 (Battery University 2022). The likelihood to overheat or ignite is increased if the batteries are poorly packaged, damaged, or exposed to a fire or a heat source. However, when packaged and handled properly, lithium-ion batteries pose no environmental hazard (79 *Federal Register* 46011, 46032).



There are inherent risks associated with the installation and use of hydrogen fuel cells, including fire and explosion, electric shock, and exposure to toxic materials. Hydrogen possesses several hazardous properties, such as a very wide flammability range, very low ignition energy, low viscosity, and high diffusivity, and hydrogen is chemically lighter than air (Health and Safety Executive 2004). 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 lithium-ion batteries and hydrogen fuel cells and the compliance with regulations are sufficient to reduce adverse impacts associated with hazards and hazardous materials. An increase in demand for lithium-ion batteries and fuel cells could result in increased recycling, refurbishment, or disposal of lithium-ion batteries and hydrogen fuel cells. However, any increased rates of disposal of lithium-ion batteries and hydrogen fuel cells would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. Compliance with the appropriate federal and State laws governing the handling of potentially hazardous materials would be sufficient to minimize the risks from lithium-ion batteries and fuel cells because they ensure adequate handling and disposal safeguards to address these risks.

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

#### **d) Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with mechanical carbon dioxide removal and CCS actions include the modification of existing or new industrial facilities to capture CO<sub>2</sub> emissions and construction of new infrastructure, such as pipelines, wells, and other surface facilities within or near the emitting facility, to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. Mechanical carbon dioxide removal and CCS actions may also result in increased transportation, such as truck, rail, and barge transit, to transport CO<sub>2</sub> from the industrial facilities to the sequestration sites. The transport distances and pipeline construction requirements for the captured CO<sub>2</sub> would vary depending on the locations of specific industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy

generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand will be met by increased generation, both on-site and off-site.

Although the specific type(s) and sizes of these facilities and infrastructure are uncertain, the operation of new and modified facilities could result in the transport, use, and/or disposal of new or higher levels of hazardous chemicals compared to the baseline, depending on the type of facility and carbon capture system present. In the near term, most potential CCS projects would likely occur in processes at existing facilities that already produce high-purity CO<sub>2</sub> streams, such as ethanol production and certain forms of steam methane reforming. These projects do not require a CO<sub>2</sub> capture step and are expected to occur sooner because of their lower cost. Therefore, these near-term projects are likely to incur minimal changes in criteria and toxics emissions as a result of CO<sub>2</sub> compression, transport, and injection. For CCS projects that produce low-purity CO<sub>2</sub> streams, such as power plants, the CO<sub>2</sub> capture technology would likely be primarily based on chemical adsorption using amine-based solvents, such as monoethanolamine (MEA).<sup>46</sup> Because amine-based solvents in carbon capture systems would be recycled in a closed system, emissions of amine-based solvents associated with carbon capture systems would be minimal. CO<sub>2</sub> capture technology that involves the use of amine solvents would produce amine waste related to amine degeneration. The waste amine requires further treatment and disposal. Thus, if an accident were to occur during treatment or disposal, hazardous consequences could result.

New or expanded ethanol plants may use additional quantities of anhydrous ammonia, a California Accidental Release Prevention Program-regulated hazardous chemical, and generate hazardous wastes (e.g., ammonia and acid wastes). In addition, ethanol is a volatile, flammable, colorless liquid and has a strong characteristic odor. It is easily ignited by heat, sparks, or flames. Thus, if an accident were to occur during transport or plant operation, hazardous consequences could result.

Transport of hazardous materials (e.g., caustic soda, ammonia, acid and solvent wastes, ethanol, and solvents) are regulated under the U.S. Department of Transportation (DOT), which requires the safe and reliable transportation of hazardous materials by all modes. DOT's Hazardous Materials Regulations govern the transportation of ethanol and other biofuels and blends by rail, air, motor carrier, and barge. In addition, 49 CFR Part 172 lists and classifies those materials that DOT has designated as hazardous materials for purposes of transportation and prescribes the requirements for shipping papers, package marking, labeling, placarding, emergency response, training, and safety and applicable to the shipment and transportation of those hazardous materials. Requirements for carriage by rail, including operating,

---

<sup>46</sup> Capture technologies such as pre-combustion capture, processes that use other solvents or sorbents, or entirely new power cycles may have different emissions impacts but have not yet been demonstrated commercially.

loading, and unloading requirements, along with detailed requirements for Class 3 (flammable liquid) materials are provided in 49 CFR Part 174.

Geologic sequestration involves the injection of CO<sub>2</sub> thousands of feet underground, where it is trapped within the pore spaces of solid rock. EPA requires that sequestration sites have confining subsurface zones, or layers of impermeable rock, to keep CO<sub>2</sub> from escaping into overlying geologic layers, groundwater, or the surface (40 CFR 146.83(a)(2)). Under the geologic sequestration rule, EPA requires that potential geologic sequestration sites be thoroughly studied to protect the safety and security of the project. Geologic sequestration is not allowed where unsuitable subsurface conditions exist, and all underground injection projects must obtain permits to ensure the protection of underground drinking water sources or the surface (40 CFR 146.82(a)(3)). This impact would be less than significant.

In some cases, enhanced oil recovery (EOR) has been proposed in conjunction with CCS projects in existing oil fields. Technologies to implement CCS/EOR projects are evolving. For instance, projects are currently underway to consider mobility control of the injected CO<sub>2</sub> using novel foams and gels (U.S. Department of Energy 2014). However, note that SB 905 (Caballero, 2021-2022 legislative session, enrolled by the legislature but not signed by the Governor at the time of writing) would prohibit an operator from injecting a concentrated carbon dioxide fluid produced by a carbon dioxide capture, removal, or sequestration project into a Class II injection well for purposes of enhanced oil recovery, including the facilitation of enhanced oil recovery from another well.

In addition, use of industrial sources of CO<sub>2</sub>, such as coal-based energy producers and fertilizer manufacturing plants, could contain impurities (i.e., injected agents may include other constituents, rather than only pure CO<sub>2</sub>, that could become contaminants). Although operators would take steps to ensure that the CO<sub>2</sub> and other pollutants remained sequestered, the risk would remain that some emissions could be released into the air, soil, aquifers, or surface waterways because of unidentified and/or poorly abandoned wells or other pathways (e.g., natural fractures).

Similar to natural gas pipelines, CO<sub>2</sub> pipelines operate at high pressure within the ambient temperature of the system. They require monitoring for leaks, and protection against overpressure, especially in populated areas (Parfomak and Folger 2008). While pipeline failure associated with fracture propagation (i.e., CO<sub>2</sub> that is unintentionally released causing high volumes of CO<sub>2</sub> to be release into an area) is recognized by the hydrocarbon industry as a potentially hazardous issue, there is uncertainty surrounding the spontaneity of CO<sub>2</sub> pipeline combustion or explosion due to fracture propagation (Bilio et al 2009). Depending on the state of CO<sub>2</sub> captured in these systems (i.e., gas or solid), the potential hazards associated with fracture propagation vary; dispersion behavior, solubility, or erosion impact of the velocity to which a leak occurs influence the physical impacts of these occurrences. According to a 2009 study, “[d]epending on

the precise time during any release, supercritical CO<sub>2</sub> will be released to atmosphere and disperse over large distances” (Bilio et al 2009).

CO<sub>2</sub> released from a pipeline is heavier than air, and the high-rate release from a pipe can form cold dense gas fog clouds comprised of dry ice particles and visible water vapor as the humidity in the air condenses from the extreme cooling. Such high-rate releases can produce areas of low visibility from “fog,” both from dry ice particles and water condensation. The CO<sub>2</sub> pipeline rupture fog becomes transparent when eventually warmed by the surrounding environment. Upon warming, the CO<sub>2</sub> plume can flow considerable distances from the pipeline unobserved, traveling over terrain, displacing oxygen while settling or filling in low spots. Ambient CO<sub>2</sub> may additionally cause adverse health effects depending on its concentration in the atmosphere. For instance, concentrations exceeding 10 percent by volume may inhibit some cognitive function, and concentrations exceeding 25 percent have the potential to lead to asphyxiation. Exposure to CO<sub>2</sub>, similar to other asphyxiants such as carbon monoxide, can in some cases lead to circulatory insufficiency, coma, and even death (Parfomak and Folger 2008). On February 22, 2020, a carbon dioxide (CO<sub>2</sub>) pipeline operated by Denbury Gulf Coast Pipelines LLC (Denbury) ruptured in proximity to the community of Satartia, Mississippi. The rupture followed heavy rains that resulted in a landslide, creating excessive axial strain on a pipeline weld (DOT 2022). The combination of weather and topography resulted in a slower dissipation of the gas. The pipeline was also carrying hydrogen sulfide, a flammable and toxic gas. The pipeline failed on a steep embankment, which had recently subsided. Heavy rains are believed to have led to a landslide, which created axial strain on the pipeline and resulted in a full circumferential girth weld failure. The Pipelines and Hazardous Materials Safety Administration’s (PHMSA) investigation also revealed several contributing factors to the accident, including but not limited to: Denbury not addressing the risks of geohazards in its plans and procedures, underestimating the potential affected areas that could be impacted by a release in its CO<sub>2</sub> dispersion model, and not notifying local responders to advise them of a potential failure.

Unlike hydrogen (H<sub>2</sub>), CO<sub>2</sub> is not flammable (i.e., it does not explode or detonate upon ignition). As such, it is not considered an issue of concern compared to conventional hydrocarbon pipelines. Nevertheless, CO<sub>2</sub> can cause blasts of intense pressure upon pipeline rupture. These ruptures can cause “blast like” expansion forces that dissipate quickly with distance from the pipeline, but may cause considerable damage within the pipelines’ right of way.

The Secretary of Transportation has primary authority to regulate interstate CO<sub>2</sub> pipeline safety under the Hazardous Liquid Pipeline Act of 1979, as amended. Under the act, the Department of Transportation (DOT) regulates the design, construction, operation and maintenance, and spill response planning for CO<sub>2</sub> pipelines. The DOT administers pipeline regulations through the Office of Pipeline Safety (OPS) within the Pipelines and Hazardous Materials Safety Administration (PHMSA).

In May 2022, PHMSA announced it is taking steps to implement new measures to strengthen its safety oversight of CO<sub>2</sub> pipelines within the U.S. and protect communities from pipeline failures. These measures include a new rulemaking to update standards for CO<sub>2</sub> pipelines, requirements related to emergency preparedness, and response; and issuance of an updated nationwide advisory bulletin to all pipeline operators underscoring the need to plan for and mitigate risks related to land-movements and geohazards that pose risks to pipeline integrity (PHMSA 2022). PHMSA also issued an updated advisory bulletin in June 2022 to address hazardous conditions related to pipelines and recommendations to operators. The updated advisory is intended to serve as a reminder to owners and operators of gas and hazardous liquid pipelines, particularly those with facilities located onshore or in inland waters, about the serious safety-related issues that can result from earth movement and other geological hazards. Additionally, changing weather patterns due to climate change may result in heavier than normal rainfall and increased temperatures causing soil saturation and flooding or soil erosion. Either phenomenon may adversely impact the stability of soil surrounding or supporting nearby pipeline facilities (Mayberry 2022).

At this time, recently passed SB 905 prohibits the transport of CO<sub>2</sub> by pipeline until such time that PHMSA updates measures to strengthen its oversight of CO<sub>2</sub> pipeline safety. Even once that rulemaking concludes, CARB cannot rule out with certainty the potential for safety and environmental hazards due to the potential for rupture and subsequent hazardous conditions related to exposure of high concentrations of CO<sub>2</sub>. Therefore, this impact would be potentially significant.

#### **e) Improvements to Oil and Gas Facilities Actions**

As described in more detail in Chapter 2, modifications to existing facilities, such as the installation of vapor recovery systems, installation of low-bleed or zero-bleed pneumatic devices, and replacement of leaking equipment, could involve construction activities related to installing or replacing gathering lines, piping, flanges, valves, and similar features associated with oil and gas facilities. Compliance responses at natural gas transmission and distribution pipelines and related equipment and facilities may result in an increase in the rate at which repairs and replacements are made. Emissions from pipeline and compressor blowdowns may be reduced by implementing methods such as using portable compressors; using plugs to isolate sections of pipelines; flaring vented gas; installing ejectors (nozzles that can capture blowdown gas and route it to a useful outlet); routing collected vapors to fuel gas systems, sales gas lines, microturbines, or underground injection wells; and installing static seals on compressor rods. Any pipeline replacement or reconstruction activities, leak surveys, and methods to reduce blowdown emissions would typically occur within the footprint of existing oil and gas facilities.

Installation and repair of gathering lines and piping, flanges, valves, low-NO<sub>x</sub> combustion devices, pneumatic devices and pumps, and other pieces of equipment associated with the compliance responses could require the use of hazardous

materials and hazardous wastes. These would generally consist of fuels, solvents, and other materials typically used to maintain industrial equipment. The management of hazardous materials and hazardous wastes would require permits from applicable federal, State, and local regulating agencies. Specific applicable laws and regulations that would apply include (but are not limited to) the Hazardous Waste Program specified under Subtitle C of the Resource Conservation and Recovery Act; Toxic Substances Control Act; Comprehensive Environmental Response, Compensation, and Liability Act; Hazardous Materials Transportation Act; and other applicable laws and regulations. In addition, it is expected that an oil and gas facility would already have secured such approval pursuant to these regulations and that the implementation of the project would not substantially change the routine transport, storage, use, and disposition of such hazardous materials and resulting wastes.

Implementation of the oil and gas measures would not drive development of new oil and gas facilities but would rather address equipment used within an existing site. Siting of specific oil and gas projects is subject to the local land use authority, and the 2022 Scoping Plan would not affect the location of existing or future facilities. As a result, the 2022 Scoping Plan would have no effect on a facility's proximity to schools, airports, or airstrips, or sites included on the Cortese List (Government Code Section 65962.5). Likewise, the 2022 Scoping Plan would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Under the oil and gas measures, collected vapors may be injected into existing, permitted underground wells. These wells are subject to Class II permit requirements. Class II injection wells fall under CalGEM's Underground Injection Control (UIC) program, which is monitored and audited by EPA. Therefore, while the oil and gas measures address conveyance of methane, which is a hazardous material, various regulations and permit requirements are in place that reduce the long-term operational-related impacts related to hazards and hazardous materials to a less than significant level.

#### **f) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce RNG that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards.

Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network.

Alternatively, collected manure could be transported to centralized digesters and potentially co-digested with other feedstocks (such as food waste) for increased fuel production. This would be feasible at large dairies in close proximity to one another that collectively could connect to a natural gas pipeline at lower cost than could occur individually. Implementation of digesters and associated equipment could provide small-scale electricity production, distributing biogas via pipeline and providing fuel for on- or off-site vehicle fleets. Digesters typically include flares, which are intended for emergency purposes and would not be expected to be used on a regular basis, if ever.

In some instances, converting dairies to pasture-based management systems may be an option to avoid methane production, in which manure is left in the field and decomposes aerobically (versus anaerobically in a lagoon). Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter).

In some instances, converting dairies to pasture-based management systems may be an option to avoid methane production, in which manure is left in the field and decomposes aerobically (versus anaerobically in a lagoon). Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter).

Manure management actions would include the modification of existing wastewater treatment plants to include or expand anaerobic digesters, and the construction of dairy and organic waste digesters. Through the use of anaerobic digestion, methane that would otherwise emit into the atmosphere is captured to fuel on- and off-site uses. The respiration of bacteria in an oxygen-free environment produces biogas, a gaseous mixture of methane and carbon dioxide that may also contain other compounds such as hydrogen sulfide. Unintentional releases of biogas from anaerobic digesters or pipelines could pose risks to human health and safety. For example, biogas could be released from a leak or rupture of a facility or one of the pipe segments. If the gas reaches a combustible mixture and an ignition source is present, a fire and/or explosion could occur, resulting in possible injuries and/or deaths. Depending on the concentration, inhalation of hydrogen sulfide gas can have adverse effects on human health ranging from a cough to lung hemorrhage.

Compliance with existing safety regulations and widely-accepted industry standards would minimize the hazard to the public and the environment. Operation of facilities

would comply with the California fire code, local building codes (including requirements for the installation of fire suppression systems), and gas pipeline regulations. The local fire agency would be responsible for enforcing the provisions of the fire code. The California Public Utilities Commission (CPUC) regulates the safety of gas transmission pipelines. Standard safety measures for anaerobic treatment facilities that would minimize the potential for exposure to biogas include leak detection systems, warning signals, and safety flares to reduce excess gas capacity. If released to the environment, methane would be dispersed rapidly in air, minimizing the hazards of exposure. In the case that a person gained entry to an anaerobic digester facility, asphyxiation could occur; however, California Occupational Safety and Health Administration (Cal/OSHA) is responsible for enforcing workplace safety standards, which include confined space and lockout procedures (California Department of Resources Recycling and Recovery [CalRecycle] 2011).

Although there is uncertainty as to the exact locations of new anaerobic digesters and modifications to wastewater treatment plants, these would likely occur within existing footprints or in areas with consistent zoning for these types of uses. In addition, as discussed above, the handling of hazardous materials would be required to comply with all applicable federal, State and local laws. As a result, this impact would be less than significant.

#### **g) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks. Some activities may include the use of herbicides or pesticides.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch.



Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

Treatment activities implemented under the 2022 Scoping Plan, consistent with the CalVTP, would require the use of various types of equipment and vehicles, which need fuels, oils, and lubricants to operate. The use, transport, and disposal of these substances could result in an accidental upset or health hazard if released into the environment. During treatment activities, all equipment should be properly maintained per manufacturer's specifications, regularly inspected for leaks, and any equipment found leaking would be promptly removed from a treatment site<sup>47</sup>. This SPR would minimize leaks and the potential for resultant contamination to enter the environment. Furthermore, several federal and State laws regulate the use, transport, storage, and disposal of hazardous materials, including the HWCA [Hazardous Waste Control Act],

---

<sup>47</sup> See CalVTP Standard Project Requirement HAZ-1

DTSC's [California Department of Toxic Substances Control's] Unified Program, and OSHA [Occupational Safety and Health Administration] and EPA regulations, which all project proponents would be required to comply with. Accelerants should be used to implement prescribed burns; however, fire ignition (including use of accelerants) should not occur in the protection zones for watercourses<sup>48</sup>; therefore, if implemented, water quality should not be affected.

Herbicide application would require increased transportation, use, storage, and disposal of various herbicides, which could result in risks related to human exposure when applied in areas in close proximity to the public. Under normal conditions, compliance with all laws, regulations, and herbicide label instructions, along with proper personal protective equipment (PPE), should prevent substantial risks related to human exposure to herbicides. However, potentially adverse effects could occur if a large spill were to occur or should spraying from equipment on vehicles occur in close proximity to public areas. Several SPRs should be incorporated into the 2022 Scoping Plan activities to minimize the potential for significant health risks. Project proponents should prepare a Spill Prevention and Response Plan prior to beginning herbicide treatment activities to provide protection to on-site workers, the public, and the environment from accidental leaks or spills of herbicides, adjuvants, or other potential contaminants; comply with all herbicide application regulations to protect the safety of workers and the public during the transport, use, storage, and disposal of herbicides; triple rinse herbicide containers with clean water at an approved site and dispose of rinsate per Title 3 CCR Section 6684 and dispose of all herbicides following label requirements and waste disposal regulations to avoid direct contamination to a water body or watershed; employ techniques during herbicide application to minimize drift; and include signage indicating that herbicide application is occurring or has occurred where members of the public could be present within 500 feet of areas receiving herbicide treatments<sup>49</sup>.

#### **h) Organic Waste Diversion and Composting Actions**

As described in detail in Chapter 2, reducing landfill disposal of organic waste to less than 6 million short tons by 2025, as required under SB 1383, would result in the development of new or expanded organic material composting, digestion and/or other facilities throughout the state to recover and recycle the diverted organic waste. It is anticipated that new facilities would be sited at or near existing waste disposal sites or landfills or in urban areas zoned for industrial or solid waste-handling facilities. Much of the material processed at these facilities would consist of residential and commercial food wastes and urban landscaping wastes that are diverted from landfill disposal and typically transported by truck but may also include other regional sources of organic wastes, such as industrial food waste/byproducts or agricultural residues.

---

<sup>48</sup> See CalVTP Standard Project Requirement HYD-4

<sup>49</sup> See CalVTP Standard Project Requirement HAZ-5 through HAZ-9

(These wastes are not typically disposed of in landfills and may largely continue to be used for animal feed or managed at wastewater treatment facilities.)

Organic waste diversion and composting actions associated with implementation of the 2022 Scoping Plan would be conducted consistent with the SB 1383 SLCP Regulation, a program developed by CalRecycle to reduce disposal of organic waste by 50 percent of 2014 levels by 2020 and 75 percent by 2025. Materials that cannot be effectively recovered for human consumption would be directed to organic waste recovery or recycling facilities to make useful products, including compost, fertilizer, fuel, energy, or other products (e.g., paper). These facilities may be developed at existing landfills, other waste management sites, or at new stand-alone sites. Because SB 1383 represents State policy regarding organic waste diversion and composting actions, it can be reasonably assumed that these types of activities associated with the 2022 Scoping Plan would be consistent with the SB 1383 SLCP Regulation EIR.

The development of new or expanded organic waste-handling facilities in response to the 2022 Scoping Plan could result in the attraction of vectors and the propagation and transport of pathogens, which are public and environmental health hazards. However, organic waste-handling facilities and operations, including compost and anaerobic digestion facilities, facilities that process green material and wood waste, and edible food recovery programs, are regulated by existing laws and regulations to protect human and environmental health. Therefore, this impact would be less than significant.

In addition, organic waste-handling facilities would process food materials that could attract increased numbers of scavenging birds to sites located near airports, thus increasing the risk of bird strikes for aircraft departing or approaching any nearby airports. Federal Aviation Administration Advisory Circular 150/5200-33B recommends a minimum distance of 5 miles between various land uses practices that attract wildlife, such as municipal solid waste landfills, and airports. Because the locations of compost and anaerobic digestion facilities are not explicitly governed by the same locational requirements established by federal regulations for municipal solid waste landfills to minimize wildlife hazards, this impact would be potentially significant.

#### **i) Offshore Renewable Wind Actions**

As described in more detail in Chapter 2, offshore renewable wind turbine projects would be installed and operated to support the decarbonization of the electrical sector. Turbines could be located within shallow and deeper portions of the oceans and would be supported by floating platforms. Turbines would be approximately 350 to 500 feet high, on average, and would be configured to optimize capture of wind energy. Energy captured by these turbines is transmitted to floating substations, which collect and stabilizes the power generated by the turbines, and is then transmitted to the onshore power grid.

Wind turbine blades can approach 200 miles per hour (mph) and can rarely become dislodged from the turbine resulting in falling projectile that may damage people or species. Wind turbines located in cold climates are susceptible to ice formation and accumulating ice may fall or be thrown from turbines potentially endangering surrounding people and property. However, the proposed turbines under this action would be sited offshore where these potential hazards would be greatly reduced.

The Occupational Safety and Hazards Association (OSHA) has reported hazardous incidents to wind energy workers including fatalities and serious injuries from falls, severe burns from electric shocks and fires, and crushing injuries. It is foreseeable that maintenance of proposed offshore wind turbines may cause similar injuries to maintenance workers. This impact would be potentially significant.

### Impact Significance Determination

Implementing the low carbon fuels actions; expanded use of zero-emission mobile source technology actions; improvements to oil and gas facilities actions; and manure management actions would result in a less than significant impact to hazards and hazardous materials. Implementing the mechanical carbon dioxide removal and CCS actions; forest, shrubland, and grassland management actions; organic waste diversion and composting actions; and offshore renewable wind actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts related to hazards and hazardous materials.

### Mitigation Measures

Table 4-14 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-14: Mitigation Measures Applicable to Long-Term Operational Impacts on Hazards and Hazardous Materials**

<b>Actions</b>	<b>Mitigation Measure</b>
Mechanical carbon dioxide removal and carbon capture and sequestration actions	9.b.1, 9.4.b
Forest, shrubland, and grassland management actions	9.b.2
Organic waste diversion and composting actions	9.b.3

#### **Mitigation Measure 9.b.1**

The Regulatory Setting in Attachment A includes applicable laws and regulations in regard to hazards and hazardous materials. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would

be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with 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.

Permits and/or agreements to reduce potential hazards and hazardous materials impacts could include, but are not limited to, UIC permits administered pursuant to the Safe Drinking Water Act at the federal and State levels. EPA issues Class VI permits under these regulations, which apply to injection wells that are drilled for the sole purpose of CO<sub>2</sub> injection in an underground formation as part of a CCS project, without any other intended purpose. CalGEM issues Class II permits under regulatory authority granted by EPA pursuant to UIC regulations. Class II permits apply to injection wells constructed for the purpose of injecting fluids produced during oil and gas production, such as brines, and include injection wells used in tertiary or EOR methods that could also be used for the purpose of CO<sub>2</sub> sequestration as part of a CCS project.

To obtain these permits, the project proponent would be required to conduct various evaluations, such as engineering and geologic studies, and submit proposed injection well construction and operation plans. Requirements for these permits are likely to include isopach maps, cross sections, and representative well logs that identify all geologic units, freshwater aquifers, and oil or gas zones. In addition, CEQA and/or other necessary regulatory processes would be completed to address and mitigate potential environmental effects. Because these actions would address inspection, enforcement, mechanical integrity testing, plugging and abandonment oversight, data management, public outreach, and potential environment effects, this impact could be reduced.

***Mitigation Measure 9.b.2: Implement CalVTP Program EIR SPRs Applicable to Hazards and Hazardous Materials***

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference herein (BOF 2019):

- SPR AD-3: Consistency with Local Plans, Policies, and Ordinances
- SPR HYD-4: Identify and Protect Watercourse and Lake Protection Zones
- SPR HAZ-1: Maintain All Equipment
- SPR HAZ-2: Require Spark Arrestors
- SPR HAZ-3: Require Fire Extinguishers
- SPR HAZ-4: Prohibit Smoking in Vegetated Areas
- SPR HAZ-5: Spill Prevention and Response Plan
- SPR HAZ-6: Comply with Herbicide Application Regulations
- SPR HAZ-7: Triple Rinse Herbicide Containers

- SPR HAZ-8: Minimize Herbicide Drift to Public Areas
- SPR HAZ-9: Notification of Herbicide Use in the Vicinity of Public Areas

***Mitigation Measure 9.b.3: Implement SB 1383 SLCP Regulation EIR Mitigation Measure 3.9-5***

***SB 1383 SLCP Regulation EIR Mitigation Measure 3.9-5: Reduce Safety Hazards from Siting an Organic Waste-Handling Facility within 5 Miles of an Airport***

The authority of CalRecycle and LEAs is statutorily limited. They do not have authority to require implementation of mitigation measures that would reduce potentially significant impacts related to conflicts with aircraft. Mitigation measures to reduce potential impacts can and should be implemented by local jurisdictions with land use authority. Site-specific, project impacts and mitigation would be identified during a project's local review process. A proposed project would be approved by a local government and potentially another permitting agency that can apply conditions of approval.

The following mitigation measure can and should be required by agencies with project approval authority to avoid or minimize impacts related to conflicts with aircraft: For any organic waste-handling facility proposed within 5 statute miles of an airport's air operations area, the project proponent shall notify the Federal Aviation Administration Regional Airports Division office and the airport operator of the proposal for a new organic waste-handling facility as early in the process as possible. Such organic waste-handling facilities with any open air (outdoor) activities must receive a Federal Aviation Administration Determination of No Hazard before project approval.

**Mitigation Measure 9.b.4**

Pipeline operators will follow PHMSA recommendations included in 98 FR 33576:

- Identify areas surrounding the pipeline that may be prone to large earth movement, including but not limited to slope instability, subsidence, frost heave, soil settlement, erosion, earthquakes, and other dynamic geologic conditions that may pose a safety risk.
- Use geotechnical engineers during the design, construction, and ongoing operation of a pipeline system to ensure that sufficient information is available to avoid or minimize the impact of earth movement on the integrity of the pipeline system. At a minimum, operators should consider soil strength characteristics, ground and surface water conditions, propensity for erosion or scour of underlying soils, and the propensity of earthquakes or frost heave.
- Develop design, construction, and monitoring plans and procedures for each identified location, based on the site-specific hazards identified. When constructing new pipelines, develop and implement procedures for pipe and

girth weld designs to increase their effectiveness for taking loads, either stresses or strains, exerted from pipe movement in areas where geological subsurface conditions and movement are a hazard to pipeline integrity.

- Monitoring plans shall include provisions related to the following:
  - Ensuring during construction of new pipelines that excavators do not steepen, load (including changing the groundwater levels) or undercut slopes which may cause excessive ground movement during construction or after operations commence.
  - Conducting periodic visits and site inspections. Increased patrolling may be necessary due to potential hazards identified and existing/pending weather conditions. Right-of-way patrol staff must be trained on how to detect and report conditions that may lead to or exhibit ground movement to appropriate staff.
  - Identifying geodetic monitoring points ( i.e., survey benchmarks) to track potential ground movement.
  - Installing slope inclinometers to track ground movement at depth which may otherwise not be detectable during right-of-way patrols.
  - Installing standpipe piezometers to track changes in groundwater conditions that may affect slope stability.
  - Evaluating the accumulation of strain on the pipeline by installing strain gauges.
  - Conducting stress/strain analysis utilizing in-line inspection tools equipped with inertia mapping unit technology and high resolution deformation in-line inspection for pipe bending and denting from movement.
  - Utilizing aerial mapping light detection and ranging or other technology to track changes in ground conditions.
- Monitor environmental conditions and changing weather patterns in proximity to their facilities and evaluate soil stability that may have been adversely impacted.).
- Use available data and information resources to assess pipeline facility vulnerability relative to landslides and other types of earth movement.
- Consider the findings and recommendations of pertinent research projects, studies, and reports on the impact of changing weather patterns on soil stability. PHMSA also notes that industry and academic materials could be informative regarding relevant considerations and strategies for ensuring pipeline integrity in areas of land movement or soil subsidence.
- Site-specific measures to reduce potential hazardous conditions may include:
  - Re-routing the pipeline right-of-way prior to construction to avoid areas prone to large ground movement such as unstable slope areas, earthquake fault zones, permafrost movement, or scour.
  - Utilize properly designed horizontal directional drilling to go below areas of potential land movement.

- Installation of drainage measures in the trench to mitigate subsurface flows and enhance surface water draining at the site including streams, creeks, runs, gullies, or other sources of surface run-off that may be contributing surface water to the site or changing groundwater levels that may exacerbate earth movement.
- Reducing the steepness of potentially unstable slopes, including installing retaining walls, soldier piles, sheet piles, wire mesh systems, mechanically stabilized earth systems and other mechanical structures.
- Installing trench breakers and slope breakers to mitigate trench seepage and divert trench flows along the surface to safe discharge points off the site or right-of-way.
- Building retaining walls and/or installing steel piling or concrete caissons to stabilize steep slope areas as long as the corrosion control systems are not compromised.
- Reducing the loading on the site by removing and/or reducing the excess backfill materials to off-site locations. Soil placement should be carefully planned to avoid triggering earth movement in other locations.
- Compacting backfill materials at the site to increase strength, reduce water infiltration, and achieve optimal moisture content.
- Drying the soil using special additives such as lime-kiln dust or cement-kiln to allow the materials to be re-used and worked at the site. Over-saturated materials may require an extensive amount of time and space to dry.
- Regrading the pipeline right-of-way to minimize scour and erosion.
- Bringing the pipeline above ground and placing it on supports that can accommodate large ground movements ( e.g., transitions across earthquake fault zones or unstable slopes, without putting excessive stress or strain on the pipeline).
- Reducing the operating pressure temporarily or shutting-in the affected pipeline segment completely.
- Re-routing the pipeline when other appropriate mitigation measures cannot be effectively implemented to maintain safety.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measures 9.b.1, 9.b.2, and 9.b.3, 9.b.4 significant impacts related to hazards and hazardous materials could occur as a result of implementing forest, shrubland, and grassland management; and organic waste diversion and composting actions. In regards to mechanical carbon dioxide removal and CCS actions, the mitigation



measures above would limit the risks of CO<sub>2</sub> pipeline rupture through proper siting and monitoring of alignments. However, the effects on a population within close proximity to a rupture could be catastrophic and result in substantial injuries and fatalities because CO<sub>2</sub> is an asphyxiant that is heavier than air and can stay close to the ground after a release and move long distances. Due to this risk of rupture, operation of CO<sub>2</sub> pipelines would remain significant after implementation of the mitigation measures listed above.

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 a compliance-response-related project, this Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential long-term operation-related impacts regarding hazards and hazardous materials associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**. As stated previously, because mitigation is not available to reduce potential hazardous conditions related to a CO<sub>2</sub> pipeline rupture, impacts related to implementation of mechanical carbon dioxide removal and CCS actions, this impact also would be **significant and unavoidable**.

## 10. Hydrology and Water Quality

### ***Impact 10.a: Short-Term Construction-Related Effects on Hydrology and Water Quality***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of

wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation; earth movement and grading; trenching for utility lines; erection of new buildings; and paving of parking lots, delivery areas, and roadways. Specific construction projects would be required to comply with applicable erosion, water quality standards, and WDRs (e.g., NPDES, Stormwater Pollution Prevention Plan). The construction of offshore wind projects would necessitate the operation of vessels. On board vessels, domestic wastewater originating from sinks, showers, laundries, and galleys is referred to as greywater. Sanitary wastewater originates from toilets and is referred to as blackwater. In general, operation of large vessels with crew quarters and full live-on-board capabilities would result in the generation of 50 to 100 gallons per day (gpd) of greywater, which could be disposed of in the ocean. Greywater disposed from moving vessels would likely rapidly dissipate, however, greywater disposal from stationary vessels could result in concentrations of pollution within the vicinity of a vessel. This impact would be potentially significant.

### **Impact Significance Determination**

Short-term construction-related effects on hydrologic resources associated with the 2022 Scoping Plan would be potentially significant.

### **Mitigation Measures**

#### ***Mitigation Measure 10.a***

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 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 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 (BMPs) to reduce sedimentation and pollution of surface waters, such as installation of silt fencing around the perimeter of active construction areas, sediment traps, revegetation, and rock and gravel cover.
  - Train construction workers for proper response to hazardous materials spills, as well as responsibilities for maintaining BMPs on-site.
  - Design drainage plans for runoff 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 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 for or offset the groundwater reductions.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 10.a, significant impacts on hydrology and water quality 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 EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related effects on hydrology and water quality associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

### ***Impact 10.b: Long-Term Operational-Related Effects on Hydrology and Water Quality***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on hydrology and water quality may be related to the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expanded use of zero-emission

mobile source technology actions; mechanical carbon dioxide removal and CCS actions; improvements to oil and gas facilities actions; reduced high-GWP compounds actions; manure management actions; forest, shrubland, and grassland management actions; agricultural actions; organic waste diversion and composting actions; and afforestation, urban forestry expansion, and wetland restoration actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 10.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

**a) Increase in Renewable Energy and Decrease in Oil and Gas Use Actions**

As described in more detail in Chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. The operation of wind, solar thermal, and solar PV energy systems would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

Solar thermal facilities may use substantial quantities of water for long-term operations, including steam generation, evaporative cooling of the power generation units, periodic washing of the mirror panels to maintain their efficiency, dust control around the site, and domestic consumption by the work force. In areas where available surface water is limited, such as arid desert regions of the southwest United States, the construction and operation of solar thermal facilities may result in the need to install groundwater wells. Groundwater pumping, if it exceeds the natural recharge rates, may result in decreased groundwater levels relative to existing conditions. Groundwater level reductions may adversely affect off-site groundwater users through reduced groundwater yield from a well, the need to deepen a well, or the need to construct deeper replacement wells. Additionally, in arid regions and deserts, surface streams, springs, and wetlands may be hydrologically connected to the groundwater. Consequently, the potential seasonal or long-term reductions in groundwater levels may adversely affect flows in seasonal surface water bodies. In addition, discharges of contaminants in stormwater runoff from industrial cooling water could affect surface water quality. However, absent site-

specific project operations and groundwater information, it is not possible to characterize the probability that solar thermal facility operations would cause adverse off-site groundwater effects.

Long-term facility operations of solar PV systems would likely include water use for periodic washing of solar panels, site dust control, and domestic water consumption by the work force. In areas where surface water resources are limited, development of groundwater wells to support groundwater pumping, if it exceeds the natural recharge rates, may result in decreased groundwater levels relative to existing conditions. Groundwater level reductions may adversely affect off-site groundwater users through reduced groundwater yield from a well, the need to deepen a well, or the need to construct deeper replacement wells. Additionally, in arid regions and deserts, surface streams, springs, and wetlands may be hydrologically connected to the groundwater. Consequently, the potential seasonal or long-term reductions in groundwater levels may adversely affect flows in seasonal surface water bodies. In addition, discharges of contaminants in stormwater runoff from industrial cooling water could affect surface water quality. However, absent site-specific project operations and groundwater information, it is not possible to characterize the probability that solar PV facility operations would cause adverse off-site groundwater effects.

Geothermal energy facilities may use geothermal fluids directly for turbine power generation, which may result in consumptive use through evaporation or discharge to brine ponds if the quality is unsuitable for reinjection back into the aquifer. Geothermal fluids also may be used indirectly as the heat source to generate steam power using supplemental water resources for steam generation, evaporative cooling, or both processes. In arid desert regions where available surface water is limited, the construction and operation of geothermal facilities may result in the need to use groundwater. Consequently, geothermal energy facility operations in areas of limited groundwater availability can potentially adversely affect off-site groundwater resources for other energy sources. In addition, discharges of contaminants in stormwater runoff from industrial cooling water could affect surface water quality. However, absent site-specific project operations and groundwater information, it is not possible to characterize the probability that geothermal facility operations would cause adverse off-site groundwater effects.

Solid-fuel biomass energy facilities are likely to be operated to generate steam power using supplemental water resources for steam production and evaporative cooling. In the arid desert regions where available surface water is limited, the construction and operation of biogas energy facilities may result in the need to use groundwater. Energy facility operations in areas of limited groundwater availability can potentially adversely affect off-site groundwater resources. However, absent site-specific project operations and groundwater information, it is not possible to characterize the probability that solid-fuel biomass or biogas facility operations would cause adverse off-site groundwater effects.

The potential for construction and placement of energy facilities on the landscape to contribute to off-site flooding, or for the facilities to be exposed to flooding and flood hazards, is related to drainage conditions. Increased stormwater drainage runoff rates and volumes may contribute to increased off-site channel flows that lead to additional inundation in existing areas of flooding or increase the frequency with which channel capacities are exceeded. In the rural desert regions of the southwest, many areas that flood are not mapped, and overland flooding can occur on the relatively level terrain, particularly in areas where the soil or bedrock is naturally impervious and generates high volumes of runoff during heavy rain events. Therefore, placement of energy facilities may expose property and workers at risk of exposure to flooding unless the site has been evaluated to determine the potential for flooding to occur. Moreover, encroachment of energy facilities within a floodplain could impede, restrict, or redirect flows, thereby exposing the facilities to flood damage or contribute to backwater upstream of the facility. Absent site-specific project drainage and streamflow information, it is not possible to characterize the probability that facility operations would cause adverse off-site effects on stormwater drainage or flooding risks. Therefore, the specific effects of additional drainage that could occur in the project area, or risks to and from flooding hazards, are uncertain.

Steam power generation facilities have the potential to result in long-term operational waste discharges associated with the steam condensation and cooling operations. In arid environments of southern California, where many of the anticipated future renewable energy facilities might be located and where available surface water and groundwater resources are limited, cooling operations that use water generally result in the creation of highly saline blowdown water, or brine. Brine wastes must be stored in lined containment ponds to prevent leakage and contamination of underlying groundwater. Typical operations would require multiple brine waste evaporation ponds, and dried brine wastes would be periodically collected and hauled to landfills for disposal. Therefore, managed brine waste storage in the arid desert regions is not anticipated to result in discharges of concern to water bodies. While it is unlikely, because of limited water availability, that renewable energy facilities would occur in desert regions, the potential exists for such facilities to be constructed adjacent to streams and involve the use of river water for cooling operations. Natural waterways may also be used as a receiving water for cooling water derived from a different source water. Conventional once-through cooling also may be more commonly used in less arid environments or coastal settings where a reliable and plentiful water source is available. Cooling water discharged to streams has the potential to cause temperature increases in the receiving water of sufficient magnitude that may exceed the thermal tolerance of aquatic life residing in the stream near the return flow, thus resulting in detrimental effects.

Steam power generation facilities generally are complex facilities that would have larger workforce requirements than other types of renewable energy facilities; may operate continuously depending on the fuel source; and may use and store a variety of operating chemicals, fuels, and other materials on-site. Industrial sites may be

exposed to long-term rainfall and runoff that may have the potential to mobilize and transport contaminants from these sites to adjacent properties or receiving water bodies. Discharge of contaminants could result in adverse water quality effects on aquatic organisms, which are likely to be the most sensitive beneficial uses affected by stormwater runoff.

Absent site-specific project facility information, it is not possible to characterize the probability that steam power cooling operations and industrial activities would cause adverse off-site effects and contaminant discharges to receiving water bodies. Therefore, the specific effects of long-term facility operations that could occur are uncertain and impacts could be substantial. This impact would be potentially significant.

#### **b) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-fueled, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

Agricultural nonpoint source (NPS) pollution affects the water quality of rivers, lakes, and wetlands and contributes to contamination of estuaries and groundwater. Agricultural activities that cause NPS pollution include poorly located or managed animal feeding operations; overgrazing; plowing too often or at the wrong time; and improper, excessive, or poorly timed application of pesticides, irrigation water, and fertilizer.



Pollutants that result from farming and ranching include sediment, nutrients, pathogens, pesticides, metals, and salts. Impacts from agricultural activities on surface water and groundwater can be minimized by using management practices that are adapted to local conditions. In addition, as described above under Impact 4.b, "Long-Term Operational-Related Effects on Biological Resources," GTAP analysis includes indirect effects of increased pesticide and nutrient use. Because the increased use of pesticides results in increased CI values, the 2022 Scoping Plan could discourage increased chemical use for cultivation of agriculture-based fuels.

In general, farmers may employ BMPs to reduce runoff associated with agricultural practices. BMPs vary from state to state and among countries because "best" can be a highly subjective and site-specific label. For example, a practice may be considered best in one area (e.g., coastal plain) but inappropriate in another area (e.g., mountains). Criteria for determining what is best may include extent of pollution prevention or pollutant removal, ease of implementation, ease of maintenance and operation, durability, attractiveness to landowner (e.g., how willing would farmers be to implement the practice in a voluntary program?), cost, and cost-effectiveness. Regardless, implementation of actions to promote low carbon fuels could result in adverse effects on water quality. This impact would be potentially significant.

#### **c) Expanded Use of Zero-Emission Mobile Source Technology Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the expanded use of zero-emission mobile source technology include increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste disposal or recycling from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Implementation of the 2022 Scoping Plan would result in increased demand for lithium-ion and NiMH batteries, which would accelerate the market for mined resources, such as lithium, cobalt, and nickel. Mining of hard rock would require the use of conventional mining practices, including the creation of underground mines and open pits, which would result in the removal of organic material (e.g., bedrock, vegetation). Additionally, lithium can be collected from continental brines found in various basins. Salty groundwater is pumped into lagoons, where it undergoes evaporation, producing salts containing lithium compounds. This process could result in overdrafting of groundwater, as well as groundwater contamination from metals such as antimony and arsenic.

Mineral extraction and mining activities within the 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, the metals necessary for battery technology are commonly obtained from areas outside of the United States, where State and U.S. laws and regulations are not enforced. Thus, water quality impacts related to mining could occur because of implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan.

Under the 2022 Scoping Plan, 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 millions of liters of wastewater, which can contaminate groundwater with toxic chemical compounds (European Parliament 2012). As of 2016, 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 (Konkel 2016). Through implementation of the 2022 Scoping Plan, the aforementioned effects on hydrologic resources would be reduced as zero-emission technologies displace internal combustion engines. As a result, adverse hydrologic effects associated with oil and gas extraction could be decreased through implementation of the 2022 Scoping Plan.

New facilities constructed as a result of implementation of the 2022 Scoping Plan 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 on runoff patterns and natural drainage, impeding or rerouting 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.

#### **d) Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with mechanical carbon dioxide removal and CCS actions include the modification of existing or new industrial facilities to capture CO<sub>2</sub> emissions and construction of new infrastructure, such as pipelines, wells, and other surface facilities within or near the emitting facility, to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. Mechanical carbon dioxide removal and CCS actions may also result in increased transportation, such as truck, rail, and barge transit, to transport CO<sub>2</sub> from the industrial facilities to the

sequestration sites. The transport distances requirements and pipeline construction restrictions for the captured CO<sub>2</sub> would vary depending on the locations of specific industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand will be met by increased generation, both on-site and off-site.

The pressure associated with CCS could result in minor to moderate seismic events, which could cause several centimeters of shift within a fault line. While these events could not be substantial such that damage to humans or structures would occur, brine displacement could result through the formation of leaks within geologic formations. This could result in contamination of groundwater resources; however, reservoirs are often selected that exist below the groundwater tables so as to avoid contamination of these resources in the case of leakage (Newmark et al. 2010). Additionally, use of CCS could place additional demand on water resources depending on the CCS technology and approach deployed, which could present additional water challenges for the state. Given the state's uncertain future regarding water security, water used for CO<sub>2</sub> capture and sequestering activities could result in further depleting water resources during periods of drought (Newmark et al. 2010). However, the use of fresh water can be reduced through the use of project-site and technology specific approaches identified as part of project design, project level planning, and project environmental review. Because of the adverse impacts described above, long-term operational impacts on hydrologic resources associated with mechanical carbon dioxide removal and CCS actions would be potentially significant.

While there are currently three direct air capture facilities in the world, this technology is evolving. The design and technology of future facilities could vary considerably, ranging from tall, multi-story structures to low-profile structures covering a potentially large area of land. Depending on the type, size, and location of these facilities, there could be adverse effects on drainage patterns that could present issues related to erosion or contaminated runoff. Further, depending on the conditions surrounding a facility and particular design on a direct air capture site, fans may erode natural landscapes (particularly sandy or very dry areas). In addition, because of the potential size of a direct air capture facility, groundwater recharge may be affected. Depending on the type of capture technology utilized at DAC facilities, groundwater resources could also be reduced because of the water demands related to some types of direct air capture facilities. This impact would be potentially significant.

#### **e) Improvements to Oil and Gas Facilities Actions**

As described in more detail in Chapter 2, modifications to existing facilities, such as the installation of vapor recovery systems, installation of low-bleed or zero-bleed pneumatic devices, and replacement of leaking equipment, could involve construction activities related to installing or replacing gathering lines, piping, flanges, valves, and similar features associated with oil and gas facilities. Compliance responses at natural gas transmission and distribution pipelines and related equipment and facilities may

result in an increase in the rate at which repairs and replacements are made. Emissions from pipeline and compressor blowdowns may be reduced by implementing methods such as using portable compressors; using plugs to isolate sections of pipelines; flaring vented gas; installing ejectors (nozzles that can capture blowdown gas and route it to a useful outlet); routing collected vapors to fuel gas systems, sales gas lines, microturbines, or underground injection wells; and installing static seals on compressor rods. Any pipeline replacement or reconstruction activities, leak surveys, and methods to reduce blowdown emissions would typically occur within the footprint of existing oil and gas facilities.

In the case that an existing underground injection well is used for methane disposal, which is classified as a hazardous material in California, it would be subject to CalGEM and EPA requirements for Class II wells. Class II wells may be used for disposal of brines and other fluids associated with the production of oil and gas or natural gas storage operations. When oil and gas are produced, brine is also brought to the surface. The brine is segregated from the oil and is then injected into the same underground formation or a similar formation. These wells protect drinking water resources by avoiding contamination to surface water, soils, and drinking water aquifers. Underground injection wells are regulated as part of the Safe Drinking Water Act, which requires EPA to report waste disposal practices and develop minimum federal requirements for injection practices that protect public health by preventing injection wells from contaminating underground sources of drinking water. Monitoring of pressure and volume injected disposal wells is required annually.

In California, all Class II injection wells are regulated by CalGEM, under provisions of the PRC and the federal Safe Drinking Water Act. Class II injection wells fall under CalGEM's UIC program, which is monitored and audited by EPA. In 1983, CalGEM received EPA primary authority, primacy, to regulate Class II wells. The main features of the UIC program include permitting, inspection, enforcement, mechanical integrity testing, plugging and abandonment oversight, data management, and public outreach.

After a well is drilled, steel pipe called casing is cemented in the hole. The average injection well is about 2,000 feet deep. The casing and cement prevent fluids in different zones from mixing with each other or with injected fluids. The casing and cement are perforated opposite the injection zone. To provide an extra layer of protection, tubing is placed in the well to a point just above the perforations and a packer is used near the bottom of the tubing to seal it against the casing. The packer prevents water from entering the space between the tubing and casing when water is injected down the tubing. Several tests are run to make sure that the well is operating properly and that the injected fluids are confined to the intended injection zone.

An injection zone is usually sandstone, a rock porous and permeable enough to accept injected fluids. Rock beds chosen for injection zones are covered by impermeable beds, like shale, that act as cap rocks, confining injected liquids in the porous beds. All

Class II injection wells are monitored by CalGEM engineers to ensure that the wells are operated properly and have mechanical integrity. Monitoring includes reviewing operational data and running tests, including the Mechanical Integrity Tests (i.e., spinner, temperature, and pressure tests and tracer surveys). In addition, most well sites are inspected annually by CalGEM engineers. Samples of the injected fluids may be taken at any time to confirm compliance.

Operators of Class II injection wells must file for a permit with CalGEM. Before a permit is issued, the proposed injection project is studied by CalGEM engineers and reviewed by the appropriate Regional Water Quality Control Board (RWQCB). CalGEM engineers evaluate the geologic and engineering information, solicit public comments, and hold a public hearing, if necessary. Injection project permits include many conditions, such as conditions related to approved injection zones, allowable injection pressures, and testing requirements. Permitting of a Class II well requires submission of a geologic study and injection plan that identifies all geologic units, formations, freshwater aquifers, and oil or gas zones (Title 14 CCR Section 1724.7(b)). The injection plan must include a map showing all injection facilities; maximum anticipated injection pressure and volumes; monitoring system or method used to ensure that injection fluid is confined to the intended zone or zones of injection; method of injection; corrosion protective measures; the source, analysis, and treatment of the injection fluid; and the location and depth of water-source wells to be used in conjunction with the project (Title 14 CCR Section 1724.7(c)). Class II permit requirements ensure that injection of hazardous materials would occur at a depth that would prevent surface contamination of soil and water and minimize risks to the environment. This impact would be less than significant.

#### **f) Reduced High-GWP Fluorinated Gases Actions**

As described in more detail in Chapter 2, replacement of high-GWP fluorinated gases such as HFCs with lower-GWP alternatives could result in increased demand for the latter (e.g., increased demand for HFOs as well as non-fluorinated low-GWP alternatives like CO<sub>2</sub>) and modification to existing production facilities. Local permitting agencies may apply additional oversight on the planning and operations of refrigeration equipment using flammable refrigerants, such as hydrocarbons, and toxic refrigerants, such as ammonia. As HFC use is discontinued, those actions would increase the vehicular transportation of HFCs for destruction or reclamation. However, any major shifts in the HFC market – such as increased production and imports of HFOs or other non-fluorinated low-GWP alternatives, and enhanced transportation of high- and low-GWP gases – will be driven predominantly by the global and national HFC phasedowns currently underway, and not by California's measures.

Incorporation of low-GWP refrigerants or heat transfer fluids to existing residences and commercial buildings and facilities would not result in disturbance to plant and animal habitat or direct mortality of individuals as a result of construction-related activities.

A potential environmental impact of HFOs is their atmospheric decomposition to trifluoroacetic acid (TFA). Because of its high water solubility, TFA is deposited on the earth's surface during precipitation events and is mild to moderately toxic to a range of organisms. Other fluorinated gases, including HFCs currently in use, also produce TFA upon oxidation; however, the rate of that process is much slower for HFCs than HFOs. Thus, the use of HFOs would increase rates of TFA formation, which could potentially accumulate in aquatic environments, including wetlands (Cahill et al. 2001). HFOs and the impact of their degradation products like TFA continue to remain a topic of active study (Behringer et al., 2021).

However, before any low-GWP alternatives can be used in California, they must first be listed as acceptable under the U.S. EPA's SNAP<sup>50</sup> program (Section 612 of the Clean Air Act, 42 U.S.C. sec. 7671k; 40 CFR part 82, subpart G), where the U.S. EPA evaluates substitutes to ozone-depleting substances (ODS) to reduce overall risk to human health and the environment using a comparative risk framework. The SNAP program determines if the new substitute poses more risk than already-approved alternatives for the same use. As such, HFO use would not pose a greater risk to the environment or human health than use of the chemical it is replacing and thus would not pose a substantial hazard to people or the environment. This impact would be less than significant.

#### **g) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce RNG that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network. In some cases, collected manure could be transported to centralized

---

<sup>50</sup> U.S. EPA's Significant New Alternatives Policy (SNAP) Program. More information available online at: <https://www.epa.gov/snap>

digesters and potentially codigested with other feedstocks (such as food waste) for increased fuel production.

Flush-water lagoon management systems are currently used by the majority of dairy farmers in California. The process requires large quantities of water to sweep manure into a localized area, or lagoon, where it undergoes anaerobic decomposition. The liquid manure effluent is then diluted with irrigation water (typically groundwater) and applied to fields and croplands by way of flood irrigation. As California enters into a more uncertain future with regards to water security, methods of water conservation should be encouraged and implemented. Under the 2022 Scoping Plan, dairy operators could implement scrape manure management systems, which when combined with more water-efficient irrigation practices like subsurface drip irrigation, would require substantially less water than flush-water management (which typically requires water-inefficient flood irrigation). Thus, the potential for decrease groundwater supplies would be reduced with scrape manure management systems compared to flush-water lagoon management systems.

Dairy operators may also implement digester facilities. Anaerobic digesters (i.e., dairy digesters, wastewater treatment plants, organic waste digesters) could result in the contamination of local waterways and groundwater resources. Dairy manure contains nutrients (including nitrogen), organic matter, salts, microorganisms, pathogens, and fecal bacteria. If improperly managed, constituents and/or byproducts of anaerobic digestion could continue to pollute water quality by contributing excess nutrients, bacterial pathogens, and oxygen-demanding materials. Application of improperly treated digestate and/or improper application timing or rates of digestate to agricultural land may lead to increased nitrogen oxide emissions, soil contamination, and/or nutrient leaching. However, WDRs are required for each facility to address surface water discharges of digestate or manure constituents. In addition, regulations prohibit surface water discharges (unless covered by an NPDES permit) and require appropriate setbacks for facilities from surface water bodies, lined detention ponds, application of digestate at agronomic rates to surrounding lands, and implementation of a groundwater monitoring system to detect when leaks occur.

Finally, dairy operators may pasture cattle herds or store manure on-site to reduce methane emissions from manure. Pasturing of cattle and drying of manure on-site may result in contamination of groundwater and discharge of contaminants into surface water. Irrigation required to maintain pastures, as well as rain events, may increase rates of polluted runoff that can result in adverse impacts to water quality. The extent to which adverse water quality impacts could occur depends on various factors, including unique hydrology, topography, climate, and land uses of specific regions. However, dairies that could be converted from lagoon-based manure management systems to pasture or open drying systems, as a result of implementation of the 2022 Scoping Plan, contain physical features (e.g., no off-property discharge) and/or have obtained appropriate permits (e.g., NPDES, WDRs) that would ensure that there

would not be substantial adverse effects related to water quality. This impact would be less than significant.

#### **h) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch.

Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of



forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

The 2022 Scoping Plan, consistent with the CalVTP, includes manual and mechanical treatment activities to reduce wildfire risk. All qualifying manual and mechanical treatments implemented under the 2022 Scoping Plan should integrate SPRs into treatment design to protect watercourses, limit equipment use on wet soils or steep slopes, stabilize highly disturbed areas, prevent concentration of runoff in non-shaded fuel breaks, and prevent spill or leaks from equipment. Implementation of SPRs would avoid and minimize the risk of substantial degradation to surface water or groundwater quality from manual or mechanical treatment activities. In treatments that incorporate grazing animals, they would be excluded from sensitive areas<sup>51</sup>. Herbicides should be applied according to the manufacturer's label directions and consistent with program SPRs, which limit herbicide use in sensitive areas or under conditions that could lead to misapplication and require each project to be prepared to respond to a spill. Non-shaded fuel breaks constructed along roadways could intersect existing roadway drainage systems. All projects would avoid disturbance of existing drainage systems and maintain pre-treatment drainage conditions<sup>52</sup>.

#### **i) Agricultural Actions**

Reasonably foreseeable compliance responses that address practices related to soil conditions include encouraging no till or reduced till practices, planting cover crops, transitioning to organic agriculture, and applying compost. Implementing certain soil management practices could increase the use of on-farm mechanical equipment (e.g., compost application, mulching, and whole orchard recycling). Additionally, compost application would require increased use of trucks to transport the compost. Other types of practices (e.g., cover crops, windbreak/shelter belt establishment, tree/shrub establishment) may require increased water use to establish and or/maintain plant or trees.

---

<sup>51</sup> See CalVTP Standard Project Requirement HYD-3

<sup>52</sup> See CalVTP Standard Project Requirement HYD-6

Changes to agricultural actions, including the use of no till or reduced till practices and composting, would reduce the potential for erosion and improve soil quality. The use of soil amendments would improve the supply of trace elements and organic matter in the soil. This would lead to a reduced need for irrigation and for pesticide and herbicide use, thereby reducing the potential for polluted runoff to enter waterways. In addition, fields managed without tilling for multiple years generally have a higher water-holding capacity than conventionally tilled fields (USDA 2021). However, certain eligible practices (e.g., cover crops, windbreak/shelter belt establishment, tree/shrub establishment) may require increased water use to establish and or/maintain plant or trees. It is anticipated that areas chosen for planting would occur on lands that are currently irrigated or where water resources are otherwise available to sustain trees and plants, and thus there would not be a substantial increase in groundwater productions such that implementation of a sustainable groundwater management plan is impeded. This impact would be less than significant.

#### **j) Organic Waste Diversion and Composting Actions**

As described in detail in Chapter 2, reducing landfill disposal of organic waste to less than 6 million short tons by 2025, as required under SB 1383, would result in the development of new or expanded organic material composting, digestion and/or other facilities throughout the state to recovery and recycle the diverted organic waste. It is anticipated that new facilities would be sited at or near existing waste disposal sites or landfills or in urban areas zoned for industrial or solid waste-handling facilities.

Organic waste diversion and composting actions associated with implementation of the 2022 Scoping Plan would be conducted consistent with the SB 1383 SLCP Regulation, a program developed by CalRecycle to reduce disposal of organic waste by 50 percent of 2014 levels by 2020 and 75 percent by 2025. Materials that cannot be effectively recovered for human consumption would be directed to organic waste recovery or recycling facilities to make useful products, including compost, fertilizer, fuel, energy, or other products (e.g., paper). These facilities may be developed at existing landfills, other waste management sites, or at new stand-alone sites. Because SB 1383 represents State policy regarding organic waste diversion and composting actions, it can be reasonably assumed that these types of activities associated with the 2022 Scoping Plan would be consistent with the SB 1383 SLCP Regulation EIR.

New or expanded organic waste-handling facilities would be developed in response to the 2022 Scoping Plan. The composting process used at such facilities releases water that may contain nutrients, metals, salts, pathogens, and oxygen-reducing compounds. Without proper management, these compounds can be carried into surface waters or can leach into groundwater, causing water quality degradation. However, California regulates composting and other organic waste recovery operations through the issuance of WDRs, which include a suite of protections to ensure that stormwater and water generated by the composting process is managed in a manner that prevents degradation of surface water and groundwater.

Stockpiles of organic wastes and detention ponds placed in floodplains or other areas are subject to inundation. Organic wastes and water from the detention ponds could be carried with floodwaters, resulting in the release of nutrients (including nitrogen) and pollutants into state waters. The composting WDRs contain inundation prevention requirements for composting facilities, and any operations located within a 100-year floodplain may be subject to additional local land use restrictions and permits. Additionally, all projects implemented in response to the 2022 Scoping Plan would be subject to project-level environmental review.

Under the 2022 Scoping Plan, the volume of organic waste that could be sent to landfills would be limited, which could result in increased land application of materials that are difficult to compost. When properly managed, land application can be accomplished without adversely affecting water quality. However, illegal land application has been documented as a threat to water quality and could increase with implementation of the proposed regulation. Because the illegal land application of organic wastes could increase under the 2022 Scoping Plan, this impact would be potentially significant.

**k) Afforestation, Urban Forestry Expansion, Avoided Natural and Working Land Use Conversion, and Wetland Restoration Actions**

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with afforestation, urban forestry expansion, and wetland restoration actions would involve planting vegetation and restoring wetland in California. Trees and other vegetation (e.g., hedgerows) would be planted in urban areas, within cropland (as hedgerows, wind/shelterbelts, alley crops), along waterways in riparian zones within croplands, and around cultivated areas. Wetland restoration actions would occur on agricultural lands in the Sacramento-San Joaquin Delta as well as in other coastal wetlands and mountain meadows. Avoided conversion of natural and working lands to another land use is also anticipated.

These anticipated actions could result in an increase in construction activities related to wetland restoration and an increase in tree maintenance (e.g. pruning/trimming, fertilizing, tree felling, chipping/grinding, biomass transportation) within urban areas and croplands. Equipment used for these activities include tractors, backhoes, aquatic craft, portable chippers/grinders, and chip trucks. Generally, afforestation leads to increase topsoil moisture levels. The introduction of trees to cropland areas has been found to decrease irrigation demands and decrease drainage from farmland (Kumar et al. 2021). Some of the afforestation and urban forestry expansion actions may be located in areas that are potentially susceptible to mudflows during large rain events. The planting of additional trees and the establishment of mature tree root systems can help strengthen and stabilize steep and erodible soils; therefore, this would be a beneficial impact over the long term. Wetland restoration on agricultural lands would lead to increased groundwater recharge and decreased runoff. Furthermore, by converting agricultural lands to wetlands, there would be a decrease in application of pesticides, herbicides, and fertilizers that would contribute to degraded water quality

conditions in the Sacramento–San Joaquin Delta. Outside of this conversion of agricultural lands to wetlands, the avoided conversion of lands would maintain hydrology and water quality as they currently exist. This impact would be less than significant.

### Impact Significance Determination

Implementing agricultural actions would result in a beneficial impact. Implementing the improvements to oil and gas facilities actions; reduced high-GWP compounds actions; manure management actions; and afforestation, urban forestry expansion, and wetland restoration actions would result in a less than significant impact. Implementing the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and CCS actions; forest, shrubland, and grassland management actions; and organic waste diversion and composting actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on hydrology and water quality.

### Mitigation Measures

Table 4-15 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-15: Mitigation Measures Applicable to Long-Term Operational Impacts on Hydrology and Water Quality**

<b>Actions</b>	<b>Mitigation Measure</b>
Increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and carbon capture and sequestration actions	10.b.1
Forest, shrubland, and grassland management actions	10.b.2
Organic waste diversion and composting actions	10.b.3

***Mitigation Measure 10.b.1: Implement Mitigation Measure 10.a***

***Mitigation Measure 10.b.2: Implement CalVTP Program EIR SPRs Applicable to Hydrology and Water Quality***

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference herein (BOF 2019):

- SPR AD-3: Consistency with Local Plans, Policies, and Ordinances
- SPR AQ-3: Create Burn Plan
- SPR BIO-1: Review and Survey Project-Specific Biological Resources
- SPR BIO-4: Design Treatment to Avoid Loss or Degradation of Riparian Habitat Function
- SPR BIO-5: Avoid Environmental Effects of Type Conversion and Maintain Habitat Function in Chaparral and Coastal Sage Scrub
- SPR GEO-1: Suspend Disturbance during Heavy Precipitation
- SPR GEO-2: Limit High Ground Pressure Vehicles
- SPR GEO-3: Stabilize Disturbed Soil Areas
- SPR GEO-4: Erosion Monitoring
- SPR GEO-5: Drain Stormwater via Water Breaks
- SPR GEO-6: Minimize Burn Pile Size
- SPR GEO-7: Minimize Erosion
- SPR GEO-8: Steep Slopes
- SPR HAZ-1: Maintain All Equipment
- SPR HAZ-5: Spill Prevention and Response Plan
- SPR HAZ-7: Triple Rinse Herbicide Containers
- SPR HYD-1: Comply with Water Quality Regulations
- SPR HYD-2: Avoid Construction of New Roads
- SPR HYD-3: Water Quality Protections for Prescribed Herbivory
- SPR HYD-4: Identify and Protect Watercourse and Lake Protection Zones
- SPR HYD-5: Protect Non-Target Vegetation and Special-status Species from Herbicides
- SPR HYD-6: Protect Existing Drainage Systems

***Mitigation Measure 10.b.3: Implement SB 1383 SLCP Regulation EIR Mitigation Measure 3.10-3***

***SB 1383 SLCP Regulation EIR Mitigation Measure 3.10-3: Develop Land Application Enforcement Strategy***

CalRecycle shall require LEAs to develop an enforcement strategy for identification of illegal land application sites. This strategy includes regulatory requirements that specify that operators that send material for land application keep records of sites where compostable material is land applied, and requirements for LEAs to review the records, inspect a statistically significant number of sites, and inform the appropriate

LEA of land application occurring within their jurisdiction. LEA enforcement strategies may additionally include encouragement of secondary processing to reduce the volume of compost overs, community outreach regarding the potential adverse effects of illegal land application, identification of sites (such as remote canyons) that may be more at risk for illegal dumping of organic wastes, development of avenues of anonymous public communication, and coordination with adjacent LEAs and RWQCB enforcement staff.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measures 10.b.1, 10.b.2, and 10.b.3, significant impacts on hydrology and water quality could occur as a result of implementing the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and CCS actions; forest, shrubland, and grassland management actions; and organic waste diversion and composting actions.

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

## **11.Land Use**

### ***Impact 11.a: Short-Term Construction-Related Effects on Land Use***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into

existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas, . An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

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

Construction and operation of new manufacturing, disposal, and recycling facilities may require the conversion of non-industrial land uses to industrial land uses. Potential environmental effects associated with land use changes on agriculture and forestry, biological resources, geology and soils, and hydrology and their related mitigation measures are discussed in further detail in their respective sections of this Recirculated Draft EA.

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

Nevertheless, as discussed in Section 2, "Agriculture and Forestry Resources," Section 4, "Biological Resources," Section 7, "Geology and Soils," and Section 10, "Hydrology and Water Quality," environmental effects associated with land use changes would be potentially significant. Therefore, land use impacts would be potentially significant.

## Impact Significance Determination

Short-term construction-related impacts on land use associated with the 2022 Scoping Plan would be potentially significant.

## Mitigation Measures

***Mitigation Measure 11.a: Implement Mitigation Measures 2.a, 4.a, 7.a, and 9.a***

## Post-Mitigation Significance Determination

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 11.a, significant impacts related to land use conversions on various resource areas could 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 a compliance-response-related project, this Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential short-term construction-related impacts related to land use conversions associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

## ***Impact 11.b: Long -Term Operational-Related Impacts on Land Use and Planning***

Long-term operational-related impacts on land use and planning could result from operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on land use and planning may be related to the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; and forest, shrubland, and grassland management actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 11.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

### **a) Increase in Renewable Energy and Decrease in Oil and Gas Use Actions**

As described in more detail in Chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel



biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. The operation of wind, solar thermal, and solar PV energy systems would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

#### **i. Division of Established Communities**

Renewable energy projects would include installation of transmission lines, which could traverse both incorporated and unincorporated jurisdictions. In general, transmission lines (both aboveground and underground) would not physically divide existing communities because the transmission lines could co-exist with existing uses. Future proposed land uses would be required to follow setback requirements to avoid potential conflicts with transmission lines. Although temporary and permanent disruptions to land uses could result to make way for transmission line rights-of-way, routing of transmission lines often involves substantial public, agency, and other stakeholder involvement. For these reasons, any disruptions are expected to be isolated and would not permanently divide an existing community.

Wind farms, solar thermal, and solar PV systems are generally located in large open space areas, including farmland, and involve dispersed placement of equipment away from existing communities. Geothermal leasing and development require a relatively small footprint, and the land required is not usually completely occupied by the plant. Therefore, these projects would not be expected to physically divide an existing community.

To be economically feasible, dedicated biomass plants are located either at the source of a fuel supply (such as at a sawmill) or within 50 miles of numerous suppliers (up to 200 miles for a very high-quantity, low-cost supplier). Biomass plants have a relatively small footprint and would generally be compatible with nearby uses (i.e., near the fuel supply or suppliers); therefore, development of biomass plants is not expected to physically divide existing communities.

Similarly, although the dedicated production of biomass resources would require large amounts of land, most biomass material is from existing industrial, agricultural, and

forestry operations. For instance, residues from sawmills are the primary biomass resources and are typically concentrated in areas of high forest-product-industry activity. In rural areas, agricultural production can often yield substantial biomass resources. In urban areas, biomass is typically composed of wood wastes, such as construction debris, pallets, yard and tree trimmings, and railroad ties. Because biomass fuel production would likely occur in locations consistent with its production, the production of biomass resources is not anticipated to physically divide an existing community.

Distributed biogas projects could be constructed throughout the state but are likely to be located in proximity to agricultural areas to provide access to fuel and to address potential odor generation. Because landfill/digester gas projects would rely on existing waste for fuel, additional land would not be required to generate fuel. For these reasons, an increase in biogas projects is not expected to physically divide an existing community.

Because small hydroelectric power generation projects would be located along rivers and at dams, increased small hydroelectric power generation is not anticipated to physically divide an existing community.

## **ii. Aviation Considerations**

A general air navigation concern is associated with tall structures. Therefore, there could be wind power siting concerns relative to the locations of airports and flight patterns and air space associated with the airports because of the turbines and meteorological towers located at wind energy projects. The Federal Aviation Administration (FAA) must be contacted for any proposed construction or alteration of objects within navigable airspace under any of the following circumstances:

- proposed object more than 200 feet above ground level at the structure's proposed location;
- proposed object within 20,000 feet of an airport or seaplane base that has at least one runway longer than 3,200 feet, and the proposed object would exceed a slope of 100:1 horizontally from the closest point of the nearest runway;
- proposed object within 10,000 feet of an airport or seaplane base that does not have a runway more than 3,200 feet in length, and the proposed object would exceed a 50:1 horizontal slope from the closest point of the nearest runway; and/or
- proposed object within 5,000 feet of a heliport, and the proposed object would exceed a 25:1 horizontal slope from the nearest landing and takeoff area of that heliport (FAA 2007).

The FAA could recommend marking and/or lighting a structure that does not exceed 200 feet above ground level, or that is not within the distances from

airports or heliports mentioned above, because of its location (FAA 2007). Because a wind energy development project would have to meet appropriate FAA criteria, no adverse impacts on aviation would be expected.

Therefore, the 2022 Scoping Plan would not have the potential to divide a community and would have a less than significant effect on this particular impact.

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

#### **b) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-fueled, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

The LCFS regulation is designed to incentivize fuel pathways with lower CI values, which already account for land use change related to GHG emissions. However, non-GHG impacts, such as decreased biodiversity and impacts on water resources, are not accounted for in the CI value of fuels, even as the metric incorporates carbon losses from deforested and other converted lands. Carbon storage of existing land uses does not sufficiently measure an area's level of biodiversity or sensitivity to land disturbance. Removal of natural undeveloped lands could lead to irreversible non-GHG impacts, such as loss of species populations, or impacts with a payback ("grow

back”) period of up to a few hundred years (Lapola et al. 2010). Because of the market-driven nature of the future biofuel mix, changes to demand for low-CI fuels could possibly incur non-GHG land use change impacts, especially if the feedstocks are sourced from an area with a sensitive ecosystem or geology. However, compliance responses, such as changes in consumption of cellulosic renewable fuels, would generally use organic waste diverted from landfills or waste biomass from existing industrial, agricultural, and forestry operations, thus not requiring a substantial change in land use associated with feedstock production. Impacts associated with land use and planning are wide-reaching, affecting nearly all resource impact areas, especially when considering indirect land use changes.

With respect to effects related only to land use and planning, the long-term conversion of lands required to meet the upstream demands for fuels to meet the proposed fuel regulations could also conflict with local conservation plans or zoning policies. The increased demand could result in continued occurrences of direct land use change related to the expansion of agricultural lands and continued occurrences of indirect expansion of displaced agricultural lands. This could then result in an intensification of adverse effects associated with the conversion or modification of natural land or existing agriculture, such as impacts on sensitive species populations; soil carbon content; annual carbon sequestration losses, depending on the land use; long-term erosion effects; adverse effects on local or regional water resources; and long-term water quality deterioration associated with intensified fertilizer use and pesticide or herbicide runoff. Therefore, the 2022 Scoping Plan would not have the potential to divide a community and would have a less than significant effect on this particular impact.

Nevertheless, as discussed in Section 2, “Agriculture and Forestry Resources,” Section 4, “Biological Resources,” Section 7, “Geology and Soils,” and Section 10, “Hydrology and Water Quality,” environmental effects associated with land use change would be potentially significant as a result of implementing the increase in renewable energy and decrease in oil and gas use actions and low carbon fuels actions. This impact would be potentially significant.

### **c) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and

transport trucks. The proposed actions would protect forests, shrublands, and grasslands from conversion to another land use.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch. Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

Projects would implement vegetation treatment on lands owned and managed by various entities, including State and Federal agencies, private and industrial owners, special districts, non-profit organizations, cities, and counties. For projects on State and Federal lands, a land management agency would develop the project consistent with its land management plans. In general, all project proponents will design and implement treatments in a manner that is consistent with applicable local plans (e.g., general plans), policies, and ordinances to the extent that the project is subject to them<sup>53</sup>. Treatment activities that would occur within the Coastal Zone would be required to comply with the California Coastal Act or a certified LCP (as applicable), including obtaining a coastal development permit, when necessary.<sup>54</sup>

**d) Afforestation, Urban Forestry Expansion, Avoided Natural and Working Land Use Conversion, and Wetland Restoration Actions**

As described in more detail in Chapter 2, achieving the targets under the 2022 Scoping Plan includes actions that would be reasonably anticipated to increase or retain vegetation and restore wetland conditions in California. These actions would result in planting of trees and other vegetation (e.g., hedgerows) in urban areas, within cropland (as hedgerows, wind/shelterbelts, alley crops), along waterways in riparian zones within croplands, in sparsely vegetated lands where invasive have been removed, and surrounding areas of cultivation. Wetland restoration activities could occur on agricultural lands in the Sacramento/San Joaquin Delta as well as in other coastal wetlands and mountain meadows as a compliance response. Avoided conversion of natural and working lands to another land use is also anticipated. These anticipated actions could result in an increase in construction activities related to wetland restoration and an increase in tree maintenance (e.g. pruning/trimming, fertilizing, tree felling, chipping/grinding, biomass transportation) within urban areas and croplands. Equipment used for these activities include tractors, backhoes, aquatic craft, portable chippers/grinders, and chip trucks.

The long-term conversion of lands required for wetland restoration could conflict with local conservation plans or zoning policies. These activities would generally involve conversion of farmland or other natural lands to other uses (e.g., conservation or open space). This could then result in an intensification of adverse effects associated with the conversion or modification of natural land or existing agriculture, such as impacts on sensitive species populations. Therefore, as discussed in Section 2, "Agriculture and Forestry Resources" and Section 4, "Biological Resources," environmental effects associated with land use change would be potentially significant as a result of implementing wetland restoration actions. This impact would be potentially significant.

---

<sup>53</sup> See CalVTP Standard Project Requirement AD-3

<sup>54</sup> See CalVTP Standard Project Requirement AD-9

## Impact Significance Determination

Implementing the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; forest, shrubland, and grassland management action; and afforestation, urban forestry expansion, avoided natural and working land use conversion, and wetland restoration actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on land use.

## Mitigation Measures

Table 4-16 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-16: Mitigation Measures Applicable to Long-Term Operational Impacts on Land Use**

Actions	Mitigation Measure
Increase in renewable energy and decrease in oil and gas use actions, low carbon fuels actions; and afforestation, urban forestry expansion, avoided natural and working land use conversion and wetland restoration actions	11.b.1
Forest, shrubland, and grassland management actions	11.b.2

## Mitigation Measures

**Mitigation Measure 11.b.1:** Implement Mitigation Measures 2.a, 4.a, 7.a, and 9.a

**Mitigation Measure 11.b.2:** Implement CalVTP Program EIR SPRs Applicable to Land Use

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference herein (BOF 2019):

- SPR AD-3: Consistency with Local Plans, Policies, and Ordinances
- SPR AD-9: Obtain a Coastal Development Permit for Proposed Treatment Within the Coastal Zone Where Required

## Post-Mitigation Significance Determination

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty

in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measures 11.b.1 and 11.b.2, significant impacts related to land use conversions on various resource areas could 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 a compliance-response-related project, this Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential short-term construction-related impacts related to land use conversions associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

## **12.Mineral Resources**

### ***Impact 12.a: Short-Term Construction-Related and Long-Term Operational-Related Effects on Mineral Resources***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.



Increased use of zero- and near zero-emission technology would require the use of batteries sourced by various precious metals (e.g., lithium) or fuel cells to provide electricity to each sector covered by the 2022 Scoping Plan. These sectors include electric and fuel cell vehicles, vessels, equipment and aircraft; battery storage systems.. An increase in demand for batteries and fuel cells could result in mining for lithium, platinum, and other metals and mineral resources, and exports from source countries or other states.

Implementation of the 2022 Scoping Plan could have an effect on the availability of known materials because it would involve mining lithium. Owing to continued exploration, identified lithium resources have increased substantially worldwide and total about 86 million tons. In 2021, the total amount of lithium ore available in the United States was 7.9 million tons in the form of continental brines, geothermal brines, hectorite, oilfield brines, and pegmatites. Lithium consumption for batteries has increased substantially in recent years because of increased demand for rechargeable lithium-ion batteries, which use approximately 71 percent of the world’s lithium resources. As of January 2022, a domestic lithium mine is in operation in Nevada, and the developer, Controlled Thermal Resources, has begun extracting lithium in the Salton Sea. Two companies produced a large array of downstream lithium compounds in the United States from domestic or South American lithium carbonate, lithium chloride, and lithium hydroxide. From 2016 through 2019, the United States imported lithium from Argentina (55 percent), Chile (36 percent), China (5 percent), Russia (2 percent), and others (2 percent) (Jaskula 2022). However, there are current initiatives at the State and federal level that are likely to influence lithium mining domestically, which include efforts in California. Table 4-17 details lithium mine production and reserves by country.

**Table 4-17: Lithium Mine Production and Reserves by Country**

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
United States	Withheld	Withheld	750,000
Argentina	5,900	6,200	2,200,000
Australia	39,700	55,000	5,700,000
Brazil	1,420	1,500	95,000
Chile	21,500	26,000	9,200,000
China	13,300	14,000	1,500,000
Portugal	348	900	60,000
Zimbabwe	417	1,200	220,000
Other countries	—	—	2,700,000

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
Worldwide total (rounded and excluding U.S. production)	82,500	100,000	22,000,000

Source: Jaskula 2022

The magnitude of reserves, shown above, is necessarily limited by many considerations, including cost of drilling, taxes, price of the mineral commodity being mined, and the associated demand. In addition to the reserves described above, deposits of mineral resources are also important to consider in assessing future supplies. Furthermore, owing to continuing exploration, identified lithium resources have increased substantially worldwide. Worldwide in 2021, lithium resources are currently estimated to be approximately 86 million tons, including 7.9 million tons in the United States, 21 million tons in Bolivia, 19.3 million tons in Argentina, 9.6 million tons in Chile, 6.4 million tons in Australia, 5.1 million tons in China, 3 million tons in the Congo, 2.9 million tons in Canada, 1.7 million tons in Mexico, 1.3 million tons in Czech Republic, and 1.2 million tons in Serbia. In addition, Peru, Mali, Zimbabwe, Brazil, Spain, Portugal, Ghana, Austria, Finland, Kazakhstan, and Namibia have resources of less than 1 million tons each. Further, because of steadily increasing demand for lithium, domestic recycling of lithium has also increased (Jaskula 2022).

As mentioned, there are efforts to increase the domestic supply of lithium. Interest in addressing supply chains of mineral commodities has grown. Both the State and the federal government have sought to address mineral independence and security. Examples of efforts include California AB 1657 (Garcia), Chapter 271, 2020, which requires the California Energy Commission to convene a Blue-Ribbon Commission on Lithium Extraction in California (Lithium Valley Commission). The Lithium Valley Commission is charged with reviewing, investigating, and analyzing issues and potential incentives regarding lithium extraction and use in California. At the federal level, Executive Order (EO) 14017 directs federal agencies to perform a 100-day review of “supply chain risks” for four classes of products: semiconductors, high-capacity batteries (including for EVs), critical and strategic minerals (including rare earths), and pharmaceuticals (Biden 2021). The EO additionally directs agencies to perform year-long reviews of supply chains in six critical sectors, including transportation and energy. The reviews will seek to identify supply chain risks that leave the United States vulnerable to reductions in the availability and integrity of critical goods, products, and services, and will include policy recommendations for addressing such risks. The EO indicates that, among other approaches, the current administration will explore how trade policies and agreements can be used to strengthen the resilience of U.S. supply chains.

In summary, while substantial research has been done and there is a clear commitment to increasing the domestic supply of lithium, exact actions that will be taken in response to this goal are yet to be identified with certainty. However, the extremely small increase in demand that could be associated with the 2022 Scoping Plan suggests that existing extraction facilities would be used. The development of new extraction facilities would not be required.

The 2022 Scoping Plan could also increase the mining of graphite ore worldwide. In 2021, natural graphite was not produced in the United States; however, approximately 95 U.S. companies, primarily in the Great Lakes and Northeastern regions and Alabama and Tennessee, consumed 45,000 tons valued at an estimated \$41 million. The major uses of natural graphite were batteries, brake linings, lubricants, powdered metals, refractory applications, and steelmaking. During 2021, the United States imported an estimated 53,000 tons of natural graphite, with about 57 percent flake and high-purity, 42 percent amorphous, and 1 percent lump and chip graphite. Table 4-18 summarizes mine production of graphite by country in 2020 and 2021. Note that reserves data are dynamic. Reserves may be considered a working inventory of mining companies' supply of an economically extractable mineral commodity. Inventory is limited by many considerations, including the cost of drilling, taxes, the price of the mineral commodity being mined, and the demand for it.

**Table 4-18: Graphite Mine Production and Reserves by Country**

<b>Country</b>	<b>Mine Production in 2020 (Tons)</b>	<b>Mine Production in 2021 (Tons) (Estimated)</b>	<b>Reserve Amount (Tons)</b>
United States	--	--	(Included in world total)
Austria	500	500	(Included in world total)
Brazil	63,600	68,000	70,000,000
Canada	8,000	8,600	(Included in world total)
China	762,000	820,000	73,000,000
Germany	300	300	(Included in world total)
India	6,000	6,500	8,000,000
North Korea	8,100	8,700	2,000,000
Madagascar	20,900	22,000	26,000,000
Mexico	3,300	3,500	3,100,000
Mozambique	28,000	30,000	25,000,000
Norway	12,000	13,000	600,000

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
Russia	25,000	27,000	(Included in world total)
Sri Lanka	4,000	4,300	1,500,000
Tanzania	--	150	18,000,000
Turkey	2,500	2,700	90,000,000
Ukraine	16,000	17,000	(Included in world total)
Uzbekistan	100	110	7,600,000
Vietnam	5,000	5,400	(Included in world total)
World total	966,000	1,000,000	320,000,000

Source: Olson 2022

Cobalt mining may also increase as a result of implementation of the 2022 Scoping Plan as battery production, which requires the use of cobalt, increases to support the electrification of the on-road mobile source sector. Identified cobalt resources of the United States are estimated to be about 1 million tons. Most of these resources are in Minnesota, but other important occurrences are in Alaska, California, Idaho, Michigan, Missouri, Montana, Oregon, and Pennsylvania. With the exception of resources in Idaho and Missouri, any future cobalt production from these deposits would be as a byproduct of another metal. Identified world terrestrial cobalt resources are about 25 million tons. The vast majority of these resources are in sediment-hosted stratiform copper deposits in the Democratic Republic of the Congo and Zambia; nickel-bearing laterite deposits in Australia and nearby island countries and Cuba; and magmatic nickel-copper sulfide deposits hosted in mafic and ultramafic rocks in Australia, Canada, Russia, and the United States. More than 120 million tons of cobalt resources have been identified in polymetallic nodules and crusts on the floor of the Atlantic, Indian, and Pacific Oceans. Table 4-19 summarizes cobalt extraction by country (Shedd 2022).

**Table 4-19: Cobalt Mine Production and Reserves by Country**

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
United States	600	700	69,000
Australia	5,630	5,600	1,400,000
Canada	3,690	4,300	220,000
China	2,200	2,200	80,000

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
Democratic Republic of the Congo	98,000	120,000	3,500,000
Cuba	3,800	3,900	500,000
Indonesia	1,100	2,100	600,000
Madagascar	850	2,500	100,000
Morocco	2,300	2,300	13,000
Papua New Guinea	2,940	3,000	47,000
Philippines	4,500	4,500	260,000
Russia	9,000	7,600	250,000
Other countries	7,640	6,600	610,000
Worldwide total (rounded and excluding U.S. production)	142,000	170,000	7,600,000

Source: Shedd 2022

The 2022 Scoping Plan could also result in an increase in nickel mining to manufacture NiMH batteries. In 2021, the underground Eagle Mine in Michigan produced approximately 18,000 tons of nickel in concentrate, which was exported to smelters in Canada and overseas. A company in Missouri recovered metals, including nickel, from mine tailings as part of the Superfund Redevelopment Initiative. Nickel in crystalline sulfate was produced as a byproduct of smelting and refining platinum-group-metal ores mined in Montana (McRae 2022). Table 4-20 summarizes mine production of nickel by country in 2020 and 2021.

**Table 4-20: Nickel Mine Production and Reserves by Country**

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
United States	16,700	18,000	340,000
Australia	169,000	160,000	21,000,000
Brazil	77,100	100,000	16,000,000
Canada	167,000	130,000	2,000,000
China	120,000	120,000	2,800,000
Indonesia	771,000	1,000,000	21,000,000
New Caledonia	200,000	190,000	not available
Philippines	334,000	370,000	4,800,000
Russian	283,000	250,000	7,500,000

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
Other countries	373,000	410,000	20,000,000
Worldwide total (rounded and excluding U.S. production)	2,510,000	2,700,000	>95,000,000

Source: McRae 2022

Increase in the manufacture of battery technology from implementation of the 2022 Scoping Plan could also increase the mining of copper. In 2021, the recoverable copper content of U.S. mine production was an estimated 1.2 million tons, unchanged from that in 2020, and was valued at an estimated \$12 billion, 58 percent greater than the value in 2020 (\$7.61 billion). Arizona was the leading copper-producing state and accounted for an estimated 71 percent of domestic output; copper was also mined in Michigan, Missouri, Montana, Nevada, New Mexico, and Utah. Copper was recovered or processed at 25 mines (19 of which accounted for 99 percent of mine production), two smelters, two electrolytic refineries, and 14 electrowinning facilities. Copper and copper alloy products were used in building construction (46 percent), electrical and electronic products (21 percent), transportation equipment (16 percent), consumer and general products (10 percent), and industrial machinery and equipment (7 percent). Table 4-21 summarizes copper production by country in 2020 and 2021.

**Table 4-21: Copper Mine Production and Reserves by Country**

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
United States	1,200	1,200	48,000
Australia	885	900	93,000
Canada	585	590	9,800
Chile	5,730	5,600	200,000
China	1,720	1,800	26,000
Democratic Republic of the Congo	1,600	1,800	31,000
Indonesia	505	810	24,000
Kazakhstan	552	520	20,000
Mexico	733	720	53,000
Peru	2,150	2,200	77,000
Poland	393	390	31,000
Russia	810	820	62,000

Country	Mine Production in 2020 (Tons)	Mine Production in 2021 (Tons) (Estimated)	Reserve Amount (Tons)
Zambia	853	830	21,000
Other countries	2,840	2,800	180,000
World total	20,600	21,000	880,000

Source: Flanagan 2022

The 2022 Scoping Plan could also result in additional mining of manganese, chromium, zinc, and aluminum. In 2021, worldwide mine production of manganese totaled 20,000 thousand metric tons (Schnebele 2022). Worldwide chromium mine production totaled 41,000 thousand metric tons in 2021 (Schulte 2022). Worldwide reserves for zinc, the 23rd most common element, are estimated to be about 1.9 billion tons (Tolcin 2022).

An increased demand for hydrogen fuel cell-powered vessels and a related increase in demand for mining of platinum-group metals (PGMs) could occur. The leading domestic use for PGMs is in catalytic converters to decrease harmful emissions from automobiles. 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 (Schulte 2022). Table 4-22 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 (Schulte 2022).

**Table 4-22: Platinum and Palladium Mine Production and Reserves**

Country	2020 (Metric Tons of Platinum)	2021 (Metric Tons of Platinum) (Estimated)	2020 (Metric Tons of Palladium)	2021 (Metric Tons of Palladium) (Estimated)	Reserve Amount (Metric Tons)
United States	4,200	4,200	14,600	14,000	900,000
Canada	7,000	6,000	20,000	17,000	310,000
Russia	23,000	19,000	93,000	74,000	4,500,000
South Africa	112,000	130,000	73,500	80,000	63,000,000
Zimbabwe	15,000	15,000	12,900	13,000	1,200,000
Other countries	4,320	4,300	2,670	2,800	Not available
World total (rounded)	166,000	180,000	217,000	200,000	70,000,000

Source: Schulte 2022

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 be substituted for another, but with losses in efficiency. From 2016 through 2019, the United States imported platinum from South Africa (43 percent), Germany (21 percent), Italy (7 percent), Switzerland (6 percent), and other countries (23 percent). During the same period, the United States imported palladium from Russia (38 percent), South Africa (33 percent), Germany (8 percent), the United Kingdom (5 percent), and other countries (16 percent) (Schulte 2022).

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 2022 Scoping Plan would be located in areas within existing footprints or in areas with consistent zoning where original permitting and analyses considered these issues and would not preclude access to a known mineral resource. This impact would be less than significant.

Mining-related impacts associated with the reasonably foreseeable compliance responses of the 2022 Scoping Plan are discussed throughout this EA (e.g., see the aesthetics, agriculture and forestry resources, hazards and hazardous materials, hydrology and water quality, and transportation sections).

### **Impact Significance Determination**

Short-term construction-related and long-term operational-related effects on mineral resources associated with the 2022 Scoping Plan would be **less than significant**.

### **Mitigation Measures**

No mitigation is required.

## **13.Noise and Vibration**

### ***Impact 13.a: Short-Term Construction-Related Effects on Noise and Vibration***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle



charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

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

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

Additionally, when construction-related noise levels are being evaluated, activities that occur during the more noise-sensitive evening and nighttime hours are of increased concern. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as traffic volumes and commercial activities decrease,

construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of nearby residential uses.

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

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

Construction activity related to implementation of offshore wind projects would similarly produce high volumes of noise; however, aquatic environments fundamentally differ from terrestrial environments, which, unlike water, support physical barriers that attenuate noise more quickly. Moreover, air over water is typically cooler and propagates noise more easily. As such, use of construction equipment to install offshore wind turbines may produce amplified noise with the capacity to travel greater distances as compared to land-based construction activity.

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. Although a detailed construction equipment list is not currently available, based on this project type, it is expected that the primary sources of groundborne vibration and noise would be bulldozers and trucks. According to the Federal Transit Administration (FTA), levels associated with the use of a large bulldozer and trucks are 0.089 and 0.076 in/sec PPV (87 and 86 VdB) at 25 feet, respectively. With respect to the prevention of structural damage, construction-

related activities would not exceed recommended levels (e.g., 0.2 in/sec PPV). However, based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, bulldozing and truck activities could exceed recommended levels with respect to the prevention of human disturbance (e.g., 80 VdB) within 275 feet.

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

### **Impact Significance Determination**

Short-term construction-related effects on noise associated with the 2022 Scoping Plan would be potentially significant.

### **Mitigation Measures**

#### ***Mitigation Measure 13.a***

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 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 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.
- Adequately muffle and maintain all construction equipment used on-site.
- 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 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 gasdriven 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.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 13.a, significant impacts on noise 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 Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses,

for CEQA compliance purposes, that the short-term construction-related effect regarding noise resulting from the construction of new facilities or reconstruction of existing facilities associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

***Impact 13.b: Long-Term Operational-Related Effects on Noise and Vibration***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on noise and vibration may be related to the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; expansion of electrical infrastructure actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and CCS actions; improvements to oil and gas facilities actions; reduced high-GWP compounds actions; manure management actions; forest, shrubland, and grassland management actions; agricultural actions; and organic waste diversion and composting actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 13.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

**a) Increase in Renewable Energy and Decrease in Oil and Gas Use Actions**

As described in more detail in chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. The operation of wind, solar thermal, and solar PV energy would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

Implementation of renewable energy supply projects could result in additional vehicle trips on the affected roadway systems from worker commute-, maintenance/operation-, and material delivery-related trips and, consequently, an

increase in traffic source noise. The exact number of daily trips required for project operations and the location of roadway segments that would be affected are unknown at this time. However, when the average daily traffic (ADT) volume is doubled on a roadway segment in comparison to existing conditions, the resultant increase is approximately 3 dB Community Noise Equivalent Level (CNEL)/ $L_{dn}$ , which is typically considered substantial because a change of this magnitude is perceivable to the human ear. ADT volumes on roadway segments in the project area vary considerably (e.g., from hundreds to hundreds of thousands) under existing no-project conditions. Therefore, project operations could result in a doubling of ADT volumes, especially in rural areas where existing ADT volumes would be lower and considering the increased tire and engine source noise from material delivery-related heavy-duty truck trips, along affected roadway segments. Consequently, based on the information above, exterior noise levels at noise-sensitive receptors located near affected roadways could substantially (e.g., 3 dB CNEL/ $L_{dn}$ ) increase.

Additionally, implementation of the renewable energy supply projects could introduce new on-site stationary noise sources, including rooftop heating, ventilation, and air conditioning equipment; mechanical equipment (e.g., turbines, engines, pumps, blowers); emergency generators; parking lot activities; loading operations; and other related operational activities. Noise levels associated with these types of sources vary greatly but would generally range from 70 dBA  $L_{eq}$  to 80 dBA  $L_{max}$  at 50 feet. Based on these and general attenuation rates, exterior noise levels at noise-sensitive receptors located within hundreds of feet from the location of renewable energy project sites could exceed typical standards (e.g., 50/60 dBA  $L_{eq}/L_{max}$  during the daytime hours and 40/50 dBA  $L_{eq}/L_{max}$  during the nighttime hours).

Consequently, because the specific noise (and vibration) impacts of alternative energy supply projects cannot be identified with any certainty, operational noise impacts could be substantial. This impact would be potentially significant.

#### **b) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production

of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-fueled, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

Implementation of low carbon fuels actions could result in changes to land use to collect or cultivate biofuel feedstock. In general, these activities exist under existing conditions. For example, any new farmland used for feedstock cultivation is likely to be adjacent to similar uses, and, forests are subject to periodic forest management activities, such as thinning, hazardous fuel removal, replanting, and timber harvest. However, the intensity and frequency of these activities could increase to provide additional biomass in response to the low carbon fuels actions, which would result in a substantial increase in ambient noise levels.

New sources of noise associated with implementation of the low carbon fuels actions could include operation of new facilities, such as biofuel processing plants, CCS infrastructure, and fixed guideways; dairy and wastewater treatment anaerobic digesters; and installation of new equipment associated with modification to dairies, landfills, wastewater treatment, and oil and gas facilities. Digester and new equipment noise levels could exceed applicable noise standards and result in a substantial increase in ambient noise levels. This impact would be potentially significant.

### **c) Expansion of Electrical Infrastructure Actions**

As described in more detail in Chapter 2, compliance responses would be associated with actions requiring that energy consumption associated with space and water heating, space cooling, cooking, clothes drying, and pool and spa heating be served only by combustion-free technology (e.g., heat pump water heaters, heat pump space conditioners, electric ranges for cooking, electric resistance or heat pump clothes dryers, and electric resistance or heat pump pool and spa heaters). Transitioning to combustion-free technology may result in greater electricity demand compared to mixed-fuel buildings. Additional electricity demand beyond what the grid is currently capable of serving could result in construction of new infrastructure or modification to existing infrastructure at the distribution level (e.g., lines, transformers, power meters, circuit breaker main cabinets) and transmission level (e.g., transmission towers, high-voltage conductors [power lines], substations) to accommodate increased loads, as well as require new supply-side generation and energy storage resources. Distributed energy strategies could also be installed to support these electric end uses, including rooftop solar PV systems (beyond those currently required by the Energy Code); load management systems; and energy storage.

Additional compliance responses associated with retrofits would include upgrading or replacing electric panels to accommodate increased load, as well as circuitry for appliance fuel switching, and modifications to the building envelope or internal space involving wall opening modifications to fit and integrate new equipment.

Operation of more energy-efficient technologies would not increase the existing noise environment beyond current levels generated by these existing technologies. The operation of new infrastructure may generate some operational noise that could affect ambient noise levels; however, these levels are not expected to be substantial. This impact would be less than significant.

#### **d) Expanded Use of Zero-Emission Mobile Source Technology Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the expanded use of zero-emission mobile source technology include increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste disposal or recycling from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

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

#### **e) Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with CCS actions include the modification of existing or new industrial facilities to capture CO<sub>2</sub> emissions and construction of new infrastructure, such as pipelines, wells, and other surface facilities within or near the emitting facility, to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. CCS actions may also result in increased transportation, such as truck, rail, and barge transit, to transport CO<sub>2</sub> from the industrial facilities to the sequestration sites. The transport distances and pipeline construction requirements for the captured CO<sub>2</sub> would vary depending on the locations of specific industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy



generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand will be met by increased generation, both on-site and off-site.

Implementation of CCS could include development of direct air capture facilities. The design of future facilities could vary considerably, ranging from tall, multi-story structures to low-profile structures covering a potentially large area of land. Depending on the size of these facilities, intake fans would emit varying degree of noise that may be substantial depending on the location. These new or modified facilities would likely be located in areas with zoning that would permit the development of industrial uses or on public lands where the appropriate State or federal agency has determined that such uses are allowable. However, the locations of infrastructure to transport captured CO<sub>2</sub> emissions (e.g., pumping stations for CO<sub>2</sub> transport through pipelines) may operate in areas outside of the footprints of existing facilities or areas zoned for manufacturing or industrial uses, depending on the locations of the storage reservoirs.

Thus, implementation of reasonably foreseeable compliance responses could result in the generation of long-term operational noise in excess of applicable standards or result in a substantial increase in ambient noise levels at nearby sensitive receptors. This impact would be potentially significant.

#### **f) Improvements to Oil and Gas Facilities Actions**

As described in more detail in Chapter 2, modifications to existing facilities, such as the installation of vapor recovery systems, installation of low-bleed or zero-bleed pneumatic devices, and replacement of leaking equipment, could involve construction activities related to installing or replacing gathering lines, piping, flanges, valves, and similar features associated with oil and gas facilities. Compliance responses at natural gas transmission and distribution pipelines and related equipment and facilities may result in an increase in the rate at which repairs and replacements are made. Emissions from pipeline and compressor blowdowns may be reduced by implementing methods such as using portable compressors; using plugs to isolate sections of pipelines; flaring vented gas; installing ejectors (nozzles that can capture blowdown gas and route it to a useful outlet); routing collected vapors to fuel gas systems, sales gas lines, microturbines, or underground injection wells; and installing static seals on compressor rods. Any pipeline replacement or reconstruction activities, leak surveys, and methods to reduce blowdown emissions would typically occur within the footprint of existing oil and gas facilities.

Noise levels from flaring have been measured as high as 115 dBA at the source to 55 dBA at distances of 1,800 feet to 3,500 feet and could occur 24 hours per day (Tribal Energy and Environmental Information 2014). Improvements to oil and gas facilities could result in the installation of additional low-NO<sub>x</sub> combustion devices to dispose of vapors. However, these are fully enclosed devices and have an estimated decibel

measurement of 88 dBA<sup>55</sup> at the source and with standard attenuation would result in negligible noise levels in comparison with the surrounding environments. Operational noise impacts associated with improvements to oil and gas facilities would be less than significant.

#### **g) Reduced High-GWP Fluorinated Gases Actions**

As described in more detail in Chapter 2, replacement of high-GWP fluorinated gases such as HFCs with lower-GWP alternatives could result in increased demand for the latter (e.g., increased demand for HFOs as well as non-fluorinated low-GWP alternatives like CO<sub>2</sub>) and modification to existing production facilities. Local permitting agencies may apply additional oversight on the planning and operations of refrigeration equipment using flammable refrigerants, such as hydrocarbons, and toxic refrigerants, such as ammonia. As HFC use is discontinued, those actions would increase the vehicular transportation of HFCs for destruction or reclamation. However, any major shifts in the HFC market – such as increased production and imports of HFOs or other non-fluorinated low-GWP alternatives, and enhanced transportation of high-and low-GWP gases – will be driven predominantly by the global and national HFC phasedowns currently underway, and not by California's measures.

Replacing high-GWP refrigerants, foam expansion agents, aerosol propellants, and other related uses of HFC would not change operations of the related devices. Similarly, existing facilities that incorporate low-GWP alternatives instead of high-GWP HFCs into their manufacturing processes would not generate additional levels of noise as compared to current conditions. Thus, there would be no substantial increases in noise associated with the use of low-GWP alternatives. This impact would be less than significant.

#### **h) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce RNG that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards.

---

<sup>55</sup> The information for the CEB 800 Flare was provided via email from Aeron. It is not an official specification for the device but is based on one field test conducted by a third-party consultant. Paneling was not installed around the blower at the measured unit. Aeron estimates that the noise level would be < 85 dBA if paneling were installed.

Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network.

Alternatively, collected manure could be transported to centralized digesters and potentially co-digested with other feedstocks (such as food waste) for increased fuel production. This would be feasible at large dairies in close proximity to one another that collectively could connect to a natural gas pipeline at lower cost than could occur individually. Implementation of digesters and associated equipment could provide small-scale electricity production, distributing biogas via pipeline and providing fuel for on- or off-site vehicle fleets. Digesters typically include flares, which are intended for emergency purposes and would not be expected to be used on a regular basis, if ever.

New sources of noise associated with implementation of the methane reduction measures could include operation of new facilities, such as anaerobic digesters, and installation of new equipment associated with modification to dairies. This equipment could include (but is not limited to) flares, internal combustion engines, fuel cells, microturbines, natural gas upgrading equipment, off-road equipment, and pumps,. Flares, which can emit high levels of noise, may be used at digesters to dispose of methane vapors. However, flares at digesters would operate only for emergency purposes and would generally not be expected to be used,. Thus, flares installed as a result of implementation of these measures would not substantially affect ambient noise levels. Internal combustion engines, fuel cells, microturbines, natural gas upgrading equipment, off-road equipment, and pumps can also emit high levels of noise and are expected to be used consistently. Thus, this impact is potentially significant.

#### **i) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch. New or expanding facilities could increase noise and vibration. Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

Projects under the 2022 Scoping Plan would integrate various SPRs into treatment design to reduce exposure to noise generated by vegetation treatment activities. Treatments would be designed and implemented in a manner that is consistent with

applicable local plans (e.g., general plans), policies, and ordinances to the extent the project is subject to them<sup>56</sup>. Additionally, vegetation treatment activities would be restricted to daytime hours, treatment activities and staging areas would be located away from sensitive receptors to the extent feasible to minimize noise exposure, and notification would be provided to nearby sensitive receptors when heavy equipment would be used for a treatment<sup>57</sup>.

SPRs to reduce noise levels during treatment would also be integrated into treatment design. All equipment would be maintained appropriately and equipped with the proper intake and exhaust shrouds. All equipment engine shrouds would be closed during operation, and equipment idling time would be restricted<sup>58</sup>.

Each vegetation treatment activity under the 2022 Scoping Plan should be required to adhere to the applicable SPRs that avoid and minimize exposure to noise and reduce noise levels during treatment. Any increase in noise exposure at nearby receptors would occur only during daytime hours, thus avoiding the potential to cause sleep disturbance to residents during the more noise-sensitive evening and nighttime hours. Although noise-sensitive receptors near vegetation treatment sites could experience a temporary increase in ambient noise levels, this increase should not be substantial with implementation of SPRs.

#### **j) Agricultural Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses that address practices related to soil conditions include encouraging no till or reduced till practices, planting cover crops, transitioning to organic agriculture, and applying compost. Implementing certain soil management practices could increase the use of on-farm mechanical equipment (e.g., compost application, mulching, and whole orchard recycling). Additionally, compost application would require increased use of trucks to transport the compost. Since these outcomes could increase the use of heavy equipment on agricultural land, or increase on road vehicle traffic, this impact is potentially significant

#### **k) Organic Waste Diversion and Composting Actions**

As described in detail in Chapter 2, reducing landfill disposal of organic waste to less than 6 million short tons by 2025, as required under SB 1383, would result in the development of new or expanded organic material composting, digestion and/or other facilities throughout the state to recover and recycle the diverted organic waste. It is anticipated that new facilities would be sited at or near existing waste disposal sites or landfills or in urban areas zoned for industrial or solid waste-handling facilities.

---

<sup>56</sup> See CalVTP Standard Project Requirement AD-3.

<sup>57</sup> See CalVTP Standard Project Requirement NOI-1, NOI-4, NOI-6.

<sup>58</sup> See CalVTP Standard Project Requirement NOI-2, NOI-3, NOI-5.

Organic waste diversion and composting actions associated with implementation of the 2022 Scoping Plan would be conducted consistent with the SB 1383 SLCP Regulation, a program developed by CalRecycle to reduce disposal of organic waste by 50 percent of 2014 levels by 2020 and 75 percent by 2025. Materials that cannot be effectively recovered for human consumption would be directed to organic waste recovery or recycling facilities to make useful products, including compost, fertilizer, fuel, energy, or other products (e.g., paper). These facilities may be developed at existing landfills, other waste management sites, or at new stand-alone sites. Because SB 1383 represents State policy regarding organic waste diversion and composting actions, it can be reasonably assumed that these types of activities associated with the 2022 Scoping Plan would be consistent with the SB 1383 SLCP Regulation EIR.

New or expanded organic waste-handling facilities developed in response to the 2022 Scoping Plan would generate ongoing noise. Based on noise emissions levels from typical types of equipment used during the operation of organic waste-handling facilities and accounting for typical usage factors of individual pieces of equipment and attenuation, the operation of these facilities could result in noise that exceeds noise standards established in local general plans and noise ordinances or that is substantially greater than the ambient noise environment. Thus, implementation of reasonably foreseeable compliance responses could result in the generation of long-term operational noise in excess of applicable standards or result in a substantial increase in ambient noise levels at nearby sensitive receptors, and exposure to excessive vibration levels. This impact would be potentially significant.

#### **l) Offshore Renewable Wind Actions**

As described in more detail in Chapter 2, offshore renewable wind turbine projects would be installed and operated to support the decarbonization of the electrical sector. Turbines could be located within shallow and deeper portions of the oceans and would be supported by floating platforms. Turbines would be approximately 350 to 500 feet high, on average, and would be configured to optimize capture of wind energy. Energy captured by these turbines is transmitted to floating substations, which collect and stabilizes the power generated by the turbines, and is then transmitted to the onshore power grid.

Operation of offshore wind projects has the potential to generate high levels of noise and vibration, both above and below water. Turbines generate noise from the mechanical humming produced by the generator and a “whooshing” sound produce from the blades moving through the air. Modern commercial turbines are typically designed so that the turbine is upwind of the tower, which mitigates low-frequency and impulsive sound. Wind turbines make different types of sound, including broadband, infrasonic, impulsive, and tonal sound. The presence of wind turbine sound is dependent on atmospheric conditions, including air flow patterns and turbulence, and the ability to perceive wind turbine sound varies based on the presence of other nearby sources of sound, manmade or otherwise, and site-specific topography.

Broadband sound is made up of a combination of sound waves with different frequencies. It has no distinct pitch and could be described as a humming, whooshing, or swishing sound. Infrasonic sound is always present in the environment. Depending on the locations, examples include the sound of flowing water, waves, or air turbulence. It can propagate further than higher, more audible frequencies, but it blends in with ambient noise. Although infrasonic noise is often inaudible, it can cause structural vibration, such as windows rattling. Impulsive sound can be generated when disturbed airflow interacts with turbine blades, making swishing noises. Impulsive sounds can vary in amplitude over time. Examples of impulsive sounds include a door slamming or a person stomping. Tonal sound can be caused by the rotation of shafts, generators, and gears operating at natural frequency; unstable airflow over holes or slits; or non-aerodynamic instabilities interacting with the blade surface. Tonal sounds can have a distinct pitch, such as a music note, and do not start or end abruptly. Because tonal sound can be problematic, wind turbine manufacturers are paying particular attention to addressing tonal sound produced by their turbines.

The proposed offshore wind turbines would be sited within a reasonable distance from coastal communities. While it is foreseeable that these turbines would generate noise, it is unlikely that such noise could result in such an increase that a local noise ordinance or standard would be exceeded from operation of turbines alone. Nevertheless, the exact location of future wind turbines is unknown at this programmatic stage. This uncertainty, combined with the acoustic fundamentals of noise propagation across an aquatic medium (e.g., the surface of the ocean), indicates that noise impacts from off-shore wind projects could generate significant noise impacts.

With respect to underwater noise generated by wind turbines, impacts to biological resources could occur including increased stress of marine species and interruption or muddling of sonar communication. See Section 4.b, “Long-Term Operational-Related Effects on Biological Resources” for a robust discussion of potential impacts to biological resources from offshore wind projects.

This impact would be potentially significant.

### **Impact Significance Determination**

Implementing expansion of electrical infrastructure actions; expanded use of zero-emission mobile source technology; improvements to oil and gas facilities actions; reduced high-GWP fluorinated gases actions; would be less than significant. Implementing the increase in renewable energy and decrease in oil and gas use actions; low carbon fuels actions; mechanical carbon dioxide removal and CCS actions; manure management actions; forest, shrubland, and grassland management actions; agricultural actions; organic waste diversion and composting actions; and offshore renewable wind actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on noise.

## Mitigation Measures

Table 4-23 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-23: Mitigation Measures Applicable to Long-Term Operational Impacts on Noise and Vibration**

Actions	Mitigation Measure
Increase in renewable energy and decrease in oil and gas use actions, low carbon fuels actions, mechanical carbon dioxide removal and carbon capture and sequestration actions, manure management actions; and agricultural actions; offshore renewable wind actions	13.b.1
Forest, shrubland, and grassland management actions	13.b.2
Organic waste diversion and composting actions	13.b.3

## Mitigation Measures

**Mitigation Measure 13.b.1:** *Implement Mitigation Measure 13.a*

**Mitigation Measure 13.b.2:** *Implement CalVTP Program EIR SPRs Applicable to Noise*

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference herein (BOF 2019):

- SPR AD-3: Consistency with Local Plans, Policies, and Ordinances
- SPR NOI-1: Limit Heavy Equipment Use to Daytime Hours
- SPR NOI-2: Equipment Maintenance
- SPR NOI-3: Engine Shroud Closure
- SPR NOI-4: Locate Staging Areas Away from Noise-Sensitive Land Uses
- SPR NOI-5: Restrict Equipment Idle Time
- SPR NOI-6: Notify Nearby Off-Site Noise-Sensitive Receptors



***Mitigation Measure 13.b.3: Implement SB 1383 SLCP Regulation EIR Mitigation Measure 3.12-2***

***SB 1383 SLCP Regulation EIR Mitigation Measure 3.12-2: Implement Noise-Reduction Measures during Project Operation***

CalRecycle shall require LEAs to incorporate the following conditions into permits, as appropriate, based on the facts at the proposed facility site, before approving a solid waste facility permit or registration permit for organic waste recovery projects developed to comply with the 2022 Scoping Plan. For individual projects not under the jurisdiction of LEAs, site-specific project impacts and mitigation would be identified during a project's local review process. A proposed project would be approved by a local government and potentially another permitting agency that can apply conditions of approval.

Recognized practices that can and should be required to avoid and/or minimize noise include:

- All powered equipment shall be used and maintained according to manufacturer's specifications.
- Public notice of activities shall be provided to nearby noise-sensitive receptors of potential noise-generating activities.
- All motorized equipment shall be shut down when not in use.
- Idling of equipment or trucks shall be limited to 5 minutes.
- All heavy equipment and equipment operation areas shall be located as far as possible from nearby noise-sensitive land uses (e.g., residential land uses, schools, hospitals, places of worship, recreation resources).
- To achieve an interior noise level less than applicable noise standards, the installation of double pane windows and building insulation shall be offered to residences directly affected by significant operational noise levels generated by the noise-generating facility. If accepted by the homeowner, the project applicant shall provide the funding necessary to install the appropriate noise-reducing building improvements.

**Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measures 13.b.1, 13.b.2, and 13.b.3, significant impacts on noise could occur because of the increase in renewable energy and decrease in oil and gas use actions; low

carbon fuels actions; mechanical carbon dioxide removal and CCS actions; improvements to oil and gas facilities actions; forest, shrubland, and grassland management actions; organic waste diversion and composting actions; and offshore renewable wind actions.

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

#### **14. Population and Housing**

##### ***Impact 14.a: Short-Term Construction-Related and Long-Term Operational-Related Effects on Population and Housing***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas, . An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

Construction and maintenance activities associated with new or modified facilities could result in additional employment; however, there is uncertainty as to the exact location and character of any new facilities. Construction activities would be anticipated to require relatively small crews, and demand for these crews would be

temporary (e.g., 6–12 months per project). Therefore, it is anticipated that there would not be a need for substantial numbers of construction workers to relocate and that a sufficient construction employment base would likely be available.

Operation of new or modified facilities would generate varying levels of employment opportunities. The number of jobs produced would be directly related to the maintenance needs of these facilities. There is inherent uncertainty surrounding the exact locations of the new facilities. For lithium mines, the number of jobs produced would be directly related to the size, capacity, and, in some cases, commodity manufactured. This range could be between 20 (e.g., small feedstock processing facility) to several thousand (e.g., Tesla Gigafactory); however, it would be expected that the locations of these facilities would be selected such that an appropriate employment base existed to support operation or that the facilities would be located where local jurisdictions have planned for increased population and employment growth. Therefore, no additional housing would be required to implement the reasonably foreseeable compliance responses to the 2022 Scoping Plan. This impact would be less than significant.

Additionally, it is unlikely, because of the nature of the facilities, that any new facilities would be constructed in areas with existing housing. That is, industrial facilities would be sited in areas zoned for them. Therefore, it is unlikely that implementing the 2022 Scoping Plan would displace existing housing. This impact would be less than significant.

Any additional employment needed to support the compliance responses to the 2022 Scoping Plan, including a rise in employment opportunities, would not be substantial enough to substantially increase a community's population, require the construction of housing, or displace housing. This impact would be less than significant.

### **Impact Significance Determination**

Short-term construction-related and long-term operational-related effects on population and housing associated with the 2022 Scoping Plan would be **less than significant**.

### **Mitigation Measures**

No mitigation is required.

## **15.Public Services**

### ***Impact 15.a: Short-Term Construction-Related and Long-Term Operational-Related Effects on Public Services***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new

facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas, . An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

An increased need for public services is generally associated with growth in population. As discussed for Impact 14.a, implementing the 2022 Scoping Plan 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 on response time for fire protection and police protection, schools, parks, and other public services associated with the 2022 Scoping Plan would be less than significant.

### **Impact Significance Determination**

Short-term construction-related and long-term operational-related effects on public services associated with the 2022 Scoping Plan would be **less than significant**.

### **Mitigation Measures**

No mitigation is required.

## 16.Recreation

### ***Impact 16.a: Short-Term Construction-Related Effects on Recreation***

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

Construction activities related to new or modified facilities would likely occur within footprints of existing facilities, or in areas with appropriate zoning that permit such uses and activities. Therefore, compliance responses associated with the 2022 Scoping Plan would not displace any recreational facilities. An increased need for recreational facilities and the accelerated degradation of existing recreational facilities are associated with growth in population. As discussed for Impact 14.a, implementing the 2022 Scoping Plan is not expected to result in a rise in employment opportunities that is great enough to substantially increase a community's population. Therefore, new or expanded recreational facilities would not be needed, and existing facilities would not experience accelerated degradation. This impact would be less than significant.

### **Impact Significance Determination**

For the reasons described above, short-term construction-related effects on recreational facilities associated with the 2022 Scoping Plan would be **less than significant**.

## **Mitigation Measures**

No mitigation is required.

### ***Impact 16.b: Long-Term Operational-Related Effects on Recreation***

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on recreation resources may be related to the increase in renewable energy and decrease in oil and gas use actions; mechanical carbon dioxide removal and CCS actions; and forest, shrubland, and grassland management actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 16.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

#### **a) Increase in Renewable Energy and Decrease in Oil and Gas Use Actions**

As described in more detail in Chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. The operation of wind, solar thermal, and solar PV energy would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

Renewable energy projects could occupy land that also provides important recreation opportunity, supports recreation uses, or provides access to recreation resources elsewhere. This could affect any type of outdoor recreation known to occur on public and private lands throughout rural California and/or nearby western states. Recreation uses most likely to be affected are activities that involve large land areas, such as off-highway motorized recreation, non-motorized recreational travel (such as hiking, horseback riding, cycling), or hunting. If these recreation activities were displaced by renewable energy projects, additional use pressure would be

transferred to other, similar recreation resource lands in the same region of the projects. Also, new renewable energy generation and transmission facilities could directly disrupt, indirectly interfere with use of, or reduce the recreational resource qualities of private land occupied by or located near renewable energy projects. New natural gas-powered turbines developed and operated to support renewable resources would likely be sited at appropriately zoned locations; however, the location of these facilities is unknown at this time and could potentially be sited within recreational areas. While the specific location of projects cannot be identified with any certainty, increased renewable energy projects could affect access to and the quality of existing recreation resources. This impact would be potentially significant.

#### **b) Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with CCS actions include the modification of existing or new industrial facilities to capture CO<sub>2</sub> emissions and construction of new infrastructure, such as pipelines, wells, and other surface facilities within or near the emitting facility, to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. CCS actions may also result in increased transportation, such as truck, rail, and barge transit, to transport CO<sub>2</sub> from the industrial facilities to the sequestration sites. The transport distances and pipeline construction requirements for the captured CO<sub>2</sub> would vary depending on the locations of specific industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand will be met by increased generation, both on-site and off-site.

While there are currently three direct air capture facilities in the world, this technology is evolving. The design of future facilities could vary considerably, ranging from tall, multi-story structures to low-profile structures covering a potentially large area of land. In addition, large-scale renewable energy facilities would be developed alongside direct air capture projects to supply power. Overall, direct air capture facilities could affect any type of outdoor recreation resources that involve large land areas, such as off-highway motorized recreation, non-motorized recreational travel (such as hiking, horseback riding, cycling), and hunting. If these recreation activities were displaced by direct air capture projects, additional use pressure would be transferred to other, similar recreation resource lands in the same region of the projects. Depending on the size and location of these facilities, access to and the quality of recreation resources could be adversely affected. This impact would be potentially significant.

#### **c) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest activities in several regions of the State through such practices as

prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch. New or expanding facilities could impact recreation opportunities.

Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement



project-specific requirements lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

Implementation of projects under the 2022 Scoping Plan would result in disruption of recreational activities if the proposed treatment directly impedes use of an existing recreational resource or indirectly degrades the experience of recreationists. Depending on the location and other site-specific considerations of the treatment, proposed treatment activities may temporarily restrict public access to surrounding areas for safety reasons, which would disrupt the recreation experience. The project proponent to design and implement the treatment in a manner that is consistent with applicable local plans, policies, and ordinances<sup>59</sup>. Regardless, potential nuisance impacts that could also disrupt recreation may include:

- degradation of scenic resources (e.g., short-term presence of equipment or long-term changes to the landscape) within the viewshed of designated recreation areas;
- decreased air quality (e.g., smoke, dust) related to prescribed burning, pile burning, and the use of motorized equipment along unpaved roadways; and
- traffic as a result of ingress/egress of heavy equipment, which may limit, restrict, or delay access to recreation areas.

The project proponent would coordinate with the owner/manager of any public recreation area or facility that would require temporary closure as a result of treatment activities and post notifications of the closure at least 2 weeks prior to the commencement of the treatment activities<sup>60</sup>. Implementation of this SPR would avoid and minimize disruptions to recreational users by affording recreationists the opportunity to use alternative recreation areas.

#### **d) Offshore Renewable Wind Actions**

As described in more detail in Chapter 2, offshore renewable wind turbine projects would be installed and operated to support the decarbonization of the electrical sector. Turbines could be located within shallow and deeper portions of the oceans and would be supported by floating platforms. Turbines would be approximately 350 to 500 feet high, on average, and would be configured to optimize capture of wind energy. Energy captured by these turbines is transmitted to floating substations, which collect and stabilizes the power generated by the turbines, and is then transmitted to the onshore power grid.

---

<sup>59</sup> See CalVTP Standard Project Requirement AD-3

<sup>60</sup> See CalVTP Standard Project Requirement REC-1

Development and installation of future offshore wind farms along the coastline could result in potential conflicts with existing recreational onshore users if the proposed facility impedes the use of or encroaches on an existing recreational resource. However, the development and operation of future onshore facilities would be regulated by the local jurisdiction's discretionary review process, which would require consistency with applicable plans, zoning requirements, and policies adopted to ensure that adequate recreational facilities are available for use by residents and visitors. Therefore, development of onshore supportive structures would occur in areas designated for development, not areas designated or known for public recreational uses.

In regards to offshore recreation, activities associated with boating and other marine craft have the potential to be affected by offshore wind farms in open-waters. For example, floating and submerged components of turbines could displace recreational boating, fishing, and SCUBA diving activities. However, the facilities would likely be dispersed, so resulting recreation pressures would also be dispersed due to the large amount of open-water available for these activities and the comparatively small space taken by offshore wind farm facilities. The size of these facilities, in comparison to the available space for offshore recreation, would not substantially disrupt or change recreation opportunities in a way that would result in substantial adverse change in offshore recreational opportunities, including within designated areas. Depending on the size and location of these facilities, access to and the quality of recreation resources could be adversely affected. This impact would be potentially significant.

### Impact Significance Determination

Implementing the increase in renewable energy and decrease in oil and gas use actions; mechanical carbon dioxide removal and CCS actions; and forest, shrubland, and grassland management actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on recreation.

### Mitigation Measures

Table 4-24 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-24: Mitigation Measures Applicable to Long-Term Operational Impacts on Recreation**

Actions	Mitigation Measure
Increase in renewable energy and decrease in oil and gas use actions and mechanical carbon dioxide removal and carbon capture and sequestration actions; offshore renewable wind actions	16.b.1

Forest, shrubland, and grassland management actions	16.b.2
---	--------

## Mitigation Measures

### **Mitigation Measure 16.b.1**

Proponents for proposed renewable energy projects shall coordinate with federal, State, and regional/local land management agencies with responsibilities for providing outdoor recreation opportunities where facilities are proposed on land supporting outdoor recreation resources, opportunities, or use. If facilities would displace, disrupt, reduce access to, or otherwise adversely affect recreation resources, opportunities, or use, the project siting and/or design shall be modified to the extent feasible to avoid or minimize the impact. Proponents shall also consult with affected outdoor recreation user groups. The information demonstrating that all feasible measures are being taken to avoid or minimize the recreation impact shall be included in the necessary environmental review (i.e., CEQA and/or NEPA).

### **Mitigation Measure 16.b.2: Implement CalVTP Program EIR SPRs Applicable to Recreation**

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference herein (BOF 2019):

- SPR AD-3: Consistency with Local Plans, Policies, and Ordinances
- SPR: REC-1 Notify Recreational Users of Temporary Closures

## Post-Mitigation Significance Determination

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measures 16.b.1 and 16.b.2, significant impacts on recreation could occur because of increase in renewable energy and decrease in oil and gas use actions; mechanical carbon dioxide removal and CCS actions; forest, shrubland, and grassland management actions; and offshore renewable wind actions.

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

associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

## 17. Transportation

### *Impact 17.a: Short-Term Construction-Related Effects on Transportation*

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

State CEQA Guidelines Section 15064.3(b) identifies criteria for analyzing the transportation impacts of a project, including land use projects (Section 15064.3[b][1]) and transportation projects (Section 15064.3[b][2]). As discussed for Impact 14.a, 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 2022 Scoping Plan includes development and operation of new facilities, short-term construction would not drive development of urban areas, residential development, major employment generation, or transportation projects. As discussed throughout this EA, predicting the precise location, timing, duration, and intensity of individual projects undertaken as compliance responses to the 2022 Scoping Plan is not possible given the performance standard-based nature of the requirements and given that the responses depend on individual business decisions. Therefore,

modeling changes to VMT during construction of the various projects undertaken in response to the 2022 Scoping Plan is not possible at this high-level planning stage.

Although detailed information about potential specific construction activities is not currently available, these activities 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 use for the varying pieces of 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 as a result of project-generated heavy-duty truck trips. This impact would be potentially significant.

### **Impact Significance Determination**

Short-term construction-related effects on transportation associated with the 2022 Scoping Plan would be potentially significant.

### **Mitigation Measures**

#### ***Mitigation Measure 17.a***

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 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 measures would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize construction traffic impacts include:

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

- Based on the results of the environmental review, proponents will implement all mitigation identified in the environmental document to reduce or substantially lessen potentially significant impacts on traffic and transportation. The definition of actions required to mitigate potentially significant traffic impacts may include the following; however, any mitigation specifically required for a new or modified facility will be determined by the local lead agency.
- Minimize the number and length of access, internal, service, and maintenance roads, and use existing roads when feasible.
- Provide for safe ingress to and egress from the 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 on 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.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 17.a, significant impacts on transportation 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 EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related effects on transportation and traffic associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

### ***Impact 17.b: Long-Term Operational-Related Effects on Transportation***

As described in more detail in Chapter 2, operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail

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

New trips and VMT would be generated by other actions under the 2022 Scoping Plan, including the transport of HFOs; collection and distribution of compost; execution of vegetation treatments, including forest thinning and prescribed fires; maintenance of new electrical infrastructure; and cultivation and processing of low carbon fuels. Any estimate of the number of new trips or the degree of VMT that would be generated from these activities would be speculative because the intensity and location of these activities, both individually and cumulatively, is unknown at this time. It is foreseeable that such vehicle movement could result in exceedances of local VMT standards, resulting in a potentially significant VMT impact.

### **Impact Significance Determination**

Long-term operational-related effects on transportation and traffic would be potentially significant.

### **Mitigation Measures**

#### ***Mitigation Measure 17.b***

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 affect 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.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 17.b, significant impacts on transportation 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 Recirculated Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational-related effects on transportation and traffic associated with the 2022 Scoping Plan would be **potentially significant and unavoidable**.

## **18. Tribal Cultural Resources**

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

Consistent with the requirements of AB 52 (Gatto, Stats. 2014, ch. 532), on July 23, 2021, CARB issued letters to tribes that requested formal AB 52 notice. Specifically, CARB issued letters to the Colusa Indian Community Council, the Ohlone Costanoan-Esselen Nation, the San Gabriel Band of Mission Indians, the Viejas Band of Kumeyaay Indians, and the San Manuel Band of Mission Indians. No requests for consultation were received.

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of



powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

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

Operation of facilities and infrastructure would not result in additional ground disturbance beyond that which occurred during construction and modification, because operation activities would occur within the footprint of the constructed or modified facility. Therefore, most operational activities would not have the potential to affect TCRs. Presence of new facilities and infrastructure may, however, change the visual setting of the surrounding area, which could adversely affect TCRs, as determined by a California Native American tribe. As a result, operational-related impacts would be potentially significant.

Therefore, short-term construction-related and long-term operational-related impacts on TCRs associated with implementation of the 2022 Scoping Plan would be potentially significant.

## Impact Significance Determination

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

## Mitigation Measures

### ***Mitigation Measure 18-1***

The Regulatory Setting in Attachment A includes applicable laws and regulations that relate to TCRs. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would 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 on TCRs include:

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the 2022 Scoping Plan would coordinate with State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant impacts on TCRs associated with the project.
- Actions required to mitigate potentially significant TCR impacts may include the following; however, any mitigation specifically required for a modified facility would be determined by the local lead agency:
  - Retain the services of or seek guidance from culturally and geographically affiliated California Native American tribes.
  - Seek guidance from archeological resource specialists with training and background that conforms to the U.S. Secretary of the Interior’s Professional Qualifications Standards, as published in 36 CFR Part 61.
  - Seek guidance from the State and local lead agencies, as appropriate, for coordination of government to government consultations with the California 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 California Native American tribes of project details to identify potential TCRs.
- In the case that a TCR is identified, consistent with PRC Section 21084.3(b), prepare mitigation measures that:
    - Avoid and preserve the resource in place, including but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    - Treat the resource with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including but not limited to protecting the character and integrity of the resource, protecting the traditional use of the resource, and protecting the confidentiality of the resource.
    - Employ permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    - Protect the resource.
  - In the event that any human remains are discovered within the project area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an Environmentally Sensitive Area (ESA) physical demarcation / barrier constructed. The on site lead / foreman shall then immediately notify the applicant / developer and the Lead Agency. The Lead Agency and the applicant / developer shall then immediately contact the County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the California Native American Heritage Commission (NAHC) within 24 hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC identified Most Likely Descendant (MLD), shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity.
  - Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. The MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The

applicant/developer/landowner should accommodate on site reburial in a location mutually agreed upon by the Parties.

- 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 consultation with California Native American tribes.

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 18-1, a significant impact on TCRs could occur.

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

## **19. Utilities and Service Systems**

### ***Impact 19.a: Long-Term Operational-Related Effects on Utilities and Service Systems***

Impacts on utilities and service systems occur over the lifetime of a project and are generally not considered to be short-term impacts.

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-

electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

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. Through the environmental review process, utility and service demands would be calculated, and agencies would provide input on available service capacity and the potential need for service-related infrastructure, including expansions to wastewater treatment plants, new water supply entitlements and infrastructure, stormwater infrastructure, and solid waste-handling capacity (e.g., landfills). Resulting environmental impacts would also be determined through this process.

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on utilities and service systems may be related to the low carbon fuels actions; expanded use of zero-emission mobile source technology actions; mechanical carbon dioxide removal and CCS actions; manure management actions; and forest, shrubland, and grassland management actions. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.

#### **a) Low Carbon Fuels Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the low carbon fuels actions include modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites via truck, rail, or new or existing pipelines; construction and

operation of new or expanded facilities to produce renewable diesel, biodiesel, AJF, renewable propane, and other fuels; construction of new or expanded anaerobic facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce biomethane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis and gasification units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of renewable energy projects; construction and operation of additional hydrogen gas generation projects, pipelines, substations, and EV charging stations; construction and operation of shore power facilities; deployment and use of additional electric drivetrain, natural gas-fueled, and propane-fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; and land use changes and changes to fuel-associated shipment patterns.

Reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could result in new demand for water, wastewater, electricity, and gas services. Generally, facilities would be sited in areas with existing utility infrastructure or areas where existing utility infrastructure is easily accessible. New or modified utility installation, connections, and expansion would be subject to the requirements of the applicable utility providers. Changes in land use associated with biofuel feedstock production are likely to change water demand to support new crop types, depending on the size of the affected area, location, and existing uses. This could result in an increase or decrease in water demand and would be subject to availability and regulatory requirements. This impact would be potentially significant.

#### **b) Expanded Use of Zero-Emission Mobile Source Technology Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with the expanded use of zero-emission mobile source technology include increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste disposal or recycling from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies.

Reasonably foreseeable compliance responses to the 2022 Scoping Plan 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. In the United States overall, there are limited regulations regarding the disposal of lithium-ion batteries; however, because of the value of recovered metals (e.g., cobalt, nickel, lithium), there is incentive to collect and recycle batteries. Currently, lead acid batteries are used in approximately 20 million of the registered vehicles in use within the state. While deployment of the 2022 Scoping Plan may result in the increased production, use, and disposal of zero- and near zero-emission lead acid batteries, these increased levels would not generate notable strain on existing manufacturing, disposal, and recycling facilities such that additional adverse effects on utilities would occur. This impact would be less than significant.

### **c) Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions**

As described in more detail in Chapter 2, reasonably foreseeable compliance responses associated with CCS actions include the modification of existing or new industrial facilities to capture CO<sub>2</sub> emissions and construction of new infrastructure, such as pipelines, wells, and other surface facilities within or near the emitting facility, to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. CCS actions may also result in increased transportation, such as truck, rail, and barge transit, to transport CO<sub>2</sub> from the industrial facilities to the sequestration sites. The transport distances and pipeline construction requirements for the captured CO<sub>2</sub> would vary depending on the locations of specific industrial sources of the captured CO<sub>2</sub> and proposed underground formations. On-site energy generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand will be met by increased generation, both on-site and off-site.

While there are currently three direct air capture facilities in the world, this technology is evolving. However, existing technologies require large quantities of water to support direct air capture facilities. Facilities may also require connections to wastewater, stormwater, and other municipal utilities, depending on their location. However, power supplies are expected to be provided by nearby renewable energy sources, the impacts of which are discussed throughout this EA.

Any new or modified facilities, no matter their size and location, would be required to obtain any required 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 projects comply 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 (e.g., wastewater services, water supply services, solid waste facilities) would be available and whether implementing the project would result in the need to expand or construct new facilities to serve the project. Through the environmental review process, utility and service demands would be calculated, and

agencies would provide input on available service capacity and the potential need for service-related infrastructure, including expansions to wastewater treatment plants, new water supply entitlements and infrastructure, stormwater infrastructure, and solid waste-handling capacity (e.g., landfills).

CCS-related operations could place additional strain on existing and future water resources. Depending on variations in water security, which vary year-to-year, the water required to facilitate the transfer for CO<sub>2</sub> into storage reservoirs could compete with other water demands within the vicinity of CCS operations. Thus, long-term operational impacts on utilities and services systems would be potentially significant

#### **d) Manure Management Actions**

As described in more detail in Chapter 2, many of the state's existing dairies may modify their manure management strategies to implement either an anaerobic digester, and alternative manure management strategy, or a combination of anaerobic digestion and alternative manure management strategies. Some dairies may implement an alternative manure management strategy that reduces or eliminates the use of anaerobic treatment and storage lagoons, resulting in reduced methane emissions from the facility. Typical alternative manure management strategies include (but are not limited to) implementation of solid scrape or vacuum manure management systems, solid-liquid manure separation, or conversion to pasture-based systems. Solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce RNG that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Conversion of dairy operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter). Alternatively, some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network.

Alternatively, collected manure could be transported to centralized digesters and potentially co-digested with other feedstocks (such as food waste) for increased fuel production. This would be feasible at large dairies in close proximity to one another that collectively could connect to a natural gas pipeline at lower cost than could occur individually. Implementation of digesters and associated equipment could provide small-scale electricity production, distributing biogas via pipeline and providing fuel for on- or off-site vehicle fleets. Digesters typically include flares, which are intended for emergency purposes and would not be expected to be used on a regular basis, if ever.

In some instances, converting dairies to pasture-based management systems may be an option to avoid methane production, in which manure is left in the field and decomposes aerobically (versus anaerobically in a lagoon). Conversion of dairy



operations to pasture-based management may require new irrigation facilities, fencing, and structures to support animal husbandry (e.g., to provide shelter).

Lagoon-based systems use a substantial amount of water, primarily related to dilution requirements for land application. Conversion to non-lagoon systems (i.e., scrape based systems, irrigation of pastures, and use of digesters) would demand water; however, the demand would be expected to be substantially less than the demand associated with lagoons. Thus, implementation of the 2022 Scoping Plan would reduce water demand related to dairies in California.

Methods to reduce fugitive methane emissions include the operation of anaerobic digesters across a number of sectors. Animal, organic, and human waste can be anaerobically digested to produce controlled methane, which can then be captured and used as a renewable energy source. It should be noted that the water demands of digesters vary depending on size, scale, capacity, and feedstock (product to be digested); because varying combinations of facility size and feedstock dryness dictate water needs, water demand is not consistent. Further, anaerobic digesters produce digestate, which can be managed in several ways: compost, land application, fertilizer, and landfill cover. Therefore, it can be assumed that a digester could potentially need landfill servicing.

As a compliance response to the methane reduction measures, dairies could construct on-site digesters as a method of manure management. As the current flush-water method of manure management requires a large amount of water, dairies that adopt on-site digestion would have sufficient water supplies for operation and would not require the construction or expansion of wastewater treatment facilities. On-site digesters would result in new impermeable surfaces; however, this area would be small in comparison to the dairy as a whole and would not affect stormwater flow. Stormwater facilities would not need to be constructed.

Development of off-site centralized dairy digester facilities could require new water and wastewater treatment facilities or connection to a municipal system. Water would be required to increase the liquid content of manure feedstock, as well as to water down the resulting effluent in some cases; however, this water could be non-potable. Digesters located near dairy facilities could be supplied by groundwater or irrigation districts; digesters within the urban fringe would be supplied by a municipal source. Domestic water use (e.g., restrooms for employees) could be serviced by septic systems or, for digesters near urban areas, could connect to a municipal system. Additionally, compliance with WDRs, NPDES and Stormwater Pollution Prevention Plan permitting, and additional local permits as discussed in Section 10, "Hydrology and Water Quality," would ensure that exceedance of local RWQCB wastewater treatment requirements would not occur (Central Valley Region RWQCB 2010). Construction of new or expanded stormwater drainage facilities could result from the development of off-site digesters, but because the location of these facilities is

uncertain, the conditions under which a facility may require supplemental stormwater management cannot be predicted or adequately analyzed.

Anaerobic digesters constructed for the management of organic waste could create additional strains on utilities and service systems. Organic waste digesters constructed within the vicinity of an existing solid waste disposal facility would likely not require supplemental water, but those constructed independently would need to connect to a municipal source or use a groundwater well. Organic waste digesters may dispose of resulting digestate by distributing it among various agricultural areas or convey it to a wastewater treatment facility. The latter would put additional pressure on wastewater facilities to comply with the treatment and disposal requirements of SWRCB and the local RWQCB (CalRecycle 2011). The locations of these facilities are, at this time, uncertain; therefore, supplemental stormwater drainage facilities could be required with project implementation depending on the characteristics of future project sites.

The operation of digester systems at dairies and organic waste facilities designed to export electricity or biogas for off-site use or consumption could potentially create impacts on electric and gas utilities and their service systems. Exporting electricity generated by digester-derived biogas would necessitate interconnection with the local electricity distribution grid and may require safety equipment and engineering upgrades to local distribution systems owned and operated by electric utilities. The export or injection of digester-derived biogas into natural gas pipeline systems would require interconnection infrastructure with local utility-owned pipeline systems and would require biogas upgrading to meet the constituency standards and heating values of their pipeline systems. This impact would be potentially significant.

#### **e) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management actions would substantially increase forest activities in several regions of the state through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, herbicide application, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed trees and brush. Most forest-thinning and undergrowth-clearing activities would require increased use of heavy timber removal, transport, and processing equipment, such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and logging transport trucks.

The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the state's electric utilities. Finally, the measure could lead to the development of new facilities

and markets for the processing and distribution of wood products, such as wood chips, biochar, and mulch.

Implementation of the 2022 Scoping Plan activities would divert solid organic waste generated from treatment activities to biomass power plants, wood product processing facilities, and/or composting facilities for processing. This would decrease the amount of waste transported to solid waste facilities consistent with AB 939 and SB 1383.

The increase in pace and scale of vegetation treatments would result in an associated increase in the volume of solid organic waste generated during treatment. The volume of biomass transported off-site to existing biomass power plants, wood product processing facilities, and/or composting facilities for processing would also increase. Although additional infrastructure for the processing of organic materials is expected to be developed in the near future in California in response to waste management statutes, expanded in-state market for wood products, and increasing demand for alternative energy sources, it is too speculative to assume that this growth would occur consistent with the increased pace and scale of vegetation treatments. This impact would be potentially significant, notwithstanding the possibility that capacity could increase with the scale of treatments such that it would not be exceeded for most or all individual treatments.

#### **f) Offshore Renewable Wind Actions**

As described in more detail in Chapter 2, offshore renewable wind turbine projects would be installed and operated to support the decarbonization of the electrical sector. Turbines could be located within shallow and deeper portions of the oceans and would be supported by floating platforms. Turbines would be approximately 350 to 500 feet high, on average, and would be configured to optimize capture of wind energy. Energy captured by these turbines is transmitted to floating substations, which collect and stabilizes the power generated by the turbines, and is then transmitted to the onshore power grid.

Reasonably foreseeable compliance responses associated with offshore renewable wind farms would be increased production of electricity, which would be transferred to onshore substations. Generally, facilities would be sited in areas with existing utility infrastructure or areas where existing utility infrastructure is easily accessible. New or modified utility installation, connections, and expansion would be subject to the requirements of the applicable utility providers. Nevertheless, it is foreseeable that new substations and associated infrastructure would be needed to accommodate increases in electrical supply and to distribute electricity throughout the electrical grid. This impact would be potentially significant.

## Impact Significance Determination

Implementing the low carbon fuels actions; mechanical carbon dioxide removal and CCS actions; manure management actions; forest, shrubland, and grassland management actions; and offshore renewable wind actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on utilities and service systems. Implementing the expanded use of zero-emission mobile source technology actions would result in a less than significant long-term operational impact.

## Mitigation Measures

Table 4-25 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

**Table 4-25: Mitigation Measures Applicable to Long-Term Operational Impacts on Utilities and Service Systems**

Actions	Mitigation Measure
Low carbon fuels actions; mechanical carbon dioxide removal and carbon capture and sequestration actions; manure management actions; and offshore renewable wind actions	19.a
Forest, shrubland, and grassland management actions	No feasible mitigation is available.

To reduce the potential for capacity of existing solid organic waste facilities to be exceeded, the amount of material generated during treatments under the forest, shrubland, and grassland management actions that requires off-site disposal would have to be reduced or the capacity of infrastructure receiving biomass would need to expand. Reduction of transported biomass would require more debris to be disposed of on-site (by chipping or pile burning), which would create adverse impact trade-offs of the risk of excessive mulch from chipping or an increase in smoke emissions from pile burning. Therefore, there would be no feasible measures to adequately reduce the volume of organic waste generated by forest shrubland, and grassland management activities.

## Mitigation Measures

### **Mitigation Measure 19.a**

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

authority. New or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the lead agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation measures would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize utility and service-related impacts include:

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

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 19a, significant impacts on utilities and service systems could occur as a result of implementing low carbon fuels actions, mechanical carbon dioxide removal and

CCS actions, manure management actions; and offshore renewable wind actions. No feasible mitigation is available to reduce significant impacts related to implementation of forest, shrubland, and grassland management activities; thus, this impact would be significant and unavoidable.

Consequently, while impacts associated with low carbon fuels actions, mechanical carbon dioxide removal and CCS actions, and manure management actions could be reduced to a less than significant level with mitigation measures imposed by land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for a compliance-response-related project, this EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the long-term operational-related effect on utilities and service systems associated with the 2022 Scoping Plan and with low carbon fuels actions, mechanical carbon dioxide removal and CCS actions, and manure management actions would be **significant and unavoidable**. As stated previously, because no feasible mitigation is available to reduce significant impacts related to implementation of forest, shrubland, and grassland management activities, this impact also would be **significant and unavoidable**.

## 20. Wildfire

### Impact 20.a: Short-Term Construction-Related Effects on Wildfire

As described in more detail in Chapter 2, the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could include construction of new facilities and modifications to existing facilities. New development may include electricity and hydrogen gas generation projects, new biofuel production facilities, electric equipment manufacturing facilities, pipelines, substations and extension of powerlines, shore power facilities, solar thermal steam production, composting facilities, biomass processing and bioenergy facilities, anaerobic digesters, vehicle charging/fueling stations, offshore wind energy generation facilities, and direct air capture and other CCS projects. Modifications to existing facilities could consist of decommissioning and consolidation of refineries, vapor recovery systems, gas-to-electric conversion, upgrades to dairies, new chemical manufacturing facilities for cattle feed additives, integration of energy generation and storage facilities into existing development, rooftop solar photovoltaic (PV) system installation, modifications to existing electrical distribution and transmission systems, and modifications to existing natural gas distribution and transmission systems for leak repair and pipeline interconnection for renewable natural gas (RNG). Construction projects would also include new bicycle/pedestrian lanes, high-occupancy vehicle (HOV) lanes, a commuter rail line, decommissioning of oil and gas facilities, decommissioning and consolidation of oil refineries, construction/restoration of wetlands, and operations related to forest thinning, harvesting, mastication, fuels reduction treatments, prescribed fire, reforestation, defensible space establishment, urban tree and vegetation establishment, and afforestation within croplands and riparian areas. An increase in mining and processing

of metals and other minerals necessary for battery storage of electricity would also be reasonably expected, including surface/open pit, underground, and brine mining.

In the event of an emergency, such as a wildfire, evacuation coordination is dealt with at various levels of government through State, federal, or local agencies as appropriate. 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.

Facilities and associated infrastructure, such as facilities for the use of alternative and hydrogen fuels, would be constructed and operated within response areas for various jurisdictions and would be dealt with in the same manner as existing infrastructure. Construction and operation activities, as well as new or modified facilities, would likely occur within footprints of existing manufacturing facilities or in areas with appropriate zoning that permit such uses and activities; therefore, changes or modifications to existing fire response and evacuation plans would not be necessary. Likewise, the small increase in the 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. Compliance responses implemented under the 2022 Scoping Plan would not create growth substantial enough to impede emergency response or affect evacuation route capacity.

As discussed above for Impact 9.b, lithium-ion 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, lithium-ion batteries pose no environmental hazard (79 Federal Register 46011, 46032). Thus, the increased use of lithium-based batteries in vehicles would not substantially increase the risk of wildland fire.

However, overhead powerlines associated with new infrastructure, including those lines built to support increased energy demand to accommodate increased reliance on the electrical grid, could increase the risk of wildfire ignition. The construction of these powerlines would require the operation of heavy-duty equipment and introduce workers to high-fire hazard severity zones. Operation of heavy-duty equipment, which is commonly operated by fossil fuels such as gasoline and diesel fuel, could increase the likelihood of wildfire hazards. Use of this equipment could generate sparks that could potentially ignite a wildfire. Therefore, the construction of new overhead powerlines could result in a potentially significant impact related to wildfire ignition.

***Mitigation Measure 20.a: Implement CalVTP Program EIR SPRs Applicable to Wildfire***

The project proponent will implement the following CalVTP SPRs, which are incorporated by reference herein (BOF 2019):

- SPR AD-3: Consistency with Local Plans, Policies, and Ordinances
- SPR AQ-3: Create Burn Plan
- SPR HAZ-2: Require Spark Arrestors
- SPR HAZ-3: Require Fire Extinguishers
- SPR HAZ-4: Prohibit Smoking in Vegetated Areas
- SPR GEO-3: Stabilize Disturbed Soil Areas
- SPR GEO-4: Erosion Monitoring
- SPR GEO-5: Drain Stormwater via Water Breaks
- SPR GEO-8: Steep Slopes

**i. Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 20.a, significant impacts on wildfire could occur as a result construction activity.

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

**Impact 20.b: Long-Term Operational-Related Effects on Wildfire**

Operational-related impacts could include operation of new facilities, operational changes at existing facilities, or natural and working land management activities. Potential impacts associated with the 2022 Scoping Plan's reasonably foreseeable compliance responses are described in detail below. Long-term effects on wildfire may be related to the increase in renewable energy, forest, shrubland, and grassland management actions. Impacts related to actions not discussed below are addressed above in the discussion of Impact 20.a. See the introduction to Section 4.B for additional information related to the approach to the environmental impact analysis.



**a) Increase in Renewable Energy and Decrease in Oil and Gas Use Actions**

As described in more detail in Chapter 2, renewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. Depending on the size and location of these types of systems, operations may affect wildfires. The operation of wind, solar thermal, and solar PV energy systems would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned. Compliance responses associated with equipment being decommissioned could include the use of equipment and materials associated with capping or plugging oil and gas wells, such as cement and mechanical plugs. Reclamation activities, such as contouring topsoil and revegetation, might be necessary to restore well sites after wells are capped or plugged. Equipment at oil and gas facilities (e.g., tanks, steam generators, boilers, compressors, gathering lines, flares) would need to be removed and repurposed, recycled, or disposed of. Additional compliance responses might include the decommissioning of some natural gas processing plants and power plants, as well as the decommissioning and remediation of produced water ponds. Drilling of new wells and workovers of existing wells may also decrease or terminate as a compliance response.

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

Nevertheless, there exists the potential that new overhead powerlines could result in unintended wildfire ignition depending on the characteristics of the environment and meteorological conditions where they are located (e.g., heavily forested areas experiencing high temperatures and drought). It is also foreseeable that these powerlines may degrade over time and may slack during high-temperature periods initiating contact between the lines and vegetations. Therefore, this impact would be potentially significant.

**b) Forest, Shrubland, and Grassland Management Actions**

As described in more detail in Chapter 2, the proposed forest, shrubland, and grassland management measures would be reasonably expected to substantially increase forest

activities in several regions of the State through such practices as prescribed fire, mechanical thinning, undergrowth clearing, dead wood removal or clearing, targeted herbicide uses, prescribed herbivory, and other methods. These increased activities could also increase the development of temporary or permanent forest access roads and the siting of wood storage and processing locations for removed biomass. Most forest thinning and undergrowth clearing activities would require increased use of biomass removal, transport, and processing equipment such as tractors, backhoes, skidders, harvesters, grinders, portable incinerators, and transport trucks. These activities would reduce fuels, reintroduce fire as an ecological process on the landscape, and decrease wildfire risk across forests, shrublands, and grasslands. The proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock. Expanded processing of biomass feedstock at existing or new biomass facilities could increase the production of liquid or gaseous fuels, carbon dioxide removal, or the role these facilities serve in generating exportable electricity to meet the renewable energy requirements of the State's electric utilities. Finally, the measure could lead to the development of new facilities and markets for the processing and distribution of wood products such as woodchips, biochar, and mulch.

Many of the forest, shrubland, and grassland management actions associated with implementation of the 2022 Scoping Plan that occur within State Responsibility Areas would be conducted consistent with the California Vegetation Treatment Program (CalVTP), a program developed by the California Board of Forestry and Fire Protection to treat vegetation that could become fire fuel. The CalVTP involves the use of prescribed burning, mechanical treatments, manual treatments, herbicide application, and prescribed herbivory as tools to treat vegetation around communities in the wildland-urban interface (WUI), reduce fire fuel, construct fuel breaks, and restore healthy ecological fire regimes within State Responsibility Areas. As part of the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) and other project proponents would implement vegetation treatment activities on up to approximately 250,000 acres annually within State Responsibility Areas.

The 2022 Scoping Plan does not specify the acres to be treated, but it can be reasonably assumed that fuels reduction activities associated with the 2022 Scoping Plan will go beyond the projects within State Responsibility Areas identified in the CalVTP and also include areas within Local and Federal Responsibility. The standard project requirements (SPRs) and certain mitigation measures that CAL FIRE approved as part of the CalVTP Program EIR provide mitigation actions to reduce impacts of forest, grassland, and shrubland management associated with 2022 Scoping Plan activities, and these mitigation actions could apply to both projects within State Responsibility Areas as well as areas within Local or Federal Responsibility. The impacts of the proposed actions are discussed below, followed by identification of SPRs that could be implemented to mitigate those impacts. Local, State or Federal agencies could voluntarily implement SPRs and mitigation measures from the CalVTP Program EIR to mitigate these impacts; however, because the authority to implement project-specific requirements lies with land use and/or permitting agencies for individual

projects, and the programmatic level of analysis associated with this Recirculated Draft EA does not attempt to address project-specific details of individual management activities, there is inherent uncertainty in the degree that SPRs and mitigation measures from the CalVTP Program EIR might be implemented. Thus, this impact would be potentially significant.

Vegetation treatment activities implemented as part of the 2022 Scoping Plan, which would be consistent with the CalVTP, would generally reduce wildfire risks in forests, shrublands, and grasslands. Treatment operations could result in temporary risks associated with accidental fire from prescribed burning, as well as from the use of vehicles and heavy machinery because each can increase the risk of an accidental wildfire ignition. However, several SPRs would be implemented during operations to reduce risks of accidental ignition: machine-powered hand tools would have federal- or State-approved spark arrestors; vegetation treatment crews would carry one fire extinguisher per chainsaw and one long-handle shovel and one axe or Pulaski; and smoking would be permitted only in designated smoking areas, which would have barren soil or be cleared to mineral soil and be at least 3 feet in diameter<sup>61</sup>. In addition, other SPRs would be implemented to reduce erosion risks. Projects would ensure that soils disturbed by treatments are stabilized to minimize erosion; treatment areas would be inspected for evidence of erosion prior to the rainy season and following the first large rainfall event; stormwater would be drained using waterbreaks to reduce stormwater runoff; soil burn severity would be minimized during prescribed burns, which would help to retain vegetation to stabilize the soil; and an RPF or licensed geologist would be required to evaluate treatment areas for potential issues with instability and modify treatments to account for instability issues<sup>62</sup>. Given the extensive preparation and planning prior to a prescribed burn (e.g., preparation of a Smoke Management Plan and Burn Plan), active monitoring and maintenance during a prescribed burn, and implementation of stringent safety protocols, prescription burning would not substantially exacerbate fire risk that could result in the accidental spread of wildfire.

### **Impact Significance Determination**

Implementing the increase in renewable energy and decrease in oil and gas extraction; and forest, shrubland, and grassland management actions under the 2022 Scoping Plan would result in potentially significant long-term operational impacts on wildfire.

### **Mitigation Measures**

Table 4-26 identifies the mitigation measures applicable to the proposed actions under the 2022 Scoping Plan.

---

<sup>61</sup> See CalVTP Standard Project Requirement HAZ-2 through Haz-4

<sup>62</sup> See CalVTP Standard Project Requirement GEO3, GEO-4, GEO-5, GEO-8, AG-3

**Table 4-26: Mitigation Measures Applicable to Long-Term Operational Impacts on Wildfire**

<b>Actions</b>	<b>Mitigation Measure</b>
Increase in Renewable Energy and Decrease in Oil and Gas Use Actions	20.b
Forest, shrubland, and grassland management actions	20.b

Mitigation Measure 20.b: Implement Mitigation Measure 20.a

### **Post-Mitigation Significance Determination**

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 Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although it is unlikely, even after implementation of Mitigation Measure 20.b, significant impacts on wildfire could occur as a result of increase in renewable energy and decrease in oil and gas extraction, forest, shrubland, and grassland management actions.

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

This page intentionally left blank.

## 5.0 CUMULATIVE AND GROWTH-INDUCING IMPACTS

### A. Introduction

Cumulative impacts refer to multiple individual effects that, when considered together, are considerable or that compound or increase other environmental impacts. Cumulative impacts are changes in the environment that result from the incremental impacts of a proposed project when added to other closely related past, present, and reasonably foreseeable future actions (Title 14 California Code of Regulations (CCR) Section 15355(b)). Cumulative impacts can result from individually minor but collectively significant actions taking place over time.

Although the California Air Resources Board (CARB) is exempt from the requirement to prepare environmental impact reports, CARB followed the general guidance of the California Environmental Quality Act (CEQA) Guidelines for considering the cumulative impacts of implementing the recommended actions included in the 2022 Scoping Plan. The CEQA Guidelines state that cumulative impacts should be addressed when they would be significant and when the project's incremental contribution to the impact would be cumulatively considerable (Title 14 CCR Section 15130(a)). Section 15130 of the CEQA Guidelines states that the discussion of cumulative impacts need not provide as much detail as the discussion of impacts attributable to the project alone. Where a lead agency is examining a project with an incremental impact that is not "cumulatively considerable," a lead agency need not consider that impact significant but must briefly describe its basis for concluding that the incremental impact is not cumulatively considerable.

Environmental impact reports must consider "other projects creating related impacts" (Title 14 CCR Section 15130(a)(1)). CEQA Guidelines Section 15355(b) requires an analysis of "other closely related past, present, and reasonably foreseeable probable future projects." Because of the statewide reach of the 2022 Scoping Plan and the longer-term future horizon for the greenhouse gas (GHG) emission reduction achievements, the impact analysis of the resource topics in Chapter 4 of this Draft Environmental Analysis (EA) is inherently programmatic and cumulative in nature, rather than site or project specific. As a result, the character of the impact conclusions in the resource-oriented sections of Chapter 4 is cumulative, and the conclusions consider the potential impacts of the full range of reasonably foreseeable compliance responses, along with expected background growth in California, as appropriate.

This section, therefore, summarizes the cumulative and growth-inducing impacts associated with the recommended actions in the 2022 Scoping Plan for each resource topic evaluated in this Recirculated Draft EA.

## B. Cumulative Impacts Analysis

### 1. Aesthetics

Implementation of the reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require construction and operational activities associated with new or modified facilities or infrastructure (e.g., manufacturing plants, renewable energy facilities, lithium mining). Attempting to predict the exact locations of these new facilities and modifications of existing facilities would be speculative. Construction and operation of these facilities (although likely to occur in areas zoned or used for manufacturing or industrial purposes) could conceivably introduce or increase the presence of artificial elements (e.g., heavy-duty equipment, removal of existing vegetation, buildings) in areas of scenic importance, such as views from State scenic highways. The visual impact of such development would depend on several variables, including the type and size of facilities, distance and angle of view, visual absorption, and placement in the landscape. In addition, facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime glare from lighting for safety and security purposes. 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 aesthetic impacts cannot be assured. Thus, recognizing that mitigation measures to reduce aesthetic impacts may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative aesthetics-related impact.**

### 2. Agriculture and Forestry Resources

Implementation of the reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could include construction and operational activities associated with new or modified facilities or infrastructure (e.g., manufacturing plants, renewable energy projects). In addition, demand for feedstock could displace food-based production on agricultural land currently used for row crops, orchards, and grazing. This change in demand could potentially result in land use changes where food-based agriculture could shift to other areas, thereby increasing pressure for conversion of rangeland, grassland, forests, and other uses to agriculture. There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities. Construction of new facilities could result in the conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, land under a Williamson Act contract, or forestland or timberland, resulting in the loss of these resources. Because CARB has no land use authority, mitigation is not within its purview to reduce potentially significant impacts to a less than significant level. Compliance with existing land use policies, ordinances, and regulations would serve to minimize this impact. Land use impacts would be further addressed for individual projects through the local development review process.

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 agricultural and forestry impacts cannot be assured. Thus, recognizing that mitigation measures to reduce impacts to agricultural and forest resources may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative impact on agriculture and forestry resources.**

### 3. Air Quality

The 2022 Scoping Plan identifies measures that would reduce GHG emissions while also directly reducing air pollution in California. These measures would increase process changes by increasing renewable energy procurement, reducing vehicle miles traveled in regions of the state, expanding mechanical carbon dioxide removal and carbon capture and sequestration, and encouraging policies and actions that foster natural and working lands. Overall, although there would be some criteria air pollutant emissions and toxic air contaminants (TACs) associated with operations of the 2022 Scoping Plan, in the long term, implementing the measures in the plan would result in beneficial operational impacts.

Reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan would require construction activities that may result in emissions of criteria air pollutants and TACs, as well as generate unpleasant odors that could affect sensitive receptors. These emissions would be temporary and would occur intermittently depending on the intensity of construction on a given day. Although detailed construction information is not available at this time, it is expected, based on the types of activities that could be conducted, that the primary sources of construction-related emissions would be 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 abovementioned equipment and activities, construction activities could result in hundreds of pounds of daily emissions of oxides of nitrogen and particulate matter (i.e., the 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. Part of the land use entitlement process requires that each of these projects undergo environmental review consistent with California environmental review requirements (e.g., CEQA) and other applicable local requirements (e.g., local air district rules and regulations).

Implementation of mitigation measures could potentially reduce construction-related air 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 air quality impacts cannot be assured. Thus, recognizing that mitigation measures to reduce air quality



impacts may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative impact on air quality during construction.**

However, these emissions would be greatly offset by the beneficial air quality impacts that would be realized under the 2022 Scoping Plan.

The 2022 Scoping Plan's long-term operational impacts on air quality would be beneficial on their own, as discussed in Chapter 4 of this EA. The transition to zero-emission in the on-road transportation sector would result in a decrease in gasoline and diesel fuel combustion, which contributes greatly to the degradation of air quality in the state. Unlike for other resource areas addressed in this EA, CARB can directly influence the composition of vehicle and emission standards for the on-road mobile source sector; therefore, the long-term air quality effects would likely be beneficial. Therefore, implementing the recommended actions in the 2022 Scoping Plan **would not present a cumulatively considerable contribution to a significant cumulative impact on long-term operational-related air quality effects.**

#### 4. Biological Resources

Implementing reasonably foreseeable compliance responses could require construction and operational activities associated with new or modified facilities or infrastructure. There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities. 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. These activities would have the potential to adversely affect biological resources (e.g., species, habitat) that reside or are present in those areas. Because some biological species occur, or even thrive, in developed settings, resources could also be adversely affected by construction and operation in disturbed areas at existing manufacturing facilities or at other sites in areas with zoning that would permit the development of manufacturing or industrial uses. In addition, new regulations could affect biological resources depending on the type of crop, location, and need to convert lands, and habitat destruction could occur, resulting in the loss of biodiversity. The location of new croplands may affect conservation plans or disrupt important migratory routes. Indirect effects, such as increased pesticide and nutrient use, the runoff of which could be detrimental to individual species, also could occur.

The biological resources that could be affected by construction and operation associated with implementing recommended actions in the 2022 Scoping Plan measures would depend on the specific location of any necessary construction and its environmental setting. Harmful impacts could include modifications to existing habitat, including removal, degradation, and fragmentation of riparian systems, wetlands, or other sensitive natural wildlife habitat and plant communities; interference with wildlife movement or wildlife nursery sites; loss of special-status species; and conflicts with the

provisions of adopted habitat conservation plans, natural community conservation plans, or other conservation plans or policies to protect natural 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 biological impacts cannot be assured. Thus, recognizing that mitigation measures to reduce impacts to biological resources may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative impact on biological resources.**

## 5. Cultural Resources

Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require construction activities associated with new or modified facilities or infrastructure (e.g., new manufacturing plants, renewable energy projects). There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation; earth movement and grading; trenching for utility lines; erection of new buildings; and paving of parking lots, delivery areas, and roadways. 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 prehistoric and historical archaeological sites; paleontological resources; historic buildings, structures, or archaeological sites associated with agriculture and mining; and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, also may exist. Historic buildings and structures may also be adversely affected by demolition-related activities. Such resources may occur individually, in groupings of modest size, or in districts. Because culturally sensitive resources can also be located in developed settings, historic, archaeological, and paleontological resources and places important to Native American communities also could be adversely affected by construction of new facilities. 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 cultural resources cannot be assured. Thus, recognizing that mitigation measures to reduce impacts to cultural resources may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative impact on cultural resources.**

## 6. Energy

Implementation of reasonably foreseeable compliance responses associated with the 2022 Scoping Plan could require construction and operational activities associated with new or modified facilities or infrastructure. Temporary increases in energy demand associated with new facilities would be related to fuels used during construction, as well as gas and electricity used during operation. Typical earth-moving equipment that may be necessary for construction includes graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. Although energy would be required to complete construction for any new or modified facilities or infrastructure projects, the demand would be temporary and limited in magnitude and would not result in sustained increases in demand that would adversely affect energy supplies.

While these compliance responses would require the consumption of energy resources, these actions would enable the transition to zero-emission technologies to comply with provisions of the 2022 Scoping Plan and would not involve the wasteful or inefficient use of energy. While energy demand would increase during construction of future projects in response to implementation of the 2022 Scoping Plan, 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, unnecessary short-term energy consumption would not occur. Use of zero- and near-zero-emission technologies would divert energy from fossil fuel-powered systems and engines to electrical systems, which, as mandated by the Renewables Portfolio Standard and as outlined in SB 100's 100 percent renewable and zero-carbon resources by 2045 target, would become increasingly more renewable in the coming years. Arguably, through the use of alternative fuels and an increasingly more renewable energy grid, implementation of the 2022 Scoping Plan would improve the efficiency of energy use across the state.

Overall, although there would be some use of nonrenewable resources for construction projects, implementing the 2022 Scoping Plan would reduce energy demand, decrease reliance on fossil fuels, and increase reliance on renewable energy sources. Thus, implementation of the 2022 Scoping Plan **would not result in a cumulatively considerable contribution to a significant cumulative impact related to energy.**

## 7. Geology and Soils

Implementing the reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require construction and operational activities associated with new or modified facilities or infrastructure (e.g., manufacturing plants, new renewable energy facilities). In addition, implementing new fuels regulations could increase or change agricultural practices (see Section 2, "Agriculture and Forestry Resources," above). The detrimental effects of agricultural

practices on soil quality include erosion, desertification, salinization, compaction, and pollution. Loss of topsoil can increase erosion rates and affect water quality, which may be exacerbated through increased use of nutrients and pesticides.

There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities. Construction and operation activities could be located in a variety of relatively high-risk geologic and soil conditions that could be potentially hazardous. For instance, the seismic conditions at the site of a new facility may have high to extremely high seismic-related fault rupture and ground shaking potential associated with earthquake activity. New facilities could also be subject to seismic-related ground failure, including liquefaction and landslides. Construction and operational activities could be located in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that would be susceptible to soil erosion. Strong ground shaking could also trigger landslides in areas where the natural slope is naturally unstable or is oversteepened by the construction of access roads and structures. Construction and operation could also occur in locations that would expose facilities and structures to expansive soil conditions. Development of new facilities could be susceptible to the presence of expansive soils particularly in areas of fine-grained sediment accumulation typically associated with playas, valley bottoms, and local low-lying areas.

The specific design details, siting locations, seismic hazards, and geologic, slope, and soil conditions for any particular facilities that could be developed as a result of reasonably foreseeable compliance responses are unknown at this time and would be analyzed on a site-specific basis at the project level. Therefore, for purposes of this analysis, it is determined that development of these facilities could expose people and structures to relatively high levels of risk associated with strong seismic ground shaking, including risk of liquefaction and landslides, and instability. These geologic, seismic, and soil-related conditions could result in damage to structures, related utility lines, and access roads, blocking access and posing safety hazards to people. 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 geologic impacts cannot be assured. Thus, recognizing that mitigation measures to reduce geologic impacts may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative impact on geology and soils.**

## 8. Greenhouse Gas Emissions

Implementation of reasonably foreseeable compliance responses could require construction activities associated with new or modified facilities or infrastructure. Specific project-related construction activities could result in increased generation of short-term GHG emissions in limited amounts associated with the use of heavy-duty

off-road equipment, materials transport, and worker commutes. As described in Chapter 4, most local agencies (e.g., air pollution control districts) do not recommend or require the quantification of short-term construction-generated GHG emissions for typical construction projects because they occur only for a finite period (e.g., during periods of construction) that is typically much shorter than the operational phase. Instead, agencies generally recommend that GHG analyses focus on operational phase emissions unless the project is of a unique nature requiring atypical (e.g., large-scale, long-term) activity levels (e.g., construction of a new dam or levee) for which quantification and consideration (e.g., amortization of construction emissions over the lifetime of the project) may be recommended. Thus, short-term construction-related GHG emission impacts associated with reasonably foreseeable compliance responses for the recommended actions in the 2022 Scoping Plan would be less than significant when considering the overall GHG reduction associated with implementation of the 2022 Scoping Plan.

The long-term operational-related impacts on GHG emissions from the recommended actions would be beneficial, consistent with the goals and objectives of the 2022 Scoping Plan to reduce emissions to achieve 2030 and 2045 emission reduction goals.

Thus, implementing the recommended actions in the 2022 Scoping Plan **would not result in a considerable contribution to a cumulative GHG emission impact.**

## 9. Hazards and Hazardous Materials

Reasonably foreseeable compliance responses to the recommended actions in the 2022 Scoping Plan could include construction and operation of new or modified facilities or infrastructure. There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities.

These construction activities may require the transport, use, and disposal of hazardous materials. Construction activities generally use heavy-duty equipment requiring periodic refueling and the use of lubricating fluids. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site because they are not designed for use on public roadways. Thus, such maintenance uses a service vehicle that travels to the location of the construction equipment. It is during the transfer of fuel that the potential for an accidental release is most likely. Although precautions would be taken to ensure that any spilled fuel is properly contained and disposed of, and such spills typically would be 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. Consequently, construction activities could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

In addition, because potential facilities would likely occur within footprints of existing manufacturing facilities, implementing the 2022 Scoping Plan would not be expected to result in locating new facilities near schools, public (or public use) airports, private airstrips, or wildlands or on sites included on a list of hazardous materials sites, and it would not be expected to impair implementation of or physically interfere with an adopted emergency response or evacuation plan. In addition, as noted in Chapter 4 of this Recirculated Draft EA, the handling of hazardous materials would be required to comply with all applicable federal, State, and local laws. As a result, operational-related impacts on hazards and hazardous materials would be less than significant.

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 involving hazards and hazardous materials cannot be assured. Thus, recognizing that mitigation measures to reduce impacts involving hazards and hazardous materials may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative impact on hazards and hazardous materials.**

## 10. Hydrology and Water Quality

Construction activities and long-term operation associated with reasonably foreseeable compliance responses to the recommended actions could be located in a variety of conditions with regard to altering drainage patterns, flooding, and inundation by seiche, tsunami, or mudflow. The level of susceptibility would vary by location. In addition, renewable energy projects may require quantities of groundwater that would deplete existing water resources. Furthermore, fuel-related regulations could alter agricultural practices, resulting in discharges to waterways of sediment, nutrients, pathogens, pesticides, metals, and salts. The specific design details, siting locations, and associated hydrology and water quality issues are unknown at this time and would be analyzed on a site-specific basis at the project level. Therefore, for purposes of CEQA disclosure, these potential hydrology and water quality-related impacts would be significant. 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 hydrology and water quality cannot be assured. Thus, recognizing that mitigation measures to reduce impacts to hydrology and water quality may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative impact on hydrology and water quality.**

## 11. Land Use

Implementing reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require both construction and long-term operation of new or modified facilities or infrastructure. 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 these facilities. Implementation of the 2022 Scoping Plan would also improve the state of California's forests through projects covered by the California Vegetation Treatment Program (CalVTP), and CalVTP's standard project requirements would reduce land use impacts on forest, shrubland, and grassland. Thus, implementation of the recommended actions could divide an established community or conflict with a land use or conservation plan. 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 land use impacts cannot be assured. Thus, recognizing that mitigation measures to reduce impacts involving division of an established community or conflict with a land use or conservation plan may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative land use-related impact.**

## 12. Mineral Resources

Implementing reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require the construction and operation of new or modified facilities or infrastructure. There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities. New facilities would likely occur within existing footprints or in areas with consistent zoning, where original permitting and analyses considered these issues; thus, impacts on the availability of a known mineral resource or recovery site would be less than significant. Some of the recommended actions and associated compliance responses could require the extraction of minerals (e.g., lithium, nickel, cobalt) used to manufacture batteries. However, implementation of these measures would not substantially deplete the supply of these mineral resources. Therefore, implementing the recommended actions in the 2022 Scoping Plan **would not result in a considerable contribution to a cumulative impact on mineral resources.**

## 13. Noise and Vibration

Implementing reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require construction and operation of new or modified facilities or infrastructure. Operational-related activities, including operation of anaerobic digesters and renewable energy projects, could also

contribute to increased noise levels. These activities could result in the generation of short-term construction noise in excess of applicable standards or result in a substantial increase in ambient levels at nearby sensitive receptors and exposure to excessive vibration levels, which would be a potentially significant impact. In addition, operation of new facilities, mining operations, and renewable energy projects could emit excessive levels of noise near sensitive receptors. Thus, operational-related effects of equipment constructed as a result of implementation of recommended actions associated with 2022 Scoping Plan could result in a potentially significant impact. 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 noise impacts cannot be assured. Thus, recognizing that mitigation measures to reduce noise impacts may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative construction- and operational-related noise impact.**

#### 14. Population and Housing

Implementing reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require construction and operation of new or modified facilities or infrastructure. There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities. These would likely occur within footprints of existing facilities or in areas with zoning that would permit the development of such facilities. Construction of these facilities would require relatively small crews, and demand for these crews would be temporary (e.g., 6–12 months per project). Therefore, a substantial amount of construction worker migration would not be likely to occur, and a sufficient construction employment base would likely be available. Construction activities would not require new additional housing or generate changes in land use. Therefore, implementing the recommended actions in the 2022 Scoping Plan **would not result in a considerable contribution to a cumulative impact related to population and housing growth.**

#### 15. Public Services

Reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could include construction and operation of new or modified facilities or infrastructure. There is uncertainty regarding the exact location of these new facilities and the modification of existing facilities. These would likely occur within footprints of existing facilities or in areas with zoning that would permit the development of these facilities. Construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary (e.g., 6–12 months per project). Therefore, it would be anticipated that a substantial construction worker migration would not occur and that a sufficient construction employment base would likely be available. Construction activities would not require new additional



housing to accommodate or generate changes in land use and, therefore, would not affect the provision of public services. Therefore, implementing the recommended actions in the 2022 Scoping Plan **would not result in a considerable contribution to a cumulative impact related to public services.**

## 16. Recreation

Implementing reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require construction and operation of new or modified facilities or infrastructure. There is uncertainty regarding the exact locations of potential new or modified facilities. These activities would likely occur within footprints of existing facilities or in areas with zoning that would permit their development. In addition, demand for construction crews would be temporary (e.g., 6–12 months per project). Therefore, it would be anticipated that a substantial construction worker migration would not occur and that a sufficient construction employment base would likely be available. Thus, construction activities associated with reasonably foreseeable compliance responses would not be anticipated to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would occur. In addition, the demand for new (or expansion of) recreation-related facilities would not occur as a result of construction activities. However, implementation of actions included recommend in the 2022 Scoping Plan could adversely affect the quality of recreational resources through implementation of individual projects such as renewable energy facilities, direct air capture facilities, and fuels treatment activities. 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 cumulatively considerable contribution to a significant cumulative impact related to recreational facilities.**

## 17. Transportation

Implementing reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require construction and operation of new or modified facilities or infrastructure. In addition, new fuels standards compliance responses could result in changes to imports and statewide shipments of feedstock and distribution of fuels. Although detailed information about potential specific construction activities is not currently available, some of the potential compliance responses could result in short-term construction traffic (primarily motorized) from worker commute- and material delivery-related trips. The amount of construction activity would vary depending on the particular type and number of pieces of equipment used, the duration of use, 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 result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially related to project-generated heavy-duty truck trips. As a result, transportation and traffic impacts during construction projects associated with the 2022 Scoping Plan would be potentially significant.

Depending on the amount of trip generation and the location of fuel related deliveries, implementation could conflict with applicable programs, plans, ordinances, or policies (e.g., performance standards, congestion management) or result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially related to project-generated heavy-duty truck trips. 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 traffic and transportation impacts cannot be assured. Thus, recognizing that mitigation measures to reduce traffic and transportation impacts may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative transportation and traffic-related impact.**

## 18. Tribal Cultural Resource

Implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan 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. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation; earth movement and grading; trenching for utility lines; erection of new buildings; and paving of parking lots, delivery areas, and roadways. Demolition of existing structures may also occur before the construction of new buildings and structures. Known or undocumented tribal cultural resources could be unearthed or otherwise discovered during ground-disturbing and construction activities.

The 2022 Scoping Plan's impacts on cultural resources would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant because of the potential to damage and destroy tribal cultural resources. Because the 2022 Scoping Plan on its own would result in a significant and unavoidable impact, and because the project's impact would combine with other impacts to these resources across the state, the project's contribution to the

significant cumulative impact would be cumulatively considerable. Implementation of 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 tribal cultural resources impacts cannot be assured. Thus, recognizing that mitigation measures to reduce impacts to tribal cultural resources may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a cumulatively considerable contribution to a significant cumulative impact on tribal cultural resources.**

## 19. Utilities and Service Systems

Implementing reasonably foreseeable compliance responses associated with the recommended actions in the 2022 Scoping Plan could require construction and operation of new or modified facilities or infrastructure (e.g., manufacturing facilities, renewable energy projects, anaerobic digesters). Newly constructed or modified facilities could generate substantial increases in the demand for water supply, wastewater treatment, stormwater drainage, and solid waste services in their local areas. Any new or modified facilities, no matter their size and location, would be required to seek local or State land use approvals before their development. 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 State CEQA Guidelines. It is assumed that facilities proposed in other states would be subject to comparable federal, state, and local environmental review requirements and that the environmental review process would assess whether adequate utilities and services (e.g., 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.

At this time, the specific location and type of construction needs are unknown and would depend on a variety of market factors that are not within the control of CARB, including economic costs, product demands, environmental constraints, and other market constraints. Thus, the specific impacts from construction on utility and service systems cannot be identified with any certainty, and individual compliance responses could potentially result in significant environmental impacts. Implementation of mitigation measures 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 utility and service system impacts cannot be assured. Thus, recognizing that mitigation measures to reduce utility and service system impacts may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a considerable contribution to a cumulative impact with respect to utilities and service systems.**

## 20. Wildfire

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

The 2022 Scoping Plan's impacts on wildfire would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would not be significant for individual projects covered by CalVTP, which includes various specific project requirements that would reduce the risk of uncontrolled spread of fire from treatment activities. However, not all forest, shrubland, and grassland management actions would be covered by CalVTP, and could result in temporary risks associated with accidental wildfire from prescribed burning, as well as sparks or hot equipment related to the use of vehicles and heavy machinery in the landscape because each can carry a risk of an accidental wildfire ignition. This risk would be considered a significant and unavoidable impact, because while the potential for an accident is small, the consequences could be substantial. Because the 2022 Scoping Plan on its own would result in a significant and unavoidable impact, and because the project's impact would combine with other impacts to these resources across the state, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of 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 wildfire impacts cannot be assured. Thus, recognizing that mitigation measures to reduce wildfire impacts may not be required by other public agencies, implementing the recommended actions in the 2022 Scoping Plan **could result in a cumulatively considerable contribution to a significant cumulative impact related to wildfire.**

## C. Growth-Inducing Impacts

As noted above, implementing the recommended actions of the 2022 Scoping Plan would not directly result in any growth in population or housing. Detailed analysis of economic growth is provided in Appendix H (AB 32 GHG Inventory Sector Modeling)

and Appendix I (NWL Modeling) of the 2022 Scoping Plan. As discussed in Chapter 3, the analyses indicate that the effects on the California economy would be very minor, less than 0.1% slower growth than the Reference Scenario in the years analyzed, 2035 and 2045. Employment growth is also slowed, but the impact is small, resulting in less than 0.4 percent slowing of job growth relative to projected levels in 2045. Thus, no substantial growth-inducing effects would occur as a result of implementing the 2022 Scoping Plan.

#### **D. Significant Irreversible Changes**

The State CEQA Guidelines (Section 15126.2) require a discussion of the significant irreversible environmental changes that would be involved if a project were implemented. The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Resources would be permanently lost if they cannot be recovered or recycled or they that would be consumed or reduced to unrecoverable forms.

Implementation of the 2022 Scoping Plan would result in the irreversible commitment of material resources and energy during construction and operation, including the following:

construction materials, including such resources as soil, mineral resources, rocks, wood, concrete, glass, roof shingles, and steel;  
land area committed to new project facilities;  
water supply for project operation; and  
energy expended in the form of electricity, gasoline, diesel fuel, and oil for equipment and transportation vehicles that would be needed for project construction and operation.

The use of these resources is expected to account for a minimal portion of the region's resources and would not affect the availability of these resources for other needs in the region. The overall goal of the 2022 Scoping Plan is to reduce GHG emissions and reach carbon neutrality by 2045. The long-term operation of the 2022 Scoping Plan would reduce the consumption of natural resources and improve energy conservation.

## 6.0 MANDATORY FINDINGS OF SIGNIFICANCE

Consistent with the requirements of the California Environmental Quality Act (CEQA) Guidelines section 15065 and section 18 of the Environmental Checklist, this Environmental Analysis (EA) addresses the mandatory findings of significance for the proposed 2022 Scoping Plan.

### A. Mandatory Findings of Significance

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

CEQA requires a finding of significance if a project “has the potential to substantially degrade the quality of the environment.” (Cal. Code Regs., tit 14, § 15065, subd. (a).) In practice, this is the same standard as a significant impact on the environment, 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.” (Cal. Code Regs., tit 14, § 15382.)

As with all environmental impacts and issue areas, the precise nature, location and magnitude of impacts would be highly variable, and would depend on a range of reasonably foreseeable compliance responses that could occur with implementation of the 2022 Scoping Plan. Location, extent, and a variety of other site-specific factors are not known at this time but would be addressed by environmental reviews to be conducted by local or regional agencies with regulatory authority at the project-specific level.

This Recirculated Draft EA, in its entirety, addresses and discloses potential environmental impacts associated with the recommended actions with the proposed regulations, including direct, indirect, and cumulative impacts in the following resource areas:

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

Land Use and Planning  
Mineral Resources  
Noise  
Population and Housing  
Public Services  
Recreation  
Transportation/Traffic  
Tribal Cultural Resources

Hazards and Hazardous Materials  
Hydrology and Water Quality

Utilities and Service Systems  
Wildfire

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

**a) Impacts on Species**

CEQA requires a lead agency to find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to (1) substantially reduce the habitat of a fish or wildlife species; (2) cause a fish or wildlife population to drop below self-sustaining levels; or (3) substantially reduce the number or restrict the range of an endangered, rare, or threatened species. (Cal. Code Regs., tit. 14, §15065, subd. (a)(1).) Chapter 4 of this Recirculated Draft EA addresses impacts that could occur to biological resources, including the reduction of fish or wildlife habitat, the reduction of fish or wildlife populations, and the reduction or restriction of the range of special-status species.

**b) Impacts on Historical Resources**

CEQA states that a lead agency shall find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to eliminate important examples of a major period of California history or prehistory. (Cal. Code Regs., tit. 14, § 15065, subd. (a)(1).) This incorporates the requirement that major periods of California history are preserved for future generations and a finding of significance for substantial adverse changes to historical resources. (Pub. Resources Code §§ 21001, subd. (c), 21084.1.) CEQA establishes standards for determining the significance of impacts to historical resources and archaeological sites that are a historical resource. (Cal. Code Regs., tit. 14, § 15064.5.) Chapter 4 of this Recirculated Draft EA addresses impacts that could occur related to California history and prehistory, historic resources, archaeological resources, and paleontological resources.

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

CEQA Guidelines requires a lead agency shall find that a project may have a significant impact on the environment where there is substantial evidence that the project has potential environmental impacts that are individually limited, but cumulatively considerable. (Cal. Code Regs., tit. 14, § 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.” (Cal. Code Regs., tit. 14, § 15065, subd. (a)(3).) Cumulative impacts are addressed for each of the environmental topics listed above and

are provided in Chapter 5, "Cumulative and Growth-Inducing Impacts," in this Recirculated Draft EA.

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

CEQA requires a lead agency to find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to cause substantial adverse impacts on human beings, either directly or indirectly (Cal. Code Regs., tit. 14, § 15065, subd. (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 impacts on certain individuals. While changes to the environment that could indirectly affect human beings would be represented by all the designated CEQA issue areas, those that could directly affect human beings include air quality, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, transportation/traffic, and utilities, which are addressed in Chapter 4 of this Recirculated Draft EA.



This page intentionally left blank.

## 7.0 ALTERNATIVES ANALYSIS

This chapter provides an overview of the statutory and guidelines requirements for alternatives analyses under the California Environmental Quality Act (CEQA), a description of each of the alternatives to the 2022 Scoping Plan, a discussion of whether and how each alternative meets the project's objectives, and an analysis of each alternative's potentially significant environmental impacts.

### A. Approach to Alternatives Analysis

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

The certified regulatory program provides general guidance that any action or proposal for which significant adverse environmental impacts have been identified during the review process shall not be approved or adopted as proposed if there are feasible mitigation measures or feasible alternatives available that would substantially reduce adverse impacts. For purposes of this analysis, "feasible" means capable of being accomplished in a successful manner within a reasonable period, considering economic, environmental, social, and technological factors, and consistent with the CARB's legislatively mandated responsibilities and duties (Title 17 CCR Section 60006).

Although CARB, because of its certified regulatory program, is exempt from Chapters 3 and 4 of CEQA and corresponding sections of the State CEQA Guidelines, the guidelines nevertheless contain useful information for preparing a thorough and meaningful alternatives analysis. CEQA Guidelines Section 15126.6(a) speaks to the need to describe "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, 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 certified regulatory program requirements. Alternatives considered in an environmental document should be potentially feasible and should attain most of the basic project objectives. It is, therefore, critical that the alternatives analysis define the project's objectives. The range of alternatives is governed by the "rule of reason," which requires evaluation of only those alternatives "necessary to permit a reasoned choice" (Title 14 CCR Section

15126.6(f)). Further, an agency “need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative” (Title 14 CCR Section 15126.6(f)(3)).

## **B. Selection of Range of Alternatives**

This chapter evaluates a reasonable range of alternatives to the 2022 Scoping Plan that could reduce or eliminate the project’s significant effects on the environment while meeting most of the basic project objectives (Title 14 CCR Section 15126.6(a)). Pursuant to CARB’s certified regulatory program, this chapter also contains an analysis of each alternative’s feasibility and the likelihood that it would substantially reduce any significant adverse environmental impacts identified in the impact analysis contained in Chapter 4 of this Draft Environmental Analysis (EA) (Title 17 CCR Sections 60005(b), 60006).

As described earlier, the 2022 Scoping Plan builds on previous approaches used in the initial Scoping Plan, the First Update to the Scoping Plan, and the 2017 Scoping Plan. The 2022 Scoping Plan recommends a balanced mix of broad-based sector actions to achieve specific outcomes in each sector to ensure that California remains on track to meet both the 2030 and the 2045 greenhouse gas (GHG) emission limits while continuing the downward trajectory of GHG emissions consistent with achieving the State’s long-term climate stabilization objectives for 2050 and maintaining a vibrant, clean, and sustainable California economy. Likewise, suitable alternatives considered in this Recirculated Draft EA need also to be broad-based, comprehensive approaches that could meet the basic project objectives while reducing or eliminating the project’s significant effects on the environment.

The 2022 Scoping Plan recognizes the need for broad-based strategies that require continued changes to how the State generates, transmits, and consumes electricity; how people and goods are transported; how communities are planned and built; how water and other resources are conveyed, distributed, and consumed; and how the State manages its vast natural and agrarian lands; however, specific actions are not yet fully defined at this stage of planning. The level of detail for each alternative must reflect that the project is a broad plan. Accordingly, this analysis cannot provide the level of detail that will be contained in subsequent environmental review that will be conducted when each of the 2022 Scoping Plan’s recommended actions is subsequently developed and implemented by CARB or other lead agencies.

CARB has identified a reasonable range of four alternatives that allow the public and CARB to understand the differences among the different approaches. GHG emission reduction measures ongoing or already implemented as part of the initial Scoping Plan, and subsequent updates, are considered a part of the No-Project Alternative. Because these programs are already underway and reducing emissions at this time, they are reasonably expected to continue. In addition to the No-Project Alternative, CARB made a good-faith effort to identify other potentially feasible project

alternatives. This effort included examining comments received at the public workshops held on June 8–10, 2021; July 20, 2021; August 2, 2021; August 17, 2021; September 8, 2021; September 30, 2021; November 2, 2021; December 2, 2021; December 13, 2021; February 15, 2022; March 15, 2022; and April 20, 2022 ; at the CARB hearings held on June 24, 2021; February 24, 2022; and March 24, 2022 and at 17 Environmental Justice Advisory Committee meetings to determine whether any commenters suggested potentially feasible alternatives. Although commenters made suggestions for particular components of recommended actions in the key economic sectors, no comments suggested an alternative, broad-based comprehensive approach to the project itself. CARB staff found no comments suggesting an alternative comprehensive approach to meet the State’s long-term GHG reduction goals.

Despite the challenge of identifying alternative approaches to the project as a whole, CARB identified three feasible action alternatives in addition to the No-Project Alternative rather than just partial alternatives to components within the project. The alternatives do not alter the basic nature of the project, and the information provided on them below is sufficient to allow comparisons with the proposed project.

### **C. Project Objectives**

The statement of objectives described in Chapter 2, “Project Description,” are provided below. These objectives are derived from the requirements of Assembly Bill (AB) 32. The analysis that follows, in Section E of this chapter, includes a discussion of the degree to which each alternative meets these basic project objectives:

1. To update the State’s Scoping Plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions to reflect progress towards the 2030 target (Executive Order B-30-15 and [Senate Bill] SB 32, Statutes of 2016) and to plan the longer-term trajectory to reduce GHG emissions at least 80 percent below 1990 levels by 2050 (Executive Order S-03-5) and achieve carbon neutrality no later than 2045 (Executive Order B-55-18);
2. Pursue actions and outcomes covering the State’s GHG emissions in furtherance of executive and statutory direction to continue progress reducing GHG emissions to at least 40 percent below 1990 levels by 2030, at least 80 percent below 1990 levels by 2050, and achieve carbon neutrality no later than 2045;
3. Continue to increase electricity derived from renewable sources to 60 percent by 2030 and increase electricity derived from renewable and zero-carbon resources to 100 percent by 2045;

4. Continue actions to double efficiency savings achieved at existing buildings and make heating fuels cleaner;
5. Continue actions such that 100 percent of in-State sales of new passenger cars and trucks are zero-emission by 2035, 100 percent of medium- and heavy-duty vehicles in the State are zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks, and transition off-road vehicles and equipment to 100 percent zero-emission by 2035 where feasible (Executive Order N-79-20);
6. Continue to reduce the release of methane and other short-lived climate pollutants (Health & Saf. Code §§ 39740.2, 39730.6, 39730.8 and Public Resources Code §§ 42652, 42653, 42654);
7. Pursue actions to reduce the GHG intensity of cement used within the State 40 percent below 2019 average levels by 2035 and achieve net-zero emissions of GHGs associated with cement used within the State by 2045 (Health & Safety Code, 38561.2);
8. Pursue actions to achieve the updated target for the natural and working lands sector determined in the 2022 Scoping Plan process (Executive Order N-82-20);
9. Establish carbon dioxide removal targets for 2030 and beyond, taking into consideration the Natural and Working Lands Climate Smart Strategy, science-based data, cost-effectiveness, and technological feasibility in setting the targets (Health & Saf. Code, § 39740.2, subd. (b));
10. Pursue emission reductions that are real, permanent, quantifiable, verifiable and enforceable;
11. Achieve the maximum technologically feasible and cost-effective reductions in GHG emissions, in furtherance of reaching the statewide GHG emissions limit (Health & Saf. Code, § 38562, subd. (a) and (c));
12. Minimize, to the extent feasible, leakage of emissions outside of the State;
13. Ensure, to the extent feasible, that activities undertaken to comply with the measures do not disproportionately impact low-income communities (Health & Saf. Code, § 38562, subd. (b)(2));
14. Ensure, to the extent feasible, that activities undertaken pursuant to the measures complement, and do not interfere with, efforts to achieve and maintain national and California Air Quality Attainment Standards (AAQS) and to reduce toxic air contaminant (TAC) emissions (Health & Saf. Code, § 38562, subd. (b)(4));

15. Consider overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health (Health & Saf. Code, § 38562, subd. (b)(6));
16. Minimize, to the extent feasible, the administrative burden of implementing and complying with the measure (Health & Saf. Code, § 38562, subd. (b)(7));
17. Consider, to the extent feasible, the contribution of each source or category of sources to statewide emissions of GHGs (Health Saf. Code § 38562, subd. (b)(9));
18. Maximize, to the extent feasible, additional environmental and economic benefits for California, as appropriate (Health & Saf. Code, § 38570, subd. (b)(3));
19. Ensure that electricity and natural gas providers are not required to meet duplicative or inconsistent regulatory requirements (Health & Saf. Code, §§ 38501, subd. (g), 38561, subd. (a)); and
20. Consider the social costs of the emissions of GHGs and prioritize emission reduction rules and regulations that result in direct emission reductions at large stationary sources of GHG emissions, from mobile sources, and from other sources (Health & Saf. Code, § 38562.5).
21. Update the State's Climate Change Scoping Plan as required by statute (Health & Saf. Code § 38561(h)).
22. Describe paths to equitably achieve vehicle miles travelled (VMT) reductions of 25% per capita below 1990 levels by 2030 and 30% per capita below 1990 levels by 2045, consistent with the state's need to cut vehicular pollution, and secure the many public health and economic benefits that come with a greater range of transportation choices; and
23. Further the Governor's stated goal of 3 million climate-ready and climate-friendly homes by 2030 and 7 million homes by 2035, supplemented through the deployment of 6 million heat pumps statewide by 2030. Climate-ready and climate-friendly is applied as electric- ready and all-electric for the purposes of the Scoping Plan.

#### **D. Description of Alternatives**

Detailed descriptions of each alternative 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 potentially significant impacts identified in Chapter 4.

## E. Evaluation of Scoping Plan Alternatives

During the development of the 2022 Scoping Plan, stakeholders provided several suggestions for alternative scenarios to achieve the objectives outlined above. While there are numerous scenarios that could potentially be developed and evaluated, the following four alternatives to the 2022 Scoping Plan were chosen for evaluation because they were most often included in comments by stakeholders, and they represent a reasonable range of alternatives for consideration during review of the proposed plan:

- No-Project Alternative
- Alternative A: Nearly Complete Phaseout of All Combustion, Limited Reliance on Mechanical Carbon Dioxide Removal and CCS, and Restricted Applications for Biomass-Derived Fuels; Natural and Working Land Actions are unchanged from the 2022 Scoping Plan
- Alternative B: Deployment of a Broad Portfolio of Existing and Emerging Fossil Fuel Alternatives, Slower Deployment and Adoption Rates than the Proposed Scenario, and Higher Reliance on Carbon Dioxide Removal; Natural and Working Land Actions are unchanged from the 2022 Scoping Plan
- Alternative C: Land Management Activities representative of California's Current Commitments and Plans; AB 32 GHG Inventory Sector activities are unchanged from the 2022 Scoping Plan.

Draft EA Alternative A is most similar to Alternative 1 for AB 32 GHG Inventory Sectors in the 2022 Scoping Plan with measures implemented as outlined in that scenario but with a 2045 carbon neutrality target. Draft EA Alternative B aligns with Alternative 4 for AB 32 GHG Inventory Sectors in the 2022 Scoping Plan. The natural and working lands actions in both Draft EA Alternatives A and B are the same as the Proposed Scenario in the 2022 Scoping Plan. Draft EA Alternative C is aligned with Alternative 2 for natural and working lands in the 2022 Scoping Plan and the AB 32 GHG Inventory Sectors actions in Draft EA Alternative C are the same as the Proposed Scenario in the 2022 Scoping Plan.

Generally, actions associated with the 2022 Scoping Plan and plan alternatives would be the same. Differences among the alternatives would be related to the degree to which individual actions are implemented. A summary of the differences among the alternatives, compared to the 2022 Scoping Plan, is presented in Table 7-1. Additional details and analysis of each alternative are provided following Table 7-1.

**Table 7-1: Relative Comparison of Scoping Plan Alternatives to the Proposed Scenario in the 2022 Scoping Plan**

Individual Actions in the 2022 Scoping Plan	Degree to Which Each Individual Action is Implemented (Compared to the Proposed Scenario)			
	No-Project Alternative	Draft EA Alternative A	Draft EA Alternative B	Draft EA Alternative C
Increase in renewable energy and decrease in oil and gas use actions	Less	Greater	Less	Same
Low carbon fuels actions	Less	Less	Greater	Same
Expansion of electrical infrastructure actions	Less	Greater	Less	Same
Expanded use of zero-emission mobile source technology actions	Less	Greater	Less	Same
Mechanical carbon dioxide removal and carbon capture and sequestration actions	Less	Less	Greater	Same
Improvements to oil and gas facilities actions	Less	Greater	Less	Same
Low-GWP compounds actions	Less	Greater	Less	Same
Manure management actions	Less	Less <sup>63</sup>	Similar	Same
Forest, shrubland, and grassland management activities	Less	Same	Same	Less
Agricultural actions	Less	Same	Same	Greater

<sup>63</sup> This alternative does not deploy any additional digesters and assumes several hundred additional alternative manure management practices to reduce methane emissions.



Individual Actions in the 2022 Scoping Plan	Degree to Which Each Individual Action is Implemented (Compared to the Proposed Scenario)			
	No-Project Alternative	Draft EA Alternative A	Draft EA Alternative B	Draft EA Alternative C
Organic waste diversion and composting actions	Less	Less	Same	Same
Afforestation, urban forestry expansion, Avoided Natural and Working Land Use Conversion, and wetland restoration actions	Less	Same	Same	Greater, Greater, Less, respectively

Notes: "Less," "greater," "similar," and "same" refer to the extent to which actions would be implemented under each plan alternative compared to the 2022 Scoping Plan.

GWP=global warming potential

## 1. No-Project Alternative

### a) No-Project Alternative Description

CARB is including the No-Project Alternative to provide a good-faith effort to disclose environmental information that is important for considering the 2022 Scoping Plan. CARB's certified regulatory program does not mandate consideration of a "no-project alternative" (Title 17 CCR Section 60006). Under CARB's certified regulatory program, the alternatives considered, among other things, must be "consistent with the CARB's legislatively mandated responsibilities and duties" (Title 17 CCR Section 60006).

Moreover, it is not clear that it would be legally feasible for CARB to implement the No-Project Alternative. In April 2015, Governor Brown issued Executive Order B-30-15 to establish a California GHG emission reduction target of 40 percent below 1990 levels by 2030. In doing so, the governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address to reduce GHG emissions and prepare for the unavoidable impacts of climate change. To develop a clear plan of action to achieve the State's goals, the executive order called on CARB to update the AB 32 Climate Change Scoping Plan to incorporate the 2030 target. In summer 2016, the legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016), which codified into statute the 2030 GHG emission reduction target contained in Executive Order B-30-15 to achieve a 40-percent reduction in 1990 GHG emission levels by 2030. Executive Order B-55-18 also established the goal of reaching

carbon neutrality by 2045, which builds on the target to require all utilities to source 100 percent of their electricity from renewables by 2045, established by the 100 Percent Clean Energy Act of 2018 (SB 100, De Leon, Statutes of 2018). Additionally, California's Short-Lived Climate Pollutant Reduction law, which took effect on January 1, 2022, sets targets for reducing the amount of organic waste disposed of in landfills by 75 percent (from a 2014 baseline level) by 2025 (SB 1383, Lara, Statutes of 2016).

Notably, while not yet codified in legislation, the State is on a trajectory to reach an 80-percent reduction in GHG emissions compared to 1990 levels by 2050 as directed by Executive Order S-3-05. The aforementioned regulations combine to address GHG emission reductions across multiple sectors to ultimately reach this long-term climate change target.

The No-Project Alternative is included to assist in the analysis and consideration of this portion of the 2022 Scoping Plan 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, "[t]he purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Title 14 CCR Section 15126.6(e)(1)). The No-Project Alternative also provides an important point of comparison to understand the nature and magnitude of the potential environmental benefits and impacts of the other alternatives.

The No-Project Alternative in this analysis describes a reasonably foreseeable scenario if CARB does not approve the 2022 Scoping Plan. Under the No-Project Alternative, those measures included in the initial Scoping Plan, the First Update to the Scoping Plan, and the 2017 Scoping Plan that are already being implemented, as well as those measures enacted under authority outside of AB 32, would continue to be implemented.

The No-Project Alternative does not assume that there would be no further action by CARB or other State agencies related to the reduction of GHG emissions. Some of the recommended measures in the 2022 Scoping Plan may occur as a result of requirements required by other statutes or because of commitments in existing plans (e.g., the Short-Lived Climate Pollutant Reduction Strategy, California Vegetation Treatment Program), requirements under development for other purposes, and subsequent regulatory actions by CARB or other agencies under separate statutory authority regardless of their inclusion in the 2022 Scoping Plan.

## **b) No-Project Alternative Discussion**

### **i. Objectives**

The No-Project Alternative would not meet many of the project objectives. Implementing this alternative would not result in the maximum technologically feasible

and cost-effective reductions in GHG emissions to achieve the 2030 target of 40 percent below 1990 levels (Objectives 1 and 2). It would reduce petroleum use in cars and trucks, increase the amount of electricity derived from renewable sources, increase energy efficiency in existing buildings and make heating fuels cleaner, and reduce the release of methane and other short-lived climate pollutants; however, it is unknown if measures would be stringent enough to meet the goals associated with Objectives 3, 4, 5, and 6. This alternative would generally meet the remainder of objectives because it would pursue emission reductions that are real, permanent, quantifiable, verifiable, and enforceable (Objective 10), and it is consistent with other requirements set forth under the California Health and Safety Code (Objectives 8 and 10–15). To be consistent with AB 32, this alternative would minimize, to the extent feasible, leakage of emissions outside of the state (Objective 12). This alternative would not update the State’s Scoping Plan (Objective 21).

## **ii. Environmental Impacts**

The No-Project Alternative includes GHG emission reduction measures that are ongoing or already implemented as part of the initial Scoping Plan, 2014 Update, and the 2017 Scoping Plan or developed under authorities additional to AB 32 (e.g., SB 350, the Clean Energy and Pollution Reduction Act of 2015 [Statutes of 2015, De León]). Direct and indirect environmental impacts associated with implementation of these measures were analyzed in the 2008 Functional Equivalent Document (FED), 2011 FED Supplement, 2014 Update EA, and 2017 Scoping Plan EA. Implementing the No-Project Alternative, therefore, would still result in potentially adverse environmental impacts that are similar to those described in Chapter 4 of this Recirculated Draft EA, but they would be reduced because actions would not be as stringent as those proposed for the 2022 Scoping Plan. These include potential short-term construction and long-term operational impacts that may occur as a result of activities carried out in response to regulations or programs enacted to implement the recommended actions.

## **2. Alternative A: Nearly Complete Phaseout of All Combustion, Limited Reliance on Mechanical Carbon Dioxide Removal and CCS, and Restricted Applications for Biomass-Derived Fuels; Natural and Working Lands Actions are unchanged from the 2022 Scoping Plan**

### **a) Alternative A Description**

Draft EA Alternative A includes many of the same actions and clean technology and fuel requirements as the other alternatives and proposed scenario, but it limits the role of some fuels and technologies. The key characteristics of this alternative are summarized as follows:

- accelerates the 2030 target from 40 percent below 1990;
- aims to achieve carbon neutrality by 2045;

- nearly phases out all combustion, including fossil, biomass-derived, and hydrogen fuel combustion;
- requires early retirement of vehicles, appliances, and industrial equipment to eliminate combustion, with aggressive deployment and adoption of non-combustion technologies;
- directly regulates dairies to achieve the SB 1383 methane target, with emphasis on maximizing deployment of alternative manure management strategies, aggressive adoption of enteric strategies by 2030, and increased rate of dairy herd size reduction compared to historic levels;
- includes high likelihood of leakage for sectors that are difficult to decarbonize (e.g., cement, aviation); and
- requires carbon dioxide removal to compensate for non-combustion emissions (industrial process emissions) and short-lived climate pollutants or would not achieve carbon neutrality.

Draft EA Alternative A reflects many of the priorities shared by the Environmental Justice Advisory Committee. No new digesters for organic waste diverted from landfills and dairy manure management methane capture would be supported; instead, there would need to be an overall reduction in herd size over time to reduce enteric and manure methane emissions, as well as more composting. Oil and gas fugitive methane emissions would be nearly eliminated as combustion is phased out. Sectors that are difficult to electrify, such as stone, clay, glass, and cement manufacturing, may need to close unless carbon capture and sequestration (CCS) is allowed with some combustion technology to meet the energy needs. Oil and gas extraction and refining operations would be phased out by 2035 as demand for these fuels would also be forced to zero in 2035, and all combustion-based generation resources for electricity would no longer be available. Firming capacity (i.e., maintaining energy output requirements) would be achieved through hydrogen fuel cells).

## **b) Alternative A Discussion**

### **i. Objectives**

Draft EA Alternative A meets many of the basic project objectives and even accelerates the existing target of meeting a 40-percent reduction in 1990 GHG emission levels by 2030. In comparison to the Proposed Scenario, Draft EA Alternative A provides greater reduction in fossil fuel demand in 2045 and the most reduction in GHG emissions without mechanical carbon dioxide removal in 2045. It has greater health benefit savings from air pollutant reductions in 2045, as well as greater avoided damages in 2045, consistent with project objectives not to interfere with ambient air quality standards, reduce TAC emissions, and provide societal benefits (Objectives 14 and 20). However, it has the highest direct costs due to early replacements and the highest rate of slowing economic growth in 2045 (Objective 11). Draft EA Alternative A diverges from the SB 100 retail sales definition in covering total load (0-million

metric tons electricity sector target) and restricts eligible resources, including combustion-based bioenergy, leading to less diversification of energy sources (Objective 15). Under this alternative, there would be no development of new digesters for diverted organic waste, which may result in herd size reduction and possible relocation of dairies outside California, resulting in emissions leakage. This alternative may also increase the potential for emissions leakage for cases in which electrification is not technically feasible, and a facility cannot implement CCS projects, resulting in the need to relocate production outside of the state (Objective 12). This alternative would update the State's Scoping Plan (Objective 21).

## **ii. Environmental Impacts**

Implementation of Draft EA Alternative A would decrease the rate of deployment of low-carbon fuels, mechanical carbon dioxide removal and CCS, and manure management actions. Relative to the proposed project, decreased feedstock cultivation associated with decreased low-carbon fuels actions would reduce impacts related to conversion of agricultural and forest land to other uses, potential for soil erosion, potential to generate polluted runoff associated with farm management practices (e.g., sediment, nutrients, pathogens, pesticides, metals, and salts), and noise associated with new facilities. In addition, reduced implementation of mechanical carbon dioxide removal and CCS actions would decrease the potential for new facilities to cause long-term aesthetic impacts, direct mortality of birds and bats through collision or capture by intake fans at direct air capture facilities, drawdown of groundwater supplies to support direct air capture facilities, and long-term effects on noise generation and quality of recreation experiences in generally undeveloped areas. Reduced implementation of manure management actions would decrease potential aesthetics, odor, and biological resources impacts.

Draft EA Alternative A would increase implementation of new renewable energy projects, which would increase impacts related to visual obstructions in scenic areas and new sources of light and glare from renewable resources project facilities; the potential for fire hazard and direct mortality of birds and bats through collisions with rotating turbines or transmission lines; potential for loss of habitat or alteration of existing habitats related to development of renewable energy projects and biomass facilities; potential for groundwater drawdown to support solar thermal, solar photovoltaic (PV), and geothermal energy facilities; traffic and operational noise related to renewable energy supply projects; and quality of existing recreation resources. In addition, increased expansion of electrical infrastructure and increased mining activities would increase the potential for adverse effects on biological resources from operation of new infrastructure (e.g., lines, transformers, transmission towers, high-voltage conductors, substations). Increased mining would also increase potentially significant impacts on hydrological resources.

## **3. Alternative B: Deployment of a Broad Portfolio of Existing and Emerging Fossil Fuel Alternatives, Slower Deployment and Adoption Rates than the**

**Proposed Scenario, and Higher Reliance on Carbon Dioxide Removal;  
Natural and Working Land Actions are unchanged from the 2022 Scoping  
Plan**

**a) Alternative B Description**

Draft EA Alternative B relies on existing, as well as emerging, technologies and does not place any limits on feasible fuels and technologies. It anticipates a less aggressive adoption of clean fuels and technologies by consumers and slower rates of clean fuels and technology deployment. The key characteristics of this alternative are summarized as follows:

- maintains the 2030 target of 40-percent emissions reductions from 1990 levels;
- aims to achieve carbon neutrality no later than 2045;
- does not phase out all combustion, including fossil, biomass-derived, and hydrogen fuel combustion;
- involves retirement of combustion vehicles, appliances, and industrial equipment at end of life;
- allows for the capture and use of biogas from dairies to achieve the SB 1383 methane target;
- allows for the use of CCS for sectors that are difficult to electrify;
- requires a larger amount of carbon dioxide removal to compensate for remaining fossil fuel emissions, noncombustion emissions (industrial process emissions) and short-lived climate pollutants; and
- includes a slower rate of consumer adoption for clean technology and fuels.

Draft EA Alternative B reflects aspects of the modeling that was conducted for the AB 74 Studies on Vehicle Emissions and Fuel Demand and Supply. Similar to the 2022 Scoping Plan, this alternative does not exclude biomass-derived fuels or CCS. This alternative also allows for legacy combustion technology to reach a natural end of life with no need for early buyback programs. For electricity generation, all Renewables Portfolio Standard and SB 100 Zero Carbon sources are allowed and expanded in relation to the 2021 SB 100 Joint Agency Report. Oil and gas extraction and refining operations are phased down in line with the reduction in demand. To the extent demand persists past 2045, oil and gas extraction and refining would continue but would be paired with CCS where applicable. This scenario allows for a greater share of fossil fuels remaining in the economy in 2045 than under the 2022 Scoping Plan.

**b) Alternative B Discussion**

**i. Objectives**

Overall, Draft EA Alternative B would meet many of the objectives of the 2022 Scoping Plan. It would maintain the 2030 target of 40-percent emissions reductions from 1990 levels and would achieve carbon neutrality by 2045. It delivers health and social cost benefits (Objectives 14 and 20), though to a lesser degree than both Draft

EA Alternative 1 and the Proposed Scenario. Direct costs are higher compared to the Proposed Scenario; also leading to slower economic and job growth (Objective 11). This alternative produces lesser reductions in fossil fuel combustion and GHG emissions without the use of mechanical carbon dioxide removal in 2045 compared to the Proposed Scenario. It would not reduce GHG emissions at least 80 percent below 1990 levels by 2050 (Objectives 1 and 2). In addition, it would not meet zero-emission goals for light-duty trucks under Executive Order N-79-20 (Objective 5). This alternative would update the State's Scoping Plan (Objective 21).

## **ii. Environmental Impacts**

Draft EA Alternative B would decrease implementation of new renewable energy projects, which would decrease impacts related to visual obstructions in scenic areas and new sources of light and glare from renewable resources project facilities; the potential for fire hazard and direct mortality of birds and bats through collisions with rotating turbines or transmission lines; potential for loss of habitat or alteration of existing habitats related to development of renewable energy projects and biomass facilities; potential for groundwater drawdown to support solar thermal, solar PV, and geothermal energy facilities; traffic and operational noise related to renewable energy supply projects; and quality of existing recreation resources. In addition, reduced expansion of electrical infrastructure and a decrease in mining activities would decrease the potential for adverse effects on biological resources from operation of new infrastructure (e.g., lines, transformers, transmission towers, high-voltage conductors, substations). Reduced mining would also decrease potentially significant impacts on hydrological resources.

Implementation of Draft EA Alternative B would increase the rate of deployment of low-carbon fuels, mechanical carbon dioxide removal and CCS, and manure management actions. Relative to the proposed project, increased feedstock cultivation associated with increased low-carbon fuel actions would increase impacts related to conversion of agricultural and forest land to other uses, potential for soil erosion, potential to generate polluted runoff associated with farm management practices (e.g., sediment, nutrients, pathogens, pesticides, metals, and salts), and noise associated with new facilities. In addition, increased implementation of mechanical carbon dioxide removal and CCS actions would increase the potential for new facilities to cause long-term aesthetic impacts, direct mortality of birds and bats through collision or capture by intake fans at direct air capture facilities, drawdown of groundwater supplies to support direct air capture facilities, and long-term effects on noise generation and quality of recreation experiences in generally undeveloped areas. Increased implementation of manure management actions would increase potential aesthetics, odor, and biological resources impacts.

**4. Alternative C: Land Management Activities representative of California's Current Commitments and Plans; AB 32 GHG Inventory Sector activities are unchanged from the 2022 Scoping Plan**

**a) Alternative C Description**

Draft EA Alternative C bases the modeled acreage on current State commitments, such as the One Million Acre Strategy, 30x30 Strategy, and other existing regional commitments and plans, which would result in comparatively less forest and wetlands management than identified in the Proposed Scenario. The list below provides a summary of this alternative:

- an increase of 1 million acres of forest, shrubland/chaparral, and grassland that receive fuel reduction treatments compared to business as usual (BAU); limited prescribed burning in chaparral;
- climate smart agricultural practices would increase 7.5 times compared to BAU;
- a doubling of statewide urban forest investment compared to BAU;
- compliance with the California Department of Forestry and Fire Protection defensible space requirements described in Public Resources Code Section 4291 on all parcels up to ownership boundaries;
- restoration of 18,000 acres total of Sacramento–San Joaquin Delta wetlands in line with existing regional plans by 2045; and
- a 75-percent reduction in land conversion of sparsely vegetated lands compared to BAU.

Draft EA Alternative C was developed to assess the impact of existing State commitments and plans on future carbon stocks and sequestration rates. Not all land types had existing State commitments. For these, CARB scaled acreages to complement the range of acreages among all the alternatives while maintaining an aggressive rate of implementation. All practices are increased compared with BAU. This will help provide insight into the range of outcomes that can be expected for natural and working lands and help set a realistically ambitious target.

**b) Alternative C Discussion**

**i. Objectives**

Draft EA Alternative C meets many of the basic project objectives and includes increased levels of action on croplands, urban forests, and deserts. However, implementing Alternative C would not result in the maximum technologically feasible and cost-effective reductions in GHG emissions, because forest, shrubland, grassland, and wetland management are not implemented at sufficiently high levels to restore ecosystem resilience and substantially reduce wildfire emissions (Objective 11). Overall, Alternative C would not provide balance between economic benefits and cost with consideration of the effects to land use types and may not be feasible to



implement (Objective 15). This alternative would update the State's Scoping Plan (Objective 21).

**ii. Environmental Impacts**

Implementing Draft EA Alternative C would decrease forest, shrubland, and grassland management actions and wetland restoration actions while increasing agricultural actions, afforestation, and urban forestry expansion. Decreasing forest, shrubland, and grassland management actions would reduce potentially significant impacts related to fuel management, including degradation of views from a scenic vista or the visual character and quality of public views; odors from diesel exhaust emissions and odorous smoke; direct or indirect adverse effects on special-status plant species, special-status wildlife species, riparian habitat or other sensitive natural communities, State or federally protected wetlands, and nursery sites; increased risk of erosion, loss of topsoil, and landslides; alteration to drainages; operational noise; recreation resources; and energy demands. Decreased wetland restoration actions may decrease in-water work, vegetation removal, and ground disturbance, all of which may result in direct or indirect short-term impacts on special-status wildlife, special-status plants, or sensitive habitats. However, beneficial impacts on biological resources, including special-status wildlife and special-status plants that occur in wetland habitats, as well as sensitive habitats, would not be gained (e.g., State and federally protected wetlands, riparian habitat, sensitive natural communities). Increasing agricultural actions, afforestation actions, and expansion of urban forestry actions would increase short-term impacts on biological resources as discussed for wetland restoration.

## 8.0 REFERENCES

- 86 Federal Register 68962. Available:  
<https://www.federalregister.gov/documents/2021/12/06/2021-25440/protection-of-stratospheric-ozone-listing-of-hfo-1234yf-under-the-significant-new-alternatives#citation-48-p68968>.
- Bailey, H., K. L. Brookes, and P. M. Thompson. 2014. Assessing Environmental Impacts of Offshore Wind Farms: Lessons Learned and Recommendations for the Future. *Aquatic Biosystems* 10: 1–13.
- Battery University. 2022 (February 22). BU-304a: Safety Concerns with Li-Ion. Available: <https://batteryuniversity.com/article/bu-304a-safety-concerns-with-li-ion#:~:text=BU-304a%3A%20Safety%20Concerns%20with%20Li-ion%20Safety%20of%20lithium-based,when%20steam%20engines%20exploded%20and%20people%20got%20hurt>. Last updated February 22, 2022.
- Behringer, D., Heydel, F., & Gschrey, B. (2021). *Persistent degradation products of halogenated refrigerants and blowing agents in the environment. Type, environmental concentrations, and fate with particular regard to new halogenated substitutes with low global warming potential. Final report* (No. UBA-FB--000452/ENG). Umweltbundesamt (UBA).
- Biden, J. R., Jr. 2021. Executive Order 14017 of February 24, 2021: America's Supply Chains. *Federal Register* 86(38):11849–11854. Available:  
<https://www.govinfo.gov/content/pkg/FR-2021-03-01/pdf/2021-04280.pdf>.
- Bilio, Mike, Solomon Brown, Michael Fairweather, and Haroun Mahgerefteh. 2009. CO<sub>2</sub> Pipelines Material and Safety Considerations. Hazards XXI, Symposium Series No. 155. Available: <https://www.icheme.org/media/9558/xxi-paper-061.pdf>. Accessed: August 17, 2022.
- Boarman, W. I., and W. B. Kristan. 2006 (June 12). *Trends in Common Raven Populations in the Mojave and Sonoran Deserts: 1968–2004*. Prepared for U.S. Fish and Wildlife Service. Ventura, CA. Available:  
[https://public.csusm.edu/wkristan/RavenBBSv4\\_1.pdf](https://public.csusm.edu/wkristan/RavenBBSv4_1.pdf).
- Bureau of Ocean Energy Management. 2013. *Evaluation of Lighting Schemes for Offshore Wind Facilities and Impacts to Local Environments*. Report Prepared by Bureau of Ocean Energy Management, Office of Renewable Energy Programs, Herndon, VA.
- BOEM. See Bureau of Ocean Energy Management.

BOF. See California Board of Forestry and Fire Protection.

Busse, M. D., K. R. Hubbert, and E. E. Y. Moghaddas. 2014. *Fuel Reduction Practices and Their Effects on Soil Quality*. General Technical Report PSW-GTR-241. U.S. Forest Service, Pacific Southwest Research Station. Albany, CA.

Cahill, T. M., C. M. Thomas, S. E. Schwarzbach, and J. N. Seiber. 2001. Accumulation of Trifluoroacetate in Seasonal Wetlands in California. *Environmental Science and Technology* 35(5):820–825.

California Board of Forestry and Fire Protection. 2019. California Vegetation Treatment Program Final Program Environmental Impact Report. State Clearinghouse Number 2019012052. Available: <https://bof.fire.ca.gov/projects-and-programs/calvtp/calvtp-programmatic-eir/>. Accessed: April 21, 2022.

California Department of Resources Recycling and Recovery. 2011 (June). *Statewide Anaerobic Digester Facilities for the Treatment of Municipal Organic Solid Waste Final Program Environmental Impact Report*. Sacramento, CA. Prepared by ESA. Sacramento, CA. Available: [http://resources.cleanenergyroadmap.com/BIO\\_Z\\_PropFnlPEIR.pdf](http://resources.cleanenergyroadmap.com/BIO_Z_PropFnlPEIR.pdf).

California Energy Commission. 2022 (August.) *California Energy Commission, Commission Report: Offshore Wind Energy Development off the California Coast: Maximum Feasible Capacity and Megawatt Planning Goals for 2030 and 2045*. Available: <https://www.energy.ca.gov/filebrowser/download/4361>. California Energy Commission and California Department of Fish and Game. 2007 (October). *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*. Commission Final Report. CEC-700-2007-008-CMF.

California Invasive Plant Council. 2012. *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers*. Third edition. Berkeley, CA. Available: <https://www.cal-ipc.org/docs/bmps/dd9jwo1ml8vttq9527zjhek99qr/BMPLandManager.pdf>.

California State Lands Commission. 2021. *CIERCO CADEMO Offshore Wind Demonstration Project and IDEOL VAFB Pilot Project*. Available: <https://www.slc.ca.gov/renewable-energy/offshore-wind-applications/>.

Cal-IPC. See California Invasive Plant Council.

CalRecycle. See California Department of Resources Recycling and Recovery.

CEC and DFG. See California Energy Commission and California Department of Fish and Game.

Central Valley Region RWQCB. See Central Valley Region Regional Water Quality Control Board.

Central Valley Region Regional Water Quality Control Board. 2010 (June). *Dairy Manure Digester and Co-Digester Facilities Draft Program Environmental Impact Report*. Prepared by ESA.

CSLC. See California State Lands Commission.

de Groot, R. S., M. A. Wilson, and R. M. Boumans. 2002. A Typology for the Classification, Description and Valuation of Ecosystem Functions, Goods and Services. *Ecological Economics* 41:393–408.

EEAP, 2019. Environmental Effects and Interactions of Stratospheric Ozone Depletion, UV Radiation, and Climate Change. 2018 Assessment Report. Nairobi: Environmental Effects Assessment Panel, United Nations Environment Programme (UNEP) 390 pp. Available: <https://ozone.unep.org/science/assessment/eeap>.

Environmental Laboratory. 1987 (January). *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS.

EPA. See U.S. Environmental Protection Agency.

Erickson, W., G. Johnson, D. Young, D. Strickland, R. Good, M. Bourassa, K. Bay, and K. Sernka. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. WEST, Inc. Cheyenne, WY. Prepared for Bonneville Power Administration, Portland, OR. Available: <https://www.nrc.gov/docs/ML1409/ML14098A019.pdf>.

European Parliament. 2012 (February 28). *Workshop: Impact of Shale Gas and Shale Oil Extraction on the Environment and on Human Health* [proceedings]. Available: <https://www.europarl.europa.eu/document/activities/cont/201312/20131205ATT75545/20131205ATT75545EN.pdf>. Accessed March 17, 2022.

FAA. See Federal Aviation Administration.

Federal Aviation Administration. 2020 (April). Notice of Proposed Construction or Alternation. Form 7460-1. Available:

- [https://www.faa.gov/documentLibrary/media/Form/FAA\\_Form\\_7460-1\\_042023.pdf](https://www.faa.gov/documentLibrary/media/Form/FAA_Form_7460-1_042023.pdf). Accessed: April 2022.
- Flanagan, D. M. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Copper. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-copper.pdf>. Accessed March 16, 2022.
- Garthe, S., N. Markones, and A-M. Corman. 2016. Possible Impacts of Offshore Wind Farms on Seabirds: A Pilot Study in Northern Gannets in the Southern North Sea. *Journal of Ornithology*. 158: 345–349.
- Goodale, M. W., A. Milman, and C. R. Griffin. 2019. Assessing the Cumulative Adverse Effects of Offshore Wind Energy Development on Seabird Foraging Guilds along the East Coast of the United States. *Environmental Research Letters*. 14: 074018.
- Health and Safety Executive. 2004. *Fuel Cells: Understand the Hazards, Control the Risks*.
- ICF. See ICF International.
- ICF International. 2009. *Revised Final Draft Assessment of the Potential Impacts of HFO-1234yf and the Associated Production of TFA on Aquatic Communities and Local Air Quality*. Docket number EPA-HQ-OAR-2008-0664-0037. Cited in 76 *Federal Register* 17488.
- . 2010a. *Summary of HFO-1234yf Emissions Assumptions*. Cited in 76 *Federal Register* 17488.
- . 2010b. *Revised Assessment of the Potential Impacts of HFO-1234yf and the Associated Production of TFA on Aquatic Communities, Soil and Plants, and Local Air Quality*. Cited in 76 *Federal Register* 17488. Cited in 76 *Federal Register* 17488.
- . 2010c. *Sensitivity Analysis CMAQ Results on Projected Maximum TFA Rainwater Concentrations and Maximum 8-hr Ozone Concentrations*. Cited in 76 *Federal Register* 17488.
- . 2010e. *Summary of Updates to the Vintaging Model that Impacted HFO-1234yf Emissions Estimates*. Cited in 76 *Federal Register* 17488.
- Jacoby, M. 2019 (July 14). It's Time to Get Serious About Recycling Lithium-Ion Batteries. *Chemical & Engineering News*. Available:

- <https://cen.acs.org/materials/energy-storage/time-serious-recycling-lithium/97/i28>. Accessed January 14, 2022.
- Jaskula, B. W. 2020 (January). U.S. Geological Survey Mineral Commodity Summaries: Lithium. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-lithium.pdf>. Accessed August 11, 2021.
- . 2021 (January). U.S. Geological Survey Mineral Commodity Summaries: Lithium. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-lithium.pdf>.
- Konkel, L. 2016 (December). Salting the Earth: The Environmental Impact of Oil and Gas Wastewater Spills. *Environmental Health Perspectives* 124(12):A230–A235. Available: [https://www.researchgate.net/publication/311243994\\_Salting\\_the\\_Earth\\_The\\_Environmental\\_Impact\\_of\\_Oil\\_and\\_Gas\\_Wastewater\\_Spills](https://www.researchgate.net/publication/311243994_Salting_the_Earth_The_Environmental_Impact_of_Oil_and_Gas_Wastewater_Spills). Accessed March 17, 2022.
- Kraus, S. D., R. D. Kenney, and L. Thomas. 2019 (May). *A Framework for Studying the Effects of Offshore Wind Development on Marine Mammals and Turtles*. Report prepared for the Massachusetts Clean Energy Center, Boston, MA and the Bureau of Ocean Energy Management.
- Kumar, N., A. Khamzina, P. Knofel, J. Lamers, and B. Tischbein. 2021. Afforestation of Degraded Croplands as a Water-Saving Option in Irrigated Region of the Aral Sea Basin. *Water* 13(10):1433. Available: <https://www.mdpi.com/2073-4441/13/10/1433/htm>. Accessed April 2022.
- Kuprewicz, Richard. President, Accufacts, Inc. 2022. Accufacts' Perspectives on the State of Federal Carbon Dioxide Transmission Pipeline Safety Regulations as it Relates to Carbon Capture, Utilization, and Sequestration within the U.S. March 23. Prepared for Pipeline Safety Trust. Available: [https://pstrust.org/wp-content/uploads/2022/03/3-23-22-Final-Accufacts-CO<sub>2</sub>-Pipeline-Report2.pdf](https://pstrust.org/wp-content/uploads/2022/03/3-23-22-Final-Accufacts-CO2-Pipeline-Report2.pdf). Accessed August 17, 2022.
- Lapola, D. M, R. Schaldach, J. Alcamo, A. Bondeau, J. Koch, C. Koelking, and J. A. Priess. 2010 (February 23). Indirect Land-Use Changes Can Overcome Carbon Savings from Biofuels in Brazil. *PNAS* 107(8):3383–3393. Available: <http://www.pnas.org/content/107/8/3388.full.pdf+html>.
- Luecken, D. J., R. L. Waterland, S. Papasavva, K. N. Taddonio, W. T. Hutzell, J. P. Rugh, and S. O. Andersen. 2009. Ozone and TFA Impacts in North America from the Degradation of 2,3,3,3-Tetrafluoropropene (HFO-1234yf), a Potential Greenhouse Gas Replacement. *Environmental Science & Technology*,

- submitted for publication. Docket number EPA-HQ-OAR-2008-0664-0112.3. Cited in 76 *Federal Register* 17488.
- Mayberry, Alan K. Pipeline Safety: Potential for Damage to Pipeline Facilities Caused by Earth Movement and Other Geological Hazards. 87 FR 33576. Available: <https://www.federalregister.gov/documents/2022/06/02/2022-11791/pipeline-safety-potential-for-damage-to-pipeline-facilities-caused-by-earth-movement-and-other>. Accessed: August 2022.
- McRae, M. E. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Nickel. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nickel.pdf>. Accessed March 16, 2022.
- Newmark, R. L., S. J. Friedmann, and S. A. Carroll. 2010. Water Challenges for Geologic Carbon Capture and Sequestration. *Environmental Management* 45:651–661. Available: [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2854354/pdf/267\\_2010\\_Article\\_9434.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2854354/pdf/267_2010_Article_9434.pdf).
- Newsom, Gavin. 2022. Letter to the California Air Resources Board Chair Randolph. Available: <https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf>.
- Office of Environmental Health Hazard Assessment. 2007. Fuels and Your Health.
- Olson, D. W. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Graphite (Natural). U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-graphite.pdf>. Accessed March 16, 2022.
- Parfomak, Paul W. and Peter Folger. Congressional Research Service. 2008. Carbon Dioxide (CO<sub>2</sub>) Pipelines for Carbon Sequestration: Emerging Policy Issues. Updated January 17. Available: [https://www.everycrsreport.com/files/20080117\\_RL33971\\_e9b75f9639ed7835dcbc3c565c1b1e03b632b204.pdf](https://www.everycrsreport.com/files/20080117_RL33971_e9b75f9639ed7835dcbc3c565c1b1e03b632b204.pdf). Accessed August 17, 2022.
- Peschko, V., B. Mendel, S. Muller, N. Markones, M. Mercker, and S. Garthe. 2020. Effects of Offshore Windfarms on Seabird Abundance: Strong Effects in Spring and in the Breeding Season. *Marine Environmental Research* 162: 105157.
- PHMSA. See Pipeline and Hazardous Materials Safety Administration.
- Pipeline and Hazardous Materials Safety Administration. 2022 (May 26). PHMSA Announces New Safety Measures to Protect Americans From Carbon Dioxide Pipeline Failures After Satartia, MS Leak. Available:

- <https://www.phmsa.dot.gov/news/phmsa-announces-new-safety-measures-protect-americans-carbon-dioxide-pipeline-failures>. Accessed: August 2022.
- Robichaud, P. R., L. H. MacDonald, and R. B. Foltz. 2010 (January). Chapter 5, "Fuel Management and Erosion." In *Cumulative Watershed Effects of Fuel Management in the Western United States*. General Technical Report RMRS-GTR-231. U.S. Forest Service, Rocky Mountain Research Station. Fort Collins, CO.
- Russell, M. H., G. Hoogeweg, E. M. Webster, D. A. Ellis, R. L. Waterland, and R. A. Hoke. 2012. TFA from HFO-1234yf: Accumulation and Aquatic Risk in Terminal Bodies. *Environmental Toxicology and Chemistry* 31(9):1957–1965.
- Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation*. Second edition. California Native Plant Society and California Department of Fish and Game. Sacramento, CA.
- Schnebele, E. K. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Manganese. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-manganese.pdf>. Accessed March 16, 2022.
- Schulte, R. F. 2020 (January). U.S. Geological Survey Mineral Commodity Summaries: Platinum-Group Metals. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-platinum.pdf>. Accessed August 11, 2021.
- . 2021 (January). U.S. Geological Survey Mineral Commodity Summaries: Platinum-Group Metals. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-platinum.pdf>.
- . 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Chromium. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-chromium.pdf>. Accessed March 16, 2022.
- Shedd, K. B. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Cobalt. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-cobalt.pdf>. Accessed March 16, 2022.
- Society of Vertebrate Paleontology. 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. Available: <https://vertpaleo.org/wp->



- content/uploads/2021/01/SVP\_Impact\_Mitigation\_Guidelines.pdf. Accessed January 14, 2022.
- Thomsen, F., K. Ludemann, R. Kafemann, and W. Piper. 2006 (July). *Effects of Offshore Wind Farm Noise on Marine Mammals and Fish*. Report prepared for COWRIE, Ltd., Hamburg, Germany.
- Tolcin, A. C. 2022 (January). U.S. Geological Survey Mineral Commodity Summaries: Zinc. U.S. Geological Survey. Available: <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-zinc.pdf>. Accessed March 16, 2022.
- Trautman, N. M., K. S. Porter, and R. J. Wagenet. 2015. Modern Agriculture: Its Effects on the Environment. Natural Resources Cornell Cooperative Extension. Available: [https://issuu.com/johna.shanahan/docs/120101\\_modern\\_agriculture\\_-\\_its\\_eff](https://issuu.com/johna.shanahan/docs/120101_modern_agriculture_-_its_eff).
- Tribal Energy and Environmental Information. 2014. Oil and Gas Drilling/Development Impacts. Available: <http://teeic.indianaffairs.gov/er/oilgas/impact/drilldev/index.htm>.
- UNEP, 2015. Ecological Issues on the Feasibility of Managing HFCs: Focus on TFA. Inter-sessional Informal Meeting, 12-13 June 2015. Available: [https://ozone.unep.org/sites/default/files/2020-06/informal%20brief\\_ecological%20effects\\_intersessional\\_June%202015\\_final%20%281%29.docx](https://ozone.unep.org/sites/default/files/2020-06/informal%20brief_ecological%20effects_intersessional_June%202015_final%20%281%29.docx).
- USDA. See U.S. Department of Agriculture.
- U.S. Department of Agriculture. 2021. Saving Money, Time and Soil: The Economics of No-Till Farming. Available: <https://www.usda.gov/media/blog/2017/11/30/saving-money-time-and-soil-economics-no-till-farming>. Accessed: April 2022.
- U.S. Energy Information Administration. 2022 (March 16). Hydropower Explained. Available: <https://www.eia.gov/energyexplained/hydropower/where-hydropower-is-generated.php>. Accessed: August 2022.
- U.S. Department of Energy. 2014. Enhanced Oil Recovery. Available: <http://energy.gov/fe/science-innovation/oil-gas-research/enhanced-oil-recovery>.
- U.S. Department of Transportation, PHMSA, Office of Pipeline Safety. 2022. Failure Investigation Report - Denbury Gulf Coast Pipelines, LLC – Pipeline Rupture/ Natural Force Damage. Available: <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022->

[05/Failure%20Investigation%20Report%20-%20Denbury%20Gulf%20Coast%20Pipeline.pdf](#).

U.S. DOT. See U.S. Department of Transportation.

U.S. Fish and Wildlife Service. 2017 (May). *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (*Desmocerus californicus dimorphus*). Sacramento, CA. Available: <https://ipac.ecosphere.fws.gov/guideline/assessment/population/436/office/11420.pdf>.

USFWS. See U.S. Fish and Wildlife Service.

van Wagtendonk, J. W., N. G. Sugihara, S. L. Stephens, A. E. Thode, K. E. Shaffer, and J. A. Fites-Kaufman. 2018. *Fire in California's Ecosystems*. Second edition. University of California Press.

Working Group for *Phytophthoras* in Native Habitats. 2020 (August). *Guidelines to Minimize Phytophthora Pathogens in Restoration Nurseries*. Revised. Available: [https://www.suddenoakdeath.org/wp-content/uploads/2020/08/Restoration.Nsy\\_.Guidelines.final\\_.092216\\_rv\\_8.20.20.pdf](https://www.suddenoakdeath.org/wp-content/uploads/2020/08/Restoration.Nsy_.Guidelines.final_.092216_rv_8.20.20.pdf).

Zeng, X., J. Li, and L. Liu. 2015. Solving Spent Lithium-Ion Battery Problems in China: Opportunities and Challenges. *Renewable and Sustainable Energy Reviews* 52:11759–1767. Available: <https://www.sciencedirect.com/science/article/abs/pii/S136403211500859X>. Accessed January 14, 2022.