APPENDIX D

DRAFT ENVIRONMENTAL IMPACT ANALYSIS

FOR THE PROPOSED

California Carbon Capture, Removal, Utilization, and Storage Program Regulations and Associated Regulatory Amendments

California Air Resources Board

1001 I Street

Sacramento, California 95814

Date of Release: October 27, 2026

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LIST OF ABBREVIATIONS

AB	Assembly Bill
AD	anaerobic digestion
APE	area of potential effect
BiCRS	biomass carbon removal and storage
BECCS	bioenergy with carbon capture
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CARB or Board	California Air Resources Board
CCR	California Code of Regulations
CCS	carbon capture and storage
CCUS	carbon capture, utilization, and storage
CCUS Program	California Carbon Capture, Removal, Utilization, and Storage Program
CDR	carbon dioxide removal
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CISN	California Integrated Seismic Network
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
DAC	direct air capture
d_{BA}	A-weighted decibel
Draft EIA	draft environmental impact analysis
EA	environmental analysis
EIR	environmental impact report
EMFAC	Emission Factor model
EOR	enhanced oil and gas recovery
ERRP	emergency remedial response plan
FEP	Features, Events, Processes
FTA	Federal Transit Administration
GCS	geologic carbon storage (sequestration)
GHG	greenhouse gas
in/sec	inch per second

LCFS	Low Carbon Fuels Standard
L_{eq}	dBA equivalent level measurements
L_{max}	dBA maximum sound level
Mc	magnitude of completeness
MRR	Regulation for the Mandatory Reporting of Greenhouse Gas Emissions
$MTCO_2e$/year	metric tons of carbon dioxide equivalent per year
MW	megawatts
NOP	Notice of Preparation
NO_X	oxides of nitrogen
NPDES	National Pollution Discharge Elimination System
PISC	post-injection site care
PM_{10}	respirable particulate matter
$PM_{2.5}$	fine particulate matter
PPV	peak particle velocity
PRC	Public Resources Code
ROG	reactive organic gases
SB	Senate Bill
SMARA	Surface Mining and Reclamation Act
TAC	toxic air contaminant
TCR	tribal cultural resource
U.S. EPA	U.S. Environmental Protection Agency
UIC	underground injection control
USDW	underground sources of drinking water
VdB	vibration decibels
VMT	vehicle miles traveled
VOC	volatile organic compound

1.0 INTRODUCTION AND BACKGROUND

A. Introduction

The California Air Resources Board (CARB) is the lead agency for the California Carbon Capture, Removal, Utilization, and Storage Regulations and Associated Regulatory Amendments (Proposed Project) and has prepared this Draft Environmental Impact Analysis (Draft EIA) pursuant to its regulatory program certified by the Secretary of the Natural Resources Agency (Title 14 CCR Section 15251(d); Title 17 CCR Sections 60000-60008). In accordance with Public Resources Code section 21080.5 of CEQA, public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to preparing environmental impact reports, negative declarations, and initial studies (Title 14 CCR Section 15250). CARB has prepared this Draft EIA to assess the potential for significant adverse and beneficial environmental impacts associated with the Proposed Project, as required by CARB's certified regulatory program (Title 17 CCR Section 60005(b)). The resource areas from the CEQA Guidelines Environmental Checklist were used as a framework for assessing the potential for significant impacts (Title 17 CCR Section 60005(b)).

This Draft EIA is a program environmental document prepared for the Proposed Project. This Draft EIA is included as Appendix D to the Initial Statement of Reasons for the Proposed Project (Staff Report) and will be presented to the CARB Board for consideration. The Project Description section of this Draft EIA presents a summary of the Proposed Project, as defined under the California Environmental Quality Act (CEQA). A detailed description of the Proposed Project is included in the Staff Report, released October 27, 2026, which is hereby incorporated by reference.

This Draft EIA is intended to identify and disclose the Proposed Project's potential significant impacts on the environment and identify potential feasible mitigation measures and alternatives to lessen or avoid those significant environmental impacts. The Proposed Project is intended to create environmental benefits by supporting technologies that can capture carbon dioxide (CO_2) emissions from industrial sources or remove it directly from the atmosphere to help California meet its long-term climate targets, including reducing greenhouse gas (GHG) emissions 85% below 1990 levels and achieving carbon neutrality by 2045. However, in some cases, as described in Chapter 4 of this Draft EIA, potentially significant effects on environmental resources may occur due to implementation of compliance responses (i.e., actions taken in response to measures contained in the Proposed Project that would have a physical impact). It is possible that many of these potentially significant impacts may be feasibly avoided or mitigated to a less-than-significant level, as described in each resource area, due to project-specific environmental review processes associated with compliance responses and compliance with local and State laws and regulations. However, because there are no feasible mitigation measures that can be implemented by CARB,

the Draft EIA takes the conservative approach in its post-mitigation significance conclusions (i.e., assuming potential feasible, project-level measures beyond CARB's regulatory authority which could be identified during the project-specific environmental review process may not be required or implemented) and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable.

B. Scope of Analysis and Assumptions

The degree of specificity required in a CEQA document corresponds to the degree of specificity inherent in the underlying activity it evaluates. An EIA for broad programs cannot be as detailed as it can be for specific projects (See Title 14 California Code of Regulations (CCR) Section 15146). For example, the assessment of a construction project would be naturally more detailed than one concerning the adoption of a local general plan because construction-related effects can be predicted with more accuracy (See Title 14 CCR Section 15146(a)). Because this analysis addresses a broad regulatory program, a general level of detail is appropriate. However, this Draft EIA makes a rigorous effort to evaluate significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses that could result from implementation of the Proposed Project and contains as much information about those impacts as is currently available, without speculation.

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

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

1. The analysis addresses the potentially significant adverse environmental impacts resulting from implementation of the Proposed Project compared to existing conditions.
2. The analysis of environmental impacts and determinations of significance are based on reasonably foreseeable compliance responses taken in response to implementation of the Proposed Project.
3. The analysis addresses environmental impacts within California and outside the State to the extent they are reasonably foreseeable and do not require speculation.
4. The level of detail of impact analysis is necessarily and appropriately general because the environmental analysis was conducted at a programmatic level for the Proposed Project. Furthermore, attempting to predict decisions

regarding the specific location and design of infrastructure, the sourcing and production of materials, and other activities undertaken in response to the implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations on those decisions. As a result, there is inherent uncertainty regarding the specific mitigation measures that would ultimately be identified and implemented. Consequently, this Draft EIA takes the conservative approach in its post-mitigation significance conclusions and, for CEQA compliance purposes, discloses potentially significant and unavoidable impacts, where appropriate. This approach recognizes that, even with the implementation of all feasible avoidance, minimization, and mitigation measures identified by the applicable lead agency, some impacts may remain significant and unavoidable. Given the programmatic level of analysis for the Proposed Project, the specific environmental effects and corresponding mitigation measures cannot be fully determined at this time. As specific actions are proposed, they may undergo project-level environmental review and compliance processes, as applicable, to evaluate site-specific conditions, identify potentially significant impacts, and determine appropriate avoidance, minimization, and mitigation measures consistent with applicable regulatory requirements.

5. This Draft EIA does not analyze site-specific impacts because the location of future installations, facilities, or other infrastructure changes is speculative. However, the Draft EIA does examine regional (e.g., local air district and/or air basin) and local issues, where appropriate, and to the extent that impacts are reasonably foreseeable. As a result, the impact conclusions in the resource-oriented sections of Chapter 4, “Impact Analysis and Mitigation Measures,” cover broad types of impacts, considering the potential effects of the full range of reasonably foreseeable actions undertaken in response to the Proposed Project.

C. Background

Existing law establishes State GHG reduction and carbon neutrality targets and requires CARB to identify technologies to achieve those targets. The passage of Assembly Bill (AB) 1279 (Muratsuchi, Chapter 337, Statutes of 2022) established state policy to achieve carbon neutrality as soon as possible, but no later than 2045, and maintain net negative GHG emissions thereafter, and to ensure that by 2045 statewide anthropogenic GHG emissions are reduced at least 85 percent below 1990 levels. Under AB 1279, CARB is directed to ensure that its Scoping Plan (*2022 Scoping Plan to Achieve Carbon Neutrality* or 2022 Scoping Plan) identifies and recommends measures to achieve carbon neutrality, including carbon dioxide removal (CDR) and carbon capture, utilization, and storage (CCUS).

Senate Bill (SB) 905 was passed in 2022 to support California's broader climate goals to achieve carbon neutrality and reduce GHG emissions described above. SB 905 provides direction to several state agencies to coordinate or develop regulations and policies to regulate carbon removal activities in the state. Specifically, SB 905 requires CARB to establish the California Carbon Capture, Removal, Utilization, and Storage Program (CCUS Program) to support safe, effective, and viable deployment of carbon management technologies. The legislation also directs CARB to establish a consistent statewide regulatory framework that complements existing state, local, and federal regulations to ensure that carbon management technologies are deployed safely and in alignment with California's climate and public health objectives.

As described in the 2022 Scoping Plan, CDR, CCUS, and other carbon management technologies are essential tools for achieving carbon neutrality. CDR refers to deliberate human activities that remove CO_2 from the atmosphere, including direct air capture (DAC), nature-based strategies, and bioenergy with carbon capture and storage (BECCS). Separately, the term "carbon capture" refers to the process of capturing CO_2 present in flue and/or exhaust gases via chemical and/or physical separation methods. After CO_2 is captured from flue gas or removed from the atmosphere, it can then be converted into a product/material in the case of carbon capture utilization or transported and injected for long-term storage in geologic carbon storage (GCS). Carbon capture is suitable for commercial-scale use at large GHG-emitting facilities such as combustion at power plants, chemical production facilities, and oil and gas refineries. There are also a number of emerging carbon management technologies still undergoing research, development, and pilot-scale testing.

As described in the preceding paragraph, there are many different potential types of carbon management projects. Throughout this document, the term "carbon management" is used as a collective or "umbrella" term for all projects, facilities, and technologies that involve capture or storage of CO_2, including carbon capture projects, CDR projects, and GCS sites. The term "carbon capture projects" is used to refer to projects or facilities that capture CO_2 from an emissions stream. The term "CDR projects" is used to refer to projects or facilities that capture CO_2 from the atmosphere. The term "GCS sites" is used to refer to projects that inject CO_2 into underground geologic reservoirs for long-term storage.

D. Organization of the Draft EIA

The Draft EIA is organized into the following chapters to assist the reader in obtaining information about the Proposed Project and its specific environmental issues.

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

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

E. Public Review Process for the Environmental Impact Analysis

On May 7, 2026, CARB issued a Notice of Preparation (NOP) for the Proposed Project, announcing its intent to prepare an EIA. At a public workshop held on June 23, 2026, CARB staff discussed proposed regulatory concepts for the Proposed Project. Staff also described plans to prepare an EIA for the Proposed Project and invited public feedback on the scope of environmental analysis.

In accordance with CARB's certified regulatory program, and consistent with CARB's commitment to public review and input, this Draft EIA is subject to a public review process. The Draft EIA is posted on October 27, 2026 for a public review period that begins on October 27, 2026, and ends on December 14, 2026. This period complies with requirements for a minimum of 45 days of public review. (Title 17 CCR, Section 60004.2(b)(2).)

At the conclusion of the review period, staff will compile public comments and responses on the Draft EIA made during the noticed 45-day comment period (or during any further comment period if CARB determines recirculation of the Draft EIA is necessary), and prepare a final hearing package, which includes the Final EIA and response to environmental comments, for the Proposed Project for the Board's consideration at a public hearing (Title 17 CCR, Section 60007(a)). This hearing is currently planned for January 28, 2027. If the final Proposed Project is adopted by the

Board at that time, a Notice of Decision would be filed with the Secretary of the Natural Resources Agency.

2.0 PROJECT DESCRIPTION

A. Introduction

The “project” for purposes of this Draft EIA includes the California Carbon Capture, Removal, Utilization, and Storage Regulation and Associated Regulatory Amendments (the Proposed Project). While the Proposed Project constitutes the “project” for CEQA purposes (Title 14 CCR, Section 15378), this document also uses the term “project” to refer to reasonably foreseeable compliance response activities that could result, such as the installation of seismic monitoring wells and monitoring stations, that might be undertaken in response to the Proposed Project.

This chapter provides a list of project objectives and describes the Proposed Project, including reasonably foreseeable compliance responses resulting from it. This information provides a basis for the subsequent discussion of the reasonably foreseeable environmental effects of the Proposed Project in Chapter 4, as required by CEQA. This EIA also satisfies CEQA’s “rapid review” requirements under Public Resources Code section 21159. (See Public Resources Code [PRC] Section 21159(b).)

SB 905 directs CARB to incorporate multiple core elements into the CCUS Program to ensure effective oversight of carbon management projects. The statute requires CARB to ensure that all CCUS projects and CDR projects include strategies to minimize certain potential environmental impacts, including co-pollutant emissions from CCUS and CDR technologies and construction and transportation related air and water pollution impacts. SB 905 also directs CARB to establish robust, long term financial responsibility, seismic monitoring, and leak detection requirements for GCS sites that remain active through injection operations and extend for at least 100 years after CO_2 injection ceases. In addition, the legislation requires operators of GCS sites to demonstrate effective prohibitions on drilling or other subsurface extractive activities that could penetrate the storage reservoir, thereby protecting containment integrity throughout injection activities and long-term monitoring. These statutory obligations are intended to ensure long-term containment integrity and make certain that operators remain accountable for preventing seismic activity and CO_2 leakage from posing any risk to public health, safety, or the environment throughout the full life of a GCS site. SB 905 also authorizes CARB to support additional methods of utilization or storage of captured CO_2, including carbon capture for use in products and in methods as identified by the Board.

While SB 905 has directions for several state agencies, this Proposed Project is focused on a narrower scope identified for CARB. Other components of SB 905 are being implemented by other State agencies or are outside the scope of this Proposed

Rulemaking.[1] Ultimately, SB 905 functions to establish additional state requirements that build upon the existing and numerous local, state, and federal requirements to help ensure a robust regulatory framework that can advance climate action while safeguarding Californians. For a more detailed description, please refer to the staff report.

B. Project Objectives

Following direction from AB 1279, the *2022 Scoping Plan to Achieve Carbon Neutrality* (2022 Scoping Plan) identifies carbon management technologies as essential tools to reduce GHG emissions and achieve carbon neutrality. SB 905 directs CARB to develop a new CCUS Program that establishes regulatory requirements for carbon management projects operating in the State. The primary objectives of the Proposed Project are to:

1. Support overall deployment of CCUS and CDR projects to meet statutory climate targets as demonstrated in the 2022 Scoping Plan;
2. Implement the CCUS Program to reflect Health & Safety Code section 39741.1, subdivision (c);
3. Adopt enforceable regulations requiring project operators to maintain financial responsibility for geologic carbon storage (GCS) projects as required by Health & Safety Code section 39741.5;
4. Develop enforceable implementation, monitoring, reporting, and emergency response requirements to support the efficacy, safety, and viability of CCUS and CDR projects in alignment with authority provided by SB 905;
5. Complement existing federal, state, and local permitting requirements associated with these project types and avoid creating duplicative regulatory requirements;
6. Increase public transparency of CCUS and CDR project information; and
7. Support alignment and integration with existing CARB programs.

C. Proposed Project Location

The mandatory monitoring requirements of the Proposed Project would apply to GCS sites throughout California. The mandatory disclosure requirements would apply to both carbon capture and GCS sites throughout California. The Proposed Project could also influence existing program participation of GCS site operations located outside the State.

[1] See SB 905: Multi-agency roles. California Air Resources Board. https://ww2.arb.ca.gov/sites/default/files/2026-08/SB_905_Multi_Agency_Roles_0.pdf

1. Site Selection Criteria for GCS sites

The location of GCS sites depends on site-specific geology, which varies across the United States. This section describes key criteria that inform where future GCS sites could be located, which is unknown at this time.

GCS sites are typically located in depleted oil and gas fields, saline reservoirs, or mafic or ultramafic formations. CO_2 can also be injected in active oil and gas production sites in a process called enhanced oil recovery (CO_2-EOR); however, SB 905 prohibits CO_2 from being used for EOR in California, no known CO_2-EOR projects currently operate in the State, and EOR is not a permissible project type under the proposed carbon management project certification process. Therefore, EOR is not a foreseeable compliance response analyzed in this EIA. In California, CO_2 injection wells are permitted under the U.S. Environmental Protection Agency's (EPA) underground injection control program for Class VI wells.

For California facilities, developers select GCS sites based on their ability to receive injected CO_2 and meet safety, storage stability, and minimal environmental impacts criteria set by U.S. EPA for Class VI wells. To support these criteria, GCS sites are chosen for the formations they contain (including the sequestration zone and one or more confining layers), the absence of transmissive faults and fractures within the confining layer, and the sequestration zone located below the lowermost underground sources of drinking water (USDW).[2,3,4]

The sequestration zone is composed of highly porous rock, primarily sandstone and carbonate, which facilitates the injection and movement of CO_2. This formation should also exhibit high permeability to allow efficient CO_2 flow during injection. High permeability helps dissipate pressure at the bottom of the injection well, reducing the potential for excessive pressure buildup that could lead to damaging the mechanical integrity of the well and reservoir containment.[5]

The sequestration zone must be at depths of 800 meters (~2,600 feet) or greater to ensure the temperature and pressure remain above CO_2 's critical point. At these depths, CO_2 behaves as a supercritical fluid, which increases storage density and reduces the likelihood of leakage.[6] Deeper storage also enhances mineral trapping,

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2 Bashir, A., Ali, M., Patil, S., Aljawad, M. S., Mahmoud, M., Al-Shehri, D., Hoteit, H., & Kamal, M. S. (2024). Comprehensive review of CO_2 geological storage: Exploring principles, mechanisms, and prospects. *Earth-Science Reviews*, 249, 104672. https://doi.org/10.1016/j.earscirev.2023.104672.

3 40 CFR Section 146.83(a)(2).

4 40 CFR Section 146.5(f).

5 Bashir et al., Comprehensive Review of CO_2 Geological Storage, 104672.

6 Chiquet, P., Daridon, J.-L., Broseta, D., & Thibeau, S. (2007). CO_2 /water interfacial tensions under pressure and temperature conditions of CO_2 geological storage. *Energy Conversion and Management*, 48(3), 736–744. https://doi.org/10.1016/j.enconman.2006.09.011.

which are reactions between CO_2 and surrounding minerals that form stable solid carbonates, providing long-term secure storage.[7]

A confining layer, or caprock, is a formation that lies above the sequestration zone that is characterized by significantly lower porosity and permeability than the sequestration zone. Common confining layer materials include shale and evaporite formations such as salt beds and anhydrite. The confining layer acts as a physical barrier to prevent injected CO_2 and formation fluids from migrating out of the reservoir. Ideally, multiple confining layers (and potentially secondary reservoirs) should exist between the primary storage reservoir and any USDWs, ensuring safe and predictable long-term GCS.[8]

It is also essential that the primary confining layer is free of transmissive faults or fractures, which could provide pathways for CO_2 or formation fluids to escape the sequestration zone and contaminate USDW or reach the surface. Additionally, any water within a formation must have a salinity of at least 10,000 milligrams per liter total dissolved solids.[9] Water below this threshold may be classified as a USDW under federal law and is therefore protected from injection activities.

2. Site Selection Criteria for Seismic Monitoring Wells

Seismic monitoring wells are installed at GCS sites to identify induced and natural seismic events and assess potential impacts on the CO_2 storage reservoir. Their placement depends on site-specific geology and nearby geologic features.

GCS operators conduct a comprehensive site characterization to identify areas where seismicity should be monitored. This includes characterizing the geomechanical properties of the storage reservoir, its seals, and the overburden rock above the reservoir. GCS operators also identify nearby fault systems, including their size, orientation, and potential activity.[10] Additionally, GCS operators review regional seismic history to understand the presence and depth of seismic sources (i.e., hypocenters). GCS operators will use site characterization data to determine where seismic monitoring wells should be installed, focusing on the most suitable seismic sensor depth and avoiding geologic features that could interfere with proper well development.[11]

GCS operators also conduct seismic risk assessments to inform site selection for seismic monitoring wells. As part of this process, GCS operators identify risk scenarios that could lead to infrastructure damage or contamination of drinking water and position monitoring wells accordingly. For example, GCS operators evaluate whether planned injection activities are close to faults that could be influenced by pressure changes.

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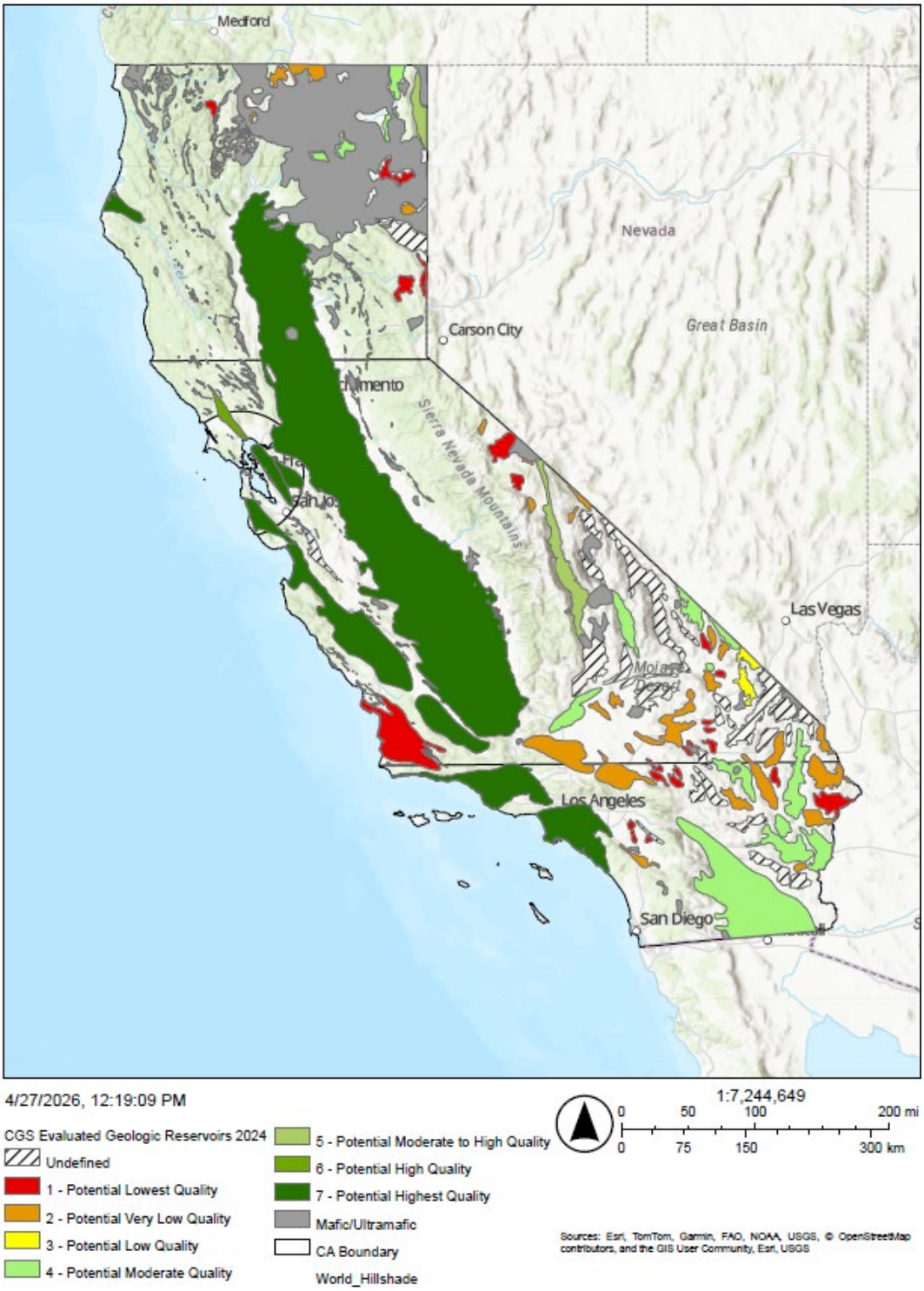
7 Bashir et al., Comprehensive Review of CO_2 Geological Storage, 104672.
8 Bashir et al., Comprehensive Review of CO_2 Geological Storage, 104672.
9 40 CFR Section 146.3
10 International Energy Agency. CO_2 Storage Resources and Their Development: An IEA CCUS Handbook. OECD Publishing, 7 Dec. 2022, doi:10.1787/9f492c0b-en. Accessed 27 Apr. 2026.
11 Hayman, Mark B. "Downhole seismometers." Encycl. Earthq. Eng. (2014).

Monitoring these areas with seismic monitoring wells helps determine if injection pressures are affecting fault stability and allows operators to adjust injection rates proactively.

3. Potential Future Locations for Carbon Capture Projects and GCS sites in California

To illustrate where future carbon capture project and GCS sites could be developed in California, Figure 1 summarizes the State's current understanding of subsurface storage potential. Figure 1 was developed by the California Geological Survey (CGS) as part of a broader effort to map the general distribution and characteristics of potential storage opportunities throughout the State. It shows geologic reservoirs across the State that have been evaluated for carbon storage potential, with regions categorized from lowest to highest suitability based on subsurface characteristics. Areas are color-coded into seven quality classes, ranging from "Potential Low Quality" in red to "Potential Highest Quality" in dark green. The map also highlights the distributions of mafic and ultramafic rocks, shown in gray, which represent areas with potential for CO_2 storage through in situ carbon mineralization projects. More information is available on the CGS Geologic Carbon Sequestration Data Portal.[12]

[12] California Department of Conservation. (n.d.). *The California Geological Survey Geologic Carbon Sequestration Data Portal*. Retrieved June 17, 2026, from https://maps.conservation.ca.gov/cgs/gcs/.



Source: California Department of Conservation. (n.d.). The California Geological Survey Geologic Carbon Sequestration Data Portal. Retrieved June 17, 2026, from https://maps.conservation.ca.gov/cgs/gcs/.

Figure 1: California Geologic Carbon Sequestration Potential

4. Currently Planned Carbon Management Projects in California and Future Growth

Carbon management deployment depends on multiple external factors, many of which are uncertain and lie outside the control or influence of the Proposed Project. In particular, carbon capture/CDR projects and GCS sites require significant capital investment[13] and implementation of the Proposed Project alone may not provide sufficient incentive for new business development of these project types. Recent federal funding reductions and subsequent reinstatements have also created uncertainty around continued federal support for the emerging carbon management sector.[14] Additionally, carbon capture and DAC projects must begin construction by 2033 to qualify for the federal 45Q tax credit, a key incentive mechanism for the developing carbon management industry in the United States.[15] In California, permitting approval and CEQA review can take several years to complete.[16] As a result, carbon capture, CDR projects and GCS sites that are not already in planning stages (i.e., in the absence of the Proposed Project) may be unable to complete necessary permitting in time to meet the 2033 construction deadline. For these reasons, the Proposed Project alone is unlikely to directly lead to development of new carbon capture projects, CDR projects, and GCS sites in California, though increased carbon capture adoption could drive some increased demand for GCS capacity.

As described above, the factors influencing the growth and deployment of new carbon management projects are highly uncertain and beyond the influence of this Proposed Project. For this reason, staff evaluated a High and Low project-deployment scenario to estimate projected project growth in California and to reflect the range of possible carbon management development in the state. The evaluation is based on carbon management projects announced in California, as documented in CARB's CCUS and CDR Project List and the U.S. EPA's Class VI permit database, and research on project growth rates in California.[17,18] Staff evaluated project growth rates based on academic sources that consider technology maturation, expected cost trends, existing market

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[13] Pett-Ridge, J., Kuebbing, S., Mayer, A. C., Hovorka, S., Pilorgé, H., Baker, S. E., ... & Zhang, Y. (2023). Roads to removal: options for carbon dioxide removal in the United States (No. LLNL--TR-852901). Lawrence Livermore National Laboratory (LLNL), Livermore, CA (United States). *https://roads2removal.org/*

[14] Volcovici, V. (2026, April 17). US Energy Department restores funding to carbon removal projects. *Reuters*. *https://www.reuters.com/legal/litigation/us-energy-department-restores-funding-carbon-removal-projects-2026-04-17/*

[15] 26 U.S.C. § 45Q

[16] Peridas, G. (2021, February). Permitting Carbon Capture & Storage Projects in California (LLNL-TR-817425). Lawrence Livermore National Laboratory. *https://gs.llnl.gov/sites/gs/files/CA_CCS_PermittingReport.pdf*

[17] California Air Resources Board. *CCUS and CDR Project List*. 13 Oct. 2025. Dataset. California Air Resources Board. Accessed 17 June 2026. https://ww2.arb.ca.gov/ccus-and-cdr-project-list.

[18] U.S. Environmental Protection Agency. *UIC Class VI Permit Tracker*. 2026. Well permitting database. Accessed 17 June 2026. https://www.epa.gov/uic/current-class-vi-projects-under-review-epa.

conditions, and the pace at which commercially available, early-stage, and research-scale technologies could realistically scale under current policies.[19,20]

For both the High and Low project-deployment scenarios, staff established a baseline growth rate for carbon capture and CDR projects beginning in 2028. For carbon capture and CDR projects, staff assumed a 4.8 percent growth rate, consistent with estimates from academic literature on carbon capture adoption in California.[21,22] For GCS site growth, staff assumed 2 projects would come online each year, reflecting historic submission rates for EPA Class VI well permit applications. Staff also assumed that carbon management deployment would continue up to the 45Q tax credit sunset in 2033.

Under the High Scenario, staff assumed that all GCS sites, carbon capture projects, and CDR projects currently planned in California would be operational by 2029, resulting in 33 carbon capture and CDR projects and 13 GCS sites coming online by 2029. Based on this assumption and the baseline growth described above, staff projected that 41 carbon capture/CDR projects and 21 GCS sites would come online by 2033 under the High scenario.

Under the Low Scenario, staff assumed that projects would face longer development timelines (e.g. from possible labor shortages, permitting challenges, obstacles to securing pipeline rights-of-way, supply chain issues, and broader economic uncertainty leading up to 2029). This assumption results in 3 carbon capture or CDR projects and 5 GCS sites becoming operational by 2029. After 2029, the same baseline growth described above was applied to years when carbon capture or CDR projects and GCS sites would become operational. Based on these assumptions, staff projected that 3 carbon capture or CDR projects and 13 GCS sites would become operational by 2033 under the Low Scenario.

Staff averaged the High and Low Scenario projections of carbon capture or CDR projects and GCS sites from 2029 through 2033. Based on this average, staff projects

[19] Derived from the DEcarbonization CALifornia (DECAL) model prescribed carbon capture growth rate across industry within the State. See: Neutel, J., Berson, A., Saltzer, S., Brandt, A., Weyant, J., Orr, F. M., & Benson, S. M. (2025). What will it take to get to net-zero emissions in California? *Energy Policy*, *208*, 114848. https://doi.org/10.1016/j.enpol.2025.114848

[20] The number of MRR compliant industrial facilities is used to derive the weighted average growth rate from the DECAL model. See: California Air Resources Board. (2025, November 4). *2024 GHG facility and entity emissions* [Data set]. https://ww2.arb.ca.gov/sites/default/files/classic/cc/reporting/ghg-rep/reported-data/2024-ghg-emissions-2025-11-04.xlsx (Accessed June 4, 2026)

[21] Derived from the DEcarbonization CALifornia (DECAL) model prescribed carbon capture growth rate across industry within the State. See: Neutel, J., Berson, A., Saltzer, S., Brandt, A., Weyant, J., Orr, F. M., & Benson, S. M. (2025). What will it take to get to net-zero emissions in California? *Energy Policy*, *208*, 114848. https://doi.org/10.1016/j.enpol.2025.114848

[22] The number of MRR compliant industrial facilities is used to derive the weighted average growth rate from the DECAL model. See: California Air Resources Board. (2025, November 4). *2024 GHG facility and entity emissions* [Data set]. https://ww2.arb.ca.gov/sites/default/files/classic/cc/reporting/ghg-rep/reported-data/2024-ghg-emissions-2025-11-04.xlsx (Accessed June 4, 2026)

that approximately 26 projects would be subject to the regulation in 2029, increasing to 38 projects by 2033. Staff reasonably assume there is no significant projected carbon management deployment between 2027 and 2028 due to project permitting and construction lead times.[23]

The Proposed Project provides regulatory certainty that enables project developers to plan long-term investments with greater confidence, reducing ambiguity around compliance expectations and timelines. At the same time, the Proposed Project also places additional costs on developers voluntarily pursuing carbon management projects. The Proposed Project also includes amendments to the Cap-and-Invest regulation that clarify how carbon capture-related reductions in GHG emissions from large stationary sources as well as carbon dioxide removal projects would be accounted for under Cap-and-Invest. It is reasonably foreseeable that these elements of the Proposed Project could indirectly encourage additional carbon capture and carbon dioxide removal development, particularly among large emitters that may voluntarily choose to retrofit their facilities with carbon capture systems.

While the extent of future development directly attributable to the Proposed Project remains highly uncertain, CARB has taken a conservative approach by disclosing potential impacts from increased development of carbon management projects and associated infrastructure that enables the transport and injection of CO_2 into a geologic formation for storage and could indirectly result from the Proposed Project. Chapter 4 evaluates potential impacts from these compliance responses at a necessarily general level because specific actions and project locations are not yet known.

5. Current and Future Carbon Management Outside California

It is possible that the Proposed Project could encourage additional development of GCS sites and other carbon management projects outside California. Future carbon capture development in California could introduce new demand for GCS in other states and indirectly encourage development of new GCS sites outside California when combined with existing federal incentives. It should be noted, however, that the Proposed Project does not directly facilitate or incentivize the development of new carbon capture projects or specific carbon dioxide removal projects. Future development of GCS sites and other carbon management projects—both inside and outside California—depends on multiple external factors that are uncertain and lie outside the control or influence of the Proposed Project. As described in C.4, GCS and CDR sites can require significant capital investment,[24] and their deployment depends on multiple external factors. For these reasons, CARB does not anticipate a large increase–if any–in GCS sites and CDR outside California compared to the existing conditions as a result of the Proposed

[23] Peridas, G. (2021, February). Permitting Carbon Capture & Storage Projects in California (LLNL-TR-817425). Lawrence Livermore National Laboratory. https://gs.llnl.gov/sites/gs/files/CA_CCS_PermittingReport.pdf

[24] Hovorka, et al. Project-Based Geologic CO_2 Storage and Cost Assessment. Dec. 2023.

Project. However, CARB has taken a conservative approach by disclosing potential impacts from infrastructure that enables the capture, transport, and injection of CO_2 into a geologic formation for storage outside California as well as disclosing potential impacts from CDR projects, which could be an indirect impact of the Proposed Project. The exact location of any such out-of-state projects is not reasonably foreseeable, but site selection would follow the same general criteria described above in sections C.1 and C.2. Accordingly, Chapter 4 evaluates these potential out-of-state impacts at a necessarily general level because specific actions and project locations are not known currently.

D. Description of the Proposed Project

SB 905 directs CARB to develop the CCUS Program and establish requirements for carbon management projects operating in the State. Projects are additionally subject to existing federal, State, and local requirements. In the absence of the Proposed Project, carbon management projects would still be subject to federal, State, and local requirements. The Proposed Project would supplement these existing requirements by evaluating and ensuring the efficacy, safety, and viability of carbon management projects and technologies, as directed by SB 905.

The Proposed Rulemaking would apply statewide to all entities voluntarily deciding to implement carbon management technologies. Under the Proposed Project, the CCUS Program would regulate entities voluntarily pursuing the following carbon management activities:

1. Carbon capture projects
2. Direct air capture projects
3. GCS sites

For purposes of CEQA, the “project,” referred to in this EIA as the “Proposed Project” or “project,” consists of CARB’s proposed regulatory requirements for carbon capture projects, direct air capture projects, and GCS sites, as well as criteria and procedures for certification of carbon management projects based on applicable quantification assessment methodologies. The Proposed Project includes the following components, each of which is discussed more fully below:

- Public Disclosure. To support the safe, effective, and viable deployment of carbon management technologies, the Proposed Project includes several public disclosure requirements that would apply to operators of carbon capture projects, direct air capture projects, and GCS sites. Operators would need to maintain a public-facing webpage that provides key project information, including monitoring plans and periodic reports, permitting and regulatory information, existing air

monitoring and mitigation activities, and emergency and remedial response plans, as applicable. This webpage would be accessible from the CARB website as well.

- Geologic Storage Requirements. The Proposed Project includes several requirements specific to GCS sites to further ensure the long-term storage of CO_2 and increased public access to project information. GCS operators must:
    - Monitor surface and subsurface CO_2 leakage from the storage complex;
    - Monitor ambient concentrations of criteria air pollutants and toxic air contaminants;
    - Implement strategies that minimize air quality impacts;
    - Perform risk-based seismic monitoring to reduce seismic impacts and the probability of an undetected leak;
    - Address seismic and leakage risks in emergency remedial response plans;
    - Demonstrate long-term financial responsibility to support ongoing monitoring and mitigation costs even after injection is no longer happening;
    - Provide proof of binding agreement to ensure no drilling or extraction activities penetrate the storage reservoir; and
    - Engage with nearby communities to ensure transparent communication about project activities and impacts.
- Alignment with existing programs. The Proposed Project includes regulatory proposals and amendments to several of CARB's existing programs to support alignment and integration for carbon capture projects, CDR projects, and GCS sites with CARB's existing programs.
    - Proposed amendments to the Cap-and-Invest Program would clarify how carbon capture and sequestration (CCS) can be used as a method to reduce GHG emissions from covered entities, and support the capture and permanent storage of CO_2 as compliance offsets, subject to existing usage limits.
    - Proposed amendments to the Mandatory Greenhouse Gas Emissions Reporting Regulation would require monitoring, reporting, and verification provisions for all GCS sites operating in the state.
    - Proposed procedural amendments to the Low Carbon Fuel Standard (LCFS) would reflect updates to the Geologic Carbon Storage Protocol (GCS Protocol) described below.
    - Protocol updates. The Carbon Capture and Sequestration Protocol (CCS Protocol) under the LCFS would separate the accounting provisions and permanence provisions. The accounting provisions would be incorporated into the LCFS regulatory sections, while the permanence provisions would become a standalone protocol called the GCS Protocol. The GCS

Protocol will continue to operate as a voluntary permanence certification program for CCS and DAC developers for all projects inside California and those outside of California seeking voluntary recognition under CARB's existing regulations.

E. Description of Compliance Responses

Compliance responses are activities undertaken by regulated entities to comply with regulatory requirements. This Draft EIA presents a programmatic evaluation describing reasonably foreseeable environmental impacts resulting from compliance responses by regulated entities. The analysis considers reasonable, foreseeable potential compliance responses, but does not speculate as to unreasonable or unforeseeable iterations of compliance responses that could occur as a result of the Proposed Project.

The following compliance responses have been identified as reasonably foreseeable actions and provide the basis for a reasoned, good-faith assessment of potential, significant environmental impacts of the regulatory requirements under the Proposed Project. The compliance responses associated with each component of the Proposed Project are discussed below under separate headings.

The Proposed Project includes requirements related to data collection and reporting and provides guidance for voluntary actions the regulated community may choose to pursue. These portions of the Proposed Project would not result in any changes to the physical environment and, therefore, would not result in any potentially significant adverse impacts on any of the resource areas analyzed under CEQA. Nevertheless, compliance responses for these aspects of the Proposed Project are described below but are not analyzed further in this document.

For an overview of the key basic terminologies and types of carbon capture, sequestration, storage, and removal projects, please see section 1.0(C) above.

1. Carbon Capture and GCS development

There are a small number of carbon capture and GCS sites already underway in California, which follow existing federal, State, and local requirements. These existing requirements govern the permitting of carbon capture projects, CDR projects, and GCS sites, including requirements specific to GCS sites such as the U.S. EPA Class VI program. Table 1 provides an overview of reasonably foreseeable expected permits and the agencies that implement them. Pursuant to SB 905, the Proposed Project would supplement these existing requirements with additional monitoring, financial responsibility, and project disclosure requirements.

Table 1: Example of Agencies and Permits that may be Required for Development of New Carbon Management Projects

Responsible Agency	Permit Title	Jurisdiction
U.S. EPA/EPA Region IX	Class VI Underground Injection Control	Federal
U.S. Bureau of Land Management	Right-of-Way Grant or Land Use Authorization	Federal
U.S. Army Corps of Engineers	Dredge and Fill Permit Under Section 404 of CWA	Federal
U.S. Fish and Wildlife	Incidental Take Permits	Federal
State Water Resources Control Board	Waste Discharge Requirements Section 401 Water Quality Certification	State
Regional Water Quality Control Boards	Waste Discharge Requirements Permits	State
California Department of Fish & Wildlife	Lake and Streambed Alteration Agreement California Endangered species Act Incidental Take Permit	State
Department of Toxic Substances Control (DTSC)	Hazardous Waste Facility Permit	State
Local Air Districts	Authority to Construct Permit to Operate Title V Operating Permit	Local
City and County Planning Departments	Conditional Use Permit Zoning approval or Determination Building and Grading Permits Encroachment and Access Permits	Local

Several elements of the Proposed Project could contribute to new or expanded development of carbon capture projects and potentially increase new demand for geologic storage capacity. This section summarizes those provisions and the types of project development that are reasonably expected. Provisions relevant to carbon management-related development are described in further detail in sections E.1.a-c.

The Proposed Project includes amendments to the Cap-and-Invest regulation that clarify how CCS-related reductions in GHG emissions from large stationary sources would be accounted for under Cap-and-Invest. It is reasonably foreseeable that this element of the Proposed Project could indirectly encourage additional carbon capture project development, particularly among large emitters voluntarily choosing to retrofit their facilities with carbon capture systems. CARB expects that the Proposed Project would not cause the creation of GCS sites, because GCS sites already planned or constructed prior to the Proposed Project would be sufficient to accommodate any increased storage needs that might result from future carbon capture adoption, though additional supporting infrastructure may be needed to transport and inject captured CO_2.

As discussed in section C.4, the Proposed Project could indirectly lead to additional carbon capture project development. Quantifying the potential scale of future development directly attributable to the Proposed Project would be speculative. Nevertheless, CARB has taken a conservative approach by disclosing potential impacts from increased development of carbon capture projects and supporting infrastructure that could be needed to transport and inject captured CO_2 in chapters 4 and 5.

a) Update of the CCS Protocol and Renaming to GCS Protocol

Summary

Part of the Proposed Project includes removing and updating the permanence provisions of the existing LCFS Program's CCS Protocol and renaming to the Geologic Carbon Storage (GCS) Protocol.

The permanence provisions specify requirements for site selection, well construction and plugging, monitoring, and verification, to ensure that all GHG emissions reductions achieved are permanent.

The Proposed Project would remove LCFS-specific accounting requirements from the GCS Protocol into a separate quantification methodology document and would maintain the permanence requirements described above. The GCS Protocol would be correspondingly reorganized. The LCFS-specific accounting requirements would remain within the LCFS program, incorporated by reference as the Greenhouse Gas Quantification Methodology for Carbon Capture and Sequestration under the Low Carbon Fuel Standard (LCFS CCS QM), and would continue to be implemented by the LCFS program. The result of these changes would provide flexibility for the GCS Protocol to align with existing CARB programs, which is critical for standardizing requirements and providing regulatory certainty for project developers. The GCS Protocol would remain a voluntary option for GCS Operators both inside and outside California.

Limited substantive proposed amendments in the renamed GCS Protocol would add requirements for geophysical testing, including 3D seismic surveys conducted at least once every five years, to ensure that applicants collect the data necessary for robust site characterization, CO_2 plume modeling, and monitoring. These proposed amendments would also require GCS operators to use at least one acceptable method for monitoring free-phase CO_2 plume development and pressure development of the CO_2 plume, establish monitoring and reporting requirements for monitoring pressure and fluid composition above the storage complex, and require monitoring of the soil and vadose zone.

The Proposed Project includes replacing the following requirements in the GCS Protocol with requirements in the proposed CCUS Program Regulations: surface CO_2 monitoring; seismic monitoring requirements; and Emergency and Remedial Response.

Additional amendments to the GCS Protocol focus on streamlining, clarifying existing requirements and standardizing risk assessment methodologies. These changes are procedural changes for applicants seeking permanence certification and would not result in reasonably foreseeable environmental impacts.

Compliance Responses

The GCS Protocol would remain voluntary under the Proposed Project. The administrative reorganization would not alter how operators design, construct, monitor, or manage GCS sites.

Compliance responses associated with requiring 3D seismic surveys at least once every five years and requiring soil and vadose zone monitoring would require new equipment installation onsite in appropriate locations. The equipment required for 3D seismic surveys may be temporarily installed.

Compliance responses for CCS Protocol requirements that have been replaced with requirements in the proposed CCUS Program Regulations are previously described as follows: for surface CO_2 monitoring requirements, see section 2.E.3 of this Draft EIA, for seismic monitoring requirements, see section 2.E.2; for Emergency and Remedial Response requirements, see section 2.E.5; for Financial Responsibility requirements see section 2.E.7. With respect to projects that would have sought approval under the CCS Protocol, it is expected that potentially fewer downhole seismic sensors would be installed, as operators would be able to utilize existing California Integrated Seismic Network sensors, where available and capable of meeting seismic monitoring requirements.

This regulatory alignment serves to establish a consistent framework that enables voluntary participation in other CARB programs. Potential compliance responses specific to participation in the Cap-and-Invest Program are discussed separately in Section E.1.b, “Amendments to Cap-and-Invest.” Specific compliance responses specific to participation in the LCFS Program are discussed separately in Section E.10, “Amendments to LCFS.”

b) Amendments to Cap-and-Invest

Summary

California’s existing Cap-and-Invest Program (formerly Cap-and-Trade Program) was first adopted by CARB in October 2011 and took effect on January 1, 2012. The Cap-and-Invest Program establishes a declining limit on major sources of GHG emissions, and it creates a economic incentive for investment in cleaner, more efficient

technologies. The Cap-and-Invest Program covers approximately 80% of the State's GHG emissions and creates a steadily increasing carbon price signal to prompt action to reduce GHG emissions. All facilities covered by the Cap-and-Invest Program are still subject to applicable local air quality permit limits for criteria and toxic air pollutants. The Cap-and-Invest Program covers in-state electricity generators; electricity imported into California; large industrial sources of GHG emissions; transportation fuel suppliers; and suppliers of natural gas and propane combusted at commercial, residential, and small industrial facilities. Under the Cap-and-Invest Program, covered entities do not have individual or facility-specific GHG emissions reduction requirements. Rather, each entity covered by the Cap-and-Invest Program is required to surrender allowances in an amount equal to its total covered GHG emissions during each compliance period.

Carbon management technologies are expected to play an important role for the State to achieve its mandated GHG emissions reduction and carbon neutrality targets by 2045. Incorporating the GCS Protocol by reference and making related changes in the Cap-and-Invest Regulation would enable the Cap-and-Invest Program to recognize CCS as an approach for reducing covered GHG emissions from a covered facility.

The Cap-and-Invest Regulation assesses an aggregated compliance obligation for CO_2 captured at a covered facility, except for CO_2 that is verified to be sequestered or utilized through a Board-approved quantification methodology that ensures that the CO_2 emissions reductions are real, quantifiable, verifiable, enforceable, and permanent to at least a 100-year permanence standard. The Board-approved quantification methodology must be incorporated by reference into the Cap-and-Invest Regulation before it can be used to reduce a covered facility's compliance obligation.

Amendments to the Cap-and-Invest Regulation would incorporate by reference the GCS Protocol, thus enabling a covered facility to reduce its Cap-and-Invest compliance obligation by capturing CO_2 and then geologically storing it following the requirements of the GCS Protocol. Amendments to the Mandatory GHG Reporting Regulation (MRR), discussed in Chapter 2 section E.11, would support quantifying reduced covered emissions associated with captured and sequestered CO_2 using verified data.

Amendments to the Cap-and-Invest Regulation would also create a buffer account to ensure the environmental integrity of the Cap-and-Invest Program in the event that geologically sequestered CO_2 that had been recognized through a reduced compliance obligation leaks from its storage complex. Compliance instruments would be contributed to the buffer account when sequestered CO_2 is recognized as a reduced compliance obligation, and to preserve the environmental integrity of the program, compliance instruments would be retired from the buffer account when CO_2 leaks from the storage complex for reasons other than a GCS operator's negligence, gross negligence, willful intent, or failure to adhere to the requirements of the GCS Protocol.

Proposed amendments to the Cap-and-Invest Regulation would support a pathway for compliance offset credits to be issued to an operator of a carbon management project

that has been certified by the Executive Officer pursuant to section 95705 and meets all applicable requirements. Proposed amendments ensure that compliance offset credits issued to a project certified by the Executive Officer pursuant to section 95705 meet all of the requirements as issued to a project that follows a Board-adopted compliance offset protocol and would enable a covered entity to use such compliance offset credits for meeting a limited portion of its Cap-and-Invest compliance obligation.

Compliance Responses

Reasonably foreseeable compliance responses associated with the Proposed Project could include modification of existing or construction of new process units or facilities to capture CO_2 emissions, and construction of new infrastructure, such as pipelines, wells, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage. Carbon capture and GCS development may also result in increased transportation, such as rail and barge transit, to transport CO_2 from an industrial facility to a storage site. The transport distances and pipeline construction requirements for the captured CO_2 would vary depending on the locations of specific industrial sources of the captured CO_2 and specific GCS sites, which are not known. These responses are voluntary and not required by the Proposed Project.

c) Carbon Management Projects and Quantification Methodologies

Summary

The Proposed Project would establish the criteria and procedures for the Executive Officer to review and certify carbon management projects under CARB's CCUS Program. These criteria would include conformance with achieving real, permanent, quantifiable, verifiable, enforceable, and additional CO_2 removal outcomes. This aspect of the Proposed Project also includes applicability language that outlines the general types of projects that could be submitted under the proposed carbon management project certification process.

Compliance Responses

The compliance responses associated with establishing the criteria and procedures for carbon management projects is administrative in nature as they only define the conditions under which future projects may be evaluated. These administrative compliance responses would not foreseeably result in any changes to the physical environment and therefore not analyzed further in this EIA.

Additionally, the Proposed Project includes the following broad types of projects as eligible under the carbon management project certification process: DAC, bioenergy with carbon capture, nature-based strategies, biomass carbon removal and storage (BiCRS), CO_2 utilization, GCS, and marine CDR. A summary and associated compliance responses for each of these categories are included below.

i. Direct Air Capture

Summary
DAC refers to a suite of technologies under the umbrella of CDR that mechanically remove CO_2 directly from ambient air. The CO_2 is then stored permanently in GCS or used to make products.

Compliance Responses
Reasonably foreseeable compliance responses associated with DAC development include construction of new process units or facilities to remove CO_2 from ambient air; construction of new infrastructure, such as pipelines, to transport CO_2; increased transportation, such as truck, rail, and barge transit to transport CO_2 from the direct air capture facilities and industrial facilities or to GCS sites; and construction of onsite electricity generating facilities (e.g., renewable electricity generation or fuel burning infrastructure) or increased electricity demand to power the DAC facilities.

ii. Bioenergy with Carbon Capture

Summary
Bioenergy with carbon capture refers to a suite of technologies under the umbrella of CDR. Bioenergy refers to converting carbon from biomass and other organic waste streams into alternative fuels, which can be converted via combustion or non-combustion technologies into electricity or heat. A carbon capture system is used to capture CO_2 emissions, which can then be stored permanently in GCS or utilized in products.

Compliance Responses
Reasonably foreseeable compliance responses associated with bioenergy with carbon capture 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 alternative 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, reduced wildfire risk through removal of forest litter and agricultural residues; land use changes and changes to fuel-associated shipment patterns; replacement of fossil fuels with alternative fuels; construction of new process units or facilities to capture CO_2 emissions; and construction of new infrastructure, such as pipelines, to transport CO_2.

iii. Nature-based strategies

Summary
Nature-based strategies refer to a suite of technologies and practices under the umbrella of CDR that are used to manage, restore, or modify ecosystems to increase uptake of CO_2 or prevent biogenic emissions into the atmosphere. Examples of nature-based strategies include, but are not limited to, improved land management, reforestation, and avoided land use conversion.

Compliance Responses
Reasonably foreseeable compliance responses associated with nature-based strategies include planting new trees or other vegetation; harvesting dead, diseased, or dying vegetation; increased removal of forest litter and agricultural residues; delivery of seeds or seedlings to the project area; hauling soil and other planting materials; using small construction equipment; transporting habitat management workers to and from project sites; application of herbicides; periodic monitoring surveys with 2-4 person crews; and protection of natural carbon sinks from land use conversion; and long-term land protection including but not limited to conservation easements.

iv. Biomass Carbon Removal and Storage

Summary
BiCRS is a hybrid CDR approach that uses both natural processes and engineered systems. Plants use photosynthesis to remove CO_2 from the atmosphere and convert it into biomass. Then, engineered technologies are used to store biomass underground or convert it into products. Examples of BiCRS include geologic storage of bio oil and burial of biochar or raw biomass.

Compliance Responses
Reasonably foreseeable compliance responses associated with BiCRS include collecting yard waste and agricultural residues; reduced wildfire risk through removal of forest products including small-diameter trees, fire snags, slash, and understory; application or herbicides or vegetation management activities related to site maintenance; transportation of biomass feedstocks to processing facilities using trucks, rail, or barge; construction of new or modified biomass processing facilities; use of grinders, chippers, conveyors, and screening machinery to process woody biomass; construction and operation of biomass drying equipment; operation of new or modified facilities and/or pyrolysis units to produce biochar and bio oil; transportation of biochar and bio oil using trucks, rail, barge, or pipelines; construction of new pipelines to transport bio oil to storage sites; use of heavy duty construction equipment to drill bio oil injection wells; injection site preparation activities, including grading, minor excavation, and installation of well pads and piping; use of heavy duty equipment, such as backhoes and excavators, to dig trenches, pits, or incorporation zones for biochar burial; soil disturbance from excavation, substrate mixing, and backfilling to stabilize

biochar burial locations; and transportation of employees to and from biomass management project sites.

v. Carbon Dioxide Utilization

Summary
CO_2 utilization is the process of converting captured CO_2 into a product, such as fuels, chemicals, building materials, and beverages. CO_2 utilization is used to isolate captured CO_2 from the atmosphere or reduce the carbon intensity of industrial processes.

Compliance Responses
Reasonably foreseeable compliance responses associated with CO_2 utilization include construction of pipelines to transport CO_2 to industrial facilities; integration of CO_2 streams into industrial processes including fuel, chemical, and construction material production; and construction of new or modified facilities to utilize CO_2.

vi. Geologic Carbon Storage

Summary

GCS is the process of injecting CO_2 deep underground into porous rock formations for permanent containment. Commonly, industrial uses are the primary sources of CO_2 for GCS.

Compliance Responses
Reasonably foreseeable compliance responses associated with GCS development include construction of new infrastructure, such as pipelines, wells, and other surface facilities in various locations to enable the transport and injection of CO_2. The transport distances and pipeline construction requirements for the captured CO_2 could vary considerably, depending on the locations of specific industrial sources.

vii. Marine Carbon Dioxide Removal

Summary
Marine CDR technologies aim to enhance marine or fluvial systems to increase uptake and storage of CO_2 through chemical, biological, or physical processes. Examples of Marine CDR include stimulating phytoplankton and macroalgal growth, using engineered systems to extract CO_2 from seawater, enhancing ocean alkalinity, and moving CO_2-rich surface waters to deeper layers through artificial downwelling.

Compliance Responses
Marine CDR technologies are in the early-stage research and development phase and are not currently being employed as carbon management projects. However, it is possible that, through continued investment and research, marine CDR projects may become part of the broader strategy to combat global climate change within and outside

of California in the future. If this technology becomes more commercially mature, compliance responses associated with marine CDR projects may include nutrient fertilization of seawater; stimulating artificial upwelling using heavy equipment; cultivating seaweed on the seafloor; harvesting biomass from the seafloor; transporting biomass and alkaline substances (e.g. lime) by barge, truck, or rail to processing facilities or to project sites; adding alkaline substances to seawater to increase pH and enhance CO_2 uptake; constructing facilities to extract CO_2 directly from seawater; transportation of CO_2-rich, alkaline water for treatment and disposal; and transportation of workers using marine vessels and small boats. These compliance responses could have impacts on the environment, although at this early developmental phase the extent of impact is speculative.

At the time of writing this Draft EIA, the number, capacity, location, and specific technologies to be employed in relation to marine CDR is speculative. Significant uncertainties persist regarding economic feasibility and environmental impacts, both of which require further study because marine CDR technology is in the research and development phase. Therefore, while marine CDR could occur as one of the broad types of projects eligible under the carbon management project certification process, this Draft EIA is at the program level and thus does not attempt to assess the environmental impacts of specific future marine CDR projects because such an analysis of project-level impacts and potential mitigation measures would at this time be too speculative to be meaningful under CEQA. For these reasons, potential compliance responses associated with marine CDR are not analyzed further in the Draft EIA.

2. Seismic Monitoring

Summary

The Proposed Project includes requirements for GCS operators to monitor seismicity at GCS sites to identify natural and induced seismicity. Seismic monitoring helps ensure injected CO_2 remains in geologic storage, protects public safety, and prevents impacts on the environment. GCS operators would be required to develop and implement a seismic monitoring plan that covers the site characterization,[25] operational, and post-injection phases. For each phase, GCS operators would be required to publish a monitoring plan on a publicly accessible webpage, conduct monitoring activities, and complete reporting in accordance with regulatory requirements. For all project phases, GCS operators would be required to implement a seismic monitoring system capable of detecting microseismicity (defined as a magnitude of completeness [Mc] between -0.5 to 0.5) within the storage complex and extending to the surface projection of the pressure front. The

[25] Note that the Proposed Project's regulatory language uses the term "baseline seismic monitoring." In this document, "site characterization" or "site characterization seismic monitoring" is used instead to avoid confusion with the specific meaning and legal significance of "baseline" under CEQA.

seismic monitoring system must also be connected to California Integrated Seismic Network (CISN).

The site characterization phase occurs prior to CO_2 injection where monitoring of natural background seismicity must be carried out for at least one year. Seismic monitoring requirements during this phase would include planning and monitoring activities to characterize the existing seismic risk profile of the GCS site. The site characterization seismic monitoring plan would include system design specifications for the seismic monitoring system, a seismic risk assessment, and identification of monitoring thresholds based on that assessment to support subsequent seismic risk management as described in Chapter 4 of this Draft EIA. The risk assessment must also be submitted to the California Geological Survey (CGS) for independent evaluation. GCS operators would be required to document background seismic conditions, validate their seismic array, and reflect coordination with existing seismic networks in California (CISN). All data collected during this phase would be retained by the operator for up to 100 years after the last date of CO_2 injection and provided to CARB or CGS upon request, with annual and five-year summaries due by March 31 during the active and post-injection phases, respectively.

The operational phase covers the period during which CO_2 injection is actively occurring at the GCS site. During injection, GCS operators would be required to analyze seismic and operational data simultaneously to detect any relationships between injection activities and seismicity. The GCS operators must maintain an earthquake catalogue during the operational phase and keep monitoring for any micro seismic events alignment that may indicate a previously unidentified fault or fracture. The operator would then prepare an annual summary of this analysis that would be disclosed on the public webpage and provided to CARB or CGS upon request. In addition, GCS operators would update seismic monitoring plan if project conditions or certain operations are modified.

Once CO_2 injection ceases, the post-injection phase begins. During this phase, GCS operators would be required to conduct seismic monitoring until they can demonstrate that seismic monitoring data indicates (1) no seismic events exceeding the green-light TLS threshold in the five years preceding the retirement request and (2) no fracture or fault activation within the storage complex that may present loss of containment. Once these criteria have been met, GCS operators may request revisions to seismic monitoring. If CARB approves a full or partial retirement of the seismic monitoring array, the GCS operator would be required to continue preparing seismic monitoring reports every five years based on available data until at least 100 years since last injection. However, if a seismic event occurs, the GCS operator would be required to reinstate the seismic monitoring plan and may again demonstrate, no sooner than five years, that site conditions no longer pose an endangerment to public health and safety.

U.S. EPA already requires Class VI well operators to submit plume tracking plans that are approved at the discretion of U.S. EPA’s Underground Injection Control (UIC)

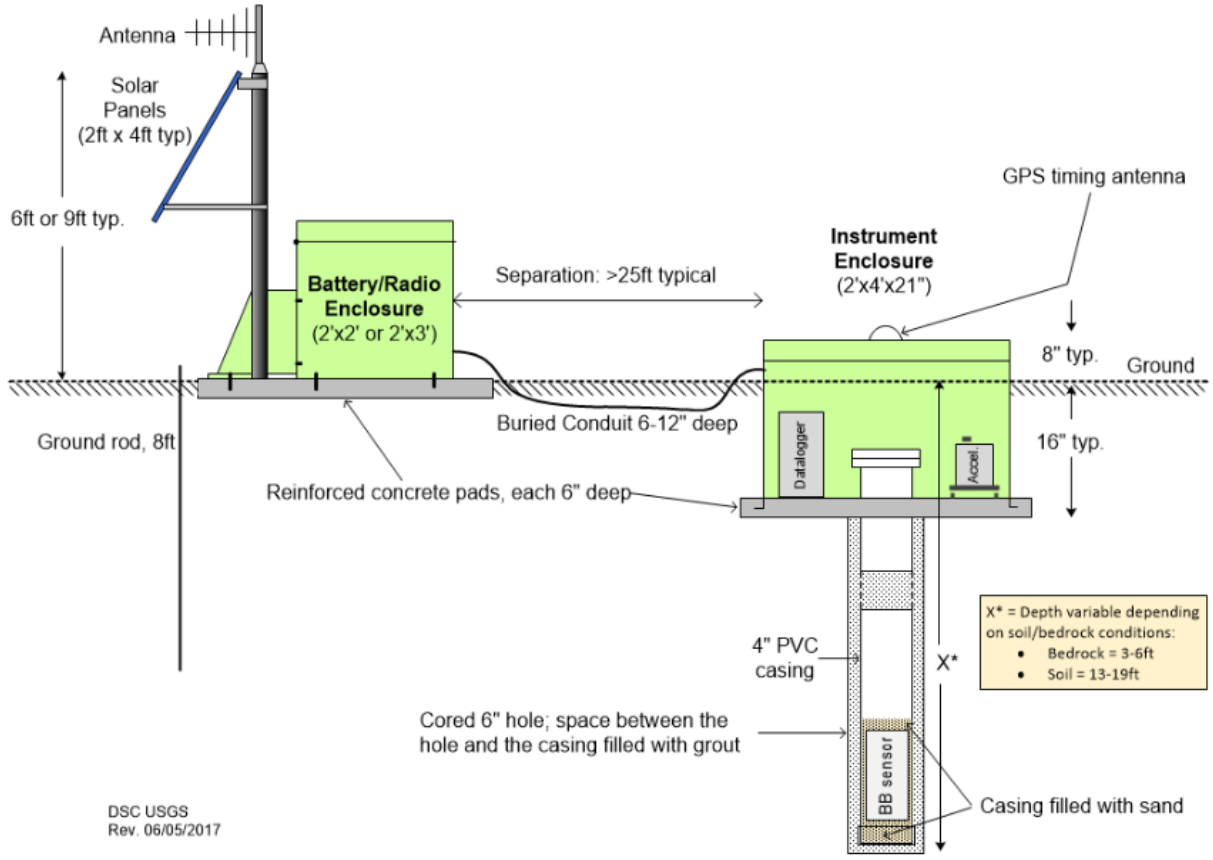
Director. These plume tracking plans may already include seismic monitoring activities depending on site specific geology. In the event that operators are already conducting site characterization monitoring, operational monitoring, post-injection monitoring, or reporting activities to meet federal or local requirements, the Proposed Project would recognize those monitoring activities as fulfilling the requirements described above to avoid being unnecessarily duplicative.

Compliance Responses

To comply with the seismic monitoring requirements of the Proposed Project, GCS operators may need to install new seismic monitoring wells and associated supporting infrastructure or retrofit existing nearby wells. Installation or retrofitting would occur in the site characterization phase. A typical seismic monitoring network includes seismic sensors (e.g., seismometers or accelerometers) installed in deep boreholes and near-surface post-holes. Deep borehole monitoring involves installing a down-borehole sensor, which may involve drilling a new borehole or retrofitting an existing well. For new seismic monitoring stations, a borehole is drilled several hundred feet deep into the subsurface and well casing is installed. The depth of a borehole may extend deeper depending on geology and other site-specific conditions. Near-surface monitoring involves excavating a post-hole between 1.5 and 60 feet deep to improve the signal-to-noise ratio by reducing the effects of temperature fluctuations, tilt noise, and surface noise. The optimal depth for near-surface monitoring depends on the local geology. Near-surface monitoring configurations also require installation of a concrete instrument enclosure (approximately 2 feet by 4 feet by 21 inches) to house the monitoring equipment.

GCS operators would also install supporting infrastructure for both monitoring configurations described above. This includes installing a small weatherproof enclosure on a concrete pad to house the data hub and power supply, which may include a solar panel and a 6- to 9-foot antenna. In addition, underground cabling would be installed between the sensor equipment and the data hub and power supply. Cabling is typically buried 6 to 12 inches deep, and the data hub and power supply are generally located within 25 feet of the monitoring well or post-hole.

Figure 2 depicts an example of a typical seismic station installed in a post-hole. A borehole installation is nearly identical, except that the seismic sensor is placed at a greater depth.



Note: A typical seismic station includes a seismic sensor (i.e., a seismometer or an accelerometer), data logger, power system, and telemetry equipment to transmit data. The sand installation method portrayed here involves lowering the seismometer into a borehole or shallow hole and backfilling with dry sand until the instrument is fully covered. The sand settles around the seismometer, filling the gap between the instrument and the hole.

Source: Data adapted from the US Geological Survey 2017.

Figure 2: Typical Seismic Station Borehole and Post-Hole Installation

For retrofitted seismic monitoring wells, a seismometer is lowered into an existing steel-cased borehole and secured rigidly in the hole to ensure good seismic coupling to the existing borehole casing and the ground. Securing the seismometer can be accomplished with a mechanical borehole lock or through a sand installation.

The mechanical borehole lock installation method involves a borehole lock, which is a device attached to the seismometer that clamps the seismometer to the side of the borehole. A borehole lock or holelock assembly includes an actuator or a passive spring that can push the entire seismometer against the side of the borehole with a substantial force.[26]

[26] Hayman, M. B. (2014). Downhole seismometers. *Encyclopedia of Earthquake Engineering*. Springer. https://doi.org/10.1007/978-3-642-36197-5_195-1.

The sand installation method involves lowering the seismometer to the bottom of a borehole or shallow hole and pouring enough dry sand to cover the seismometer. The sand flows around the entire seismometer filling the entire gap between the seismometer and the hole. A sand installation can be less costly than a holelock installation. It eliminates convection air currents around the seismometer and effectively couples the seismometer to the casing. However, sand is a loose material that is prone to spontaneous movements that can be detected by a seismometer during a settling period. Another issue with sand installations is that after a period of time, moisture and dissolved minerals in the sand can solidify the sand making it challenging to remove the seismometer.[27]

3. Air Pollutant and Surface CO_2 monitoring and Associated Requirements

a) Air Pollutant Monitoring

Summary

The Proposed Project would require GCS operators to develop and implement an air monitoring plan during construction, operation, and for up to fifty years after the last date of injection. This plan would describe the equipment used to continuously monitor and record criteria and relevant toxic air pollutant concentrations at the GCS site. GCS operators would describe siting and equipment specification as well as maintenance activities for the air monitoring system. GCS operators would be required to publish the air monitoring plan to the project webpage. Under this subsection of the Proposed Project, GCS operators would be required to retain all air monitoring data and air monitoring plans for the life of the project and provide that information to CARB upon request.

Compliance Responses

To meet the air pollutant monitoring requirements of the Proposed Project, GCS operators may need to install at least one air pollutant monitoring station at the GCS site. More than one monitoring station could be required if sensitive receptors are identified downwind of the project that could be impacted by project activities. A typical air pollutant monitoring station would include an ozone (O_3) monitor, a carbon monoxide (CO) monitor, an nitrogen oxide (NO_x) monitor, a sulfur oxide (SO_x) monitor, a particulate matter ($PM_{2.5}$) monitor, a power source (e.g., solar panels), a data logger, and a system capable of transmitting data to a centralized repository. The exact equipment configuration would depend on the pollutants being measured and the instrumentation selected by the operator. Generally, an air pollutant monitoring station can be housed in a temperature-controlled enclosure or installed on a standalone pole or bracket.

[27] Ibid.

b) Surface CO_2 Monitoring

Summary

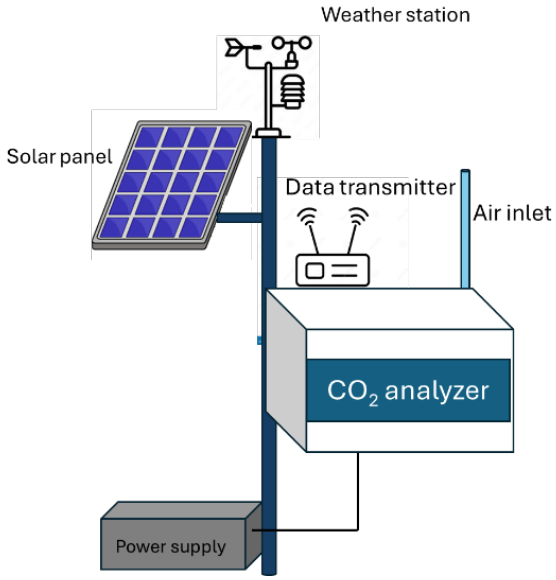
Under the Proposed Project, GCS operators would be required to develop and implement a CO_2 monitoring plan during both the operational and post-injection phases. This plan would describe the methodologies for monitoring surface CO_2 concentrations or fluxes at locations where leakage risk may be elevated (e.g., injection wellheads, abandoned wells, known faults). GCS operators would need to prepare and publish this plan on a public-facing webpage, implement it, and evaluate and document CO_2 monitoring data annually to verify no leakage has occurred. The operator would then prepare an annual summary of this analysis. GCS operators would be required to retain all monitoring data and reports for the life of the project and provide that information to CARB upon request.

In some instances, GCS operators may already be required to conduct CO_2 monitoring activities by permitting and regulatory agencies. If operators are already conducting CO_2 monitoring to fulfill any such requirements, the Proposed Project would recognize those activities as fulfilling the monitoring requirements described above to avoid being unnecessarily duplicative.

Compliance Responses

To meet the CO_2 monitoring requirements of the Proposed Project, GCS operators may need to install monitoring stations at legacy wells, fault zones, and injection well pads throughout the GCS site if they are not already required to do so by existing permitting requirements or regulations. A typical CO_2 monitoring station would include a CO_2 analyzer, a power source (e.g., solar panels), a data logger, and a system capable of transmitting data to a centralized repository. A CO_2 monitoring station can be mounted to existing equipment or installed on a standalone pole or bracket.

GCS operators may also need to install meteorological monitoring equipment since meteorological data are essential for supporting CO_2 measurement quality assurance and interpreting local dispersion patterns. Meteorological monitoring stations typically include instruments that measure temperature, relative humidity, rainfall, and wind speed and direction. Meteorological monitoring stations are mounted on a pole, with sensors installed at heights between 4 and 40 feet above ground, depending on the parameter being measured. Meteorological monitoring equipment may be installed as a standalone monitoring station or incorporated into CO_2 monitoring stations, as shown in Figure 3.



Note: A typical CO_2 monitoring station would include an air inlet, a CO_2 analyzer, a power source (e.g., solar panels), a data logger, and a system capable of transmitting data to a centralized repository. Monitoring stations may also include meteorological monitoring equipment. A CO_2 monitoring station can be mounted to existing equipment or installed on a standalone pole or bracket.
Source: Provided by CARB in 2026.

Figure 3: Typical CO_2 Monitoring Station

c) Air Mitigation Plan

Summary

This element of the Proposed Project would require GCS operators to implement minimization strategies for air quality impacts if air pollution emissions are identified. Operators would prepare an Air Mitigation Plan that describes minimization strategies and approaches for evaluating minimization strategy effectiveness. This plan would be submitted to CARB, posted to the project webpage, and retained for the duration of project operations.

Compliance Responses

This element of the Proposed Project could lead to development and implementation of additional minimization strategies at GCS sites. Minimization strategies for a GCS site might include opportunities such as, for example, amendments to construction or operation implementation plans, review of the technology used for implementation, and monitoring. However, minimization strategies for air impacts will depend upon the scope, siting, specific design details, implementation plan, and compliance obligations of GCS projects, which are project-specific and variable depending on economic, environmental, social, and technological factors. Minimization strategies may also align with or be developed in relation to other requirements as required by local lead agencies responsible for permitting a GCS project. Because the scope and nature of implementation of any such minimization actions are currently uncertain and multivariable when reviewing at this programmatic level, potential environmental

impacts related to minimization strategies at GCS sites are too speculative to analyze at this time.

4. General Project Disclosure

Summary

The Proposed Project would require carbon capture projects, DAC projects, and GCS sites to create a public-facing project webpage that provides general project information and access to project reports, monitoring plans, permits, and compliance status information. For GCS sites, operators would be required to post on the public-facing webpage the surface CO_2 monitoring plan, air pollutant monitoring plan, air mitigation plan, plume and pressure tracking plan, operational seismic monitoring plans, and the Emergency Remedial Response Plan (ERRP) to the project webpage. Operators would also be required to post information related to any existing air or water monitoring or mitigation activities implemented at the project or site.

Compliance Responses

Because the general project disclosure requirements involve only data sharing and reporting activities, the proposed requirements would not result in any physical construction, equipment installation, or other on-site compliance actions. As a result, the only compliance responses associated with this provision relate to the preparation, posting, and updating of reports and notifications.

Additionally, although DAC projects would be required to disclose under the Proposed Project, it is not reasonably foreseeable that this requirement would increase DAC adoption; therefore, potential impacts related to increased DAC deployment are not evaluated in this analysis.

5. Emergency Remedial Response Plan

Summary

The Proposed Project would require Class VI-permitted GCS operators to ensure their ERRP contains action thresholds and remedial activities to address seismic events and any unintended movement of injected CO_2 or formation fluids until 100 years after the last date of CO_2 injection (i.e., post-injection phase).

Under U.S. EPA's Class VI regulation, permitted GCS sites must establish an ERRP that include notification procedures and remedial actions that address any movement of injected CO_2 or formation fluids that could endanger a USDW during construction, operation, and post-injection site care.[28] These ERRP requirements apply from the construction phase of a geologic project through up to 50 years after the last date of CO_2 injection. Under the Proposed Project, GCS operators would need to ensure that

[28] 40 CFR Section 146.94

the ERRP addresses risks related to both the unintended movement of injected CO_2 and seismic events for 100 years after the last date of CO_2 injection.

To address seismic-related risk, GCS operators would be required to use the site-specific seismic risk assessment to establish thresholds for a Traffic Light System (TLS), which includes a green-light for normal operations, yellow-light for elevated seismic activity, and red-light for earthquakes causing consequences like nuisance, damage, or CO_2 or formation fluid leakage. The yellow-light must be set at least two magnitude steps below the red-light threshold. Under a yellow-light condition, GCS operators would need to notify CARB within 24 hours and consider additional monitoring or modifying the injection operations, such as reducing injection rate or volume. Under a red-light condition, GCS operators would have to immediately stop injection activities, notify CARB, submit information and analysis related to the incident, perform remediation activities, and demonstrate to CARB that it is safe to resume injection operations before approval to continue is provided.

To address CO_2 or formation fluid leakage risk, GCS operators must develop in the site-specific CO_2 or formation-fluid leakage mitigation measures implemented in accordance with 40 CFR Section 146.94, in the ERRP. After the end of the EPA-approved PISC period required by 40 CFR Section 146.93, GCS operators must continue applying these mitigation measures for the remaining 100 years after CO_2 injection ends if any CO_2 or formation-fluid leakage from the storage complex is detected. Similar to TLS red-light seismic conditions, if GCS operators detect any leakage, they would have to immediately stop injection operations, notify CARB, submit information and analysis related to the incident, perform remedial activities, and demonstrate to CARB that is safe to resume injection operations before CARB approval to continue is provided.

To ensure the GCS operators can manage conditions throughout the full 100-year post-injection phase, GCS operators would be required to periodically update their ERRP and implement it to address any seismic and potential leakage events for the entire post-injection period. Specifically, GCS operators would be required to update the ERRP every five years during active injection until the end of the 100 years post-injection phase, including anytime red-light threshold or leakage is detected in which case CARB review and approval would be required. The ERRP updates will include an impact analysis on public health and safety and evaluation of effectiveness of the TLS, ensuring that the ERRP remains effective for every project phase and potential site condition changes.

Compliance Responses

Under the Proposed Project, the additional compliance responses involve addressing seismic and leakage risk during the full 100-year post-injection monitoring phase. Because the ERRP requirements primarily involve planning, data sharing, and reporting activities, the proposed requirements would not result in any physical construction, equipment installation, or other on-site compliance actions. As a result, most of the

compliance responses associated with this provision relate to the preparation, submission, and updating of reports and notifications required under the ERRP.

However, in the unlikely event that a CO_2 leakage or red-light threshold is detected and the U.S. EPA allows the project to resume injection, the reasonably foreseeable compliance response to the ERRP would involve temporarily ceasing CO_2 injection activities.[29] GCS operators would be expected to shut down surface-level CO_2 compression equipment, isolate the injection well by closing surface and subsurface valves, and place the well in a safe idle status. During a required pause, GCS operators would likely continue required monitoring activities, including analysis of pressure data, plume movement, mechanical integrity of wells, and seismic activity. In some cases, GCS operators may also revise reservoir models, update mitigation plans, or perform maintenance or repairs on wells or equipment before requesting authorization from CARB to resume operations. GCS operators would be required to ensure leakage mitigation is effective to address different leakage scenarios and incorporates subsurface CO_2 plume tracking technologies capable of detecting early indications of migration outside the intended storage interval. Because these actions rely on existing infrastructure and standard industry practices for safe well management, compliance responses are not anticipated to require additional construction or installation of new equipment.

6. Subsurface Plume and Pressure Monitoring at GCS Sites

Summary

The Proposed Project would require GCS operators to monitor the extent of the CO_2 plume and the presence or absence of elevated pressure pursuant to 40 CFR Section 146.90(g) and 40 CFR Section 146.90(i) and ensure no loss of CO_2 containment for 100 years after injection ends. Under U.S. EPA's Class VI regulation, permitted GCS sites must conduct CO_2 plume and pressure monitoring that include using direct and indirect methods, such as seismic, gravity, or electromagnetic surveys, as well as CO_2 detection tools. The Proposed Project would not establish new requirements.[30] Instead, it would require operators to comply with the applicable provisions of 40 CFR Section 146.90(g) and 40 CFR Section 146.90(i). The only substantial change would be extending the required compliance period from EPA approved Post-Injection Site Care (PISC) timeframe (or 50 years) to 100 years.

GCS operators would also need to prepare and publish details on how they monitor and track the CO_2 plume's location, thickness, saturation, and associated pressure changes within the storage complex on a public-facing webpage. GCS operators would need to review and update the plan pursuant to 40 CFR Section 146.90(j) to ensure containment for 100 years after injection ceases.

[29] 40 CFR Section 146.94(c)
[30] EPA-approved PISC timeframe pursuant to 40 CFR Section 146.93

GCS operators will have the option to retire their subsurface CO_2 plume and elevated pressure monitoring system at the end of their EPA-approved PISC timeframe. However, if the GCS operators find evidence of leakage during the 100 years after injection ceases, the GCS operator would need to reinstate the subsurface CO_2 plume and elevated pressure monitoring system and continue monitoring and documenting monitoring data evaluations every five years. After completing five years of monitoring following reinstatement, the GCS operator would be able to demonstrate, pursuant to 40 CFR Section 146.93(c), that site conditions no longer pose an endangerment to public health or the environment and request Executive Officer approval to retire the monitoring system.

Compliance Responses

Under EPA Class VI, GCS operators are already required to conduct plume tracking, pressure monitoring, and groundwater sampling activities. GCS operators would not need to drill additional monitoring wells to comply with the plume tracking requirements under the Proposed Project. The only additional compliance responses under the Proposed Project involve planning, publishing the monitoring plan, and extending the subsurface monitoring from 50 to 100 years post-injection, unless the GCS operators decide to demonstrate for an alternative EPA-approved PISC timeframe pursuant to 40 CFR Section 146.93(c). The proposed requirements would not result in any physical construction, equipment installation, or other on-site compliance actions. As a result, the only compliance responses associated with this provision relate to the preparing and updating reports.

7. Financial Responsibility for GCS sites

Summary

The Proposed Project would align with U.S. EPA's financial responsibility requirements for Class VI wells (see 40 CFR Section 146.85) and expand upon them as directed by SB 905. Financial assurance under the Proposed Project is anticipated to require additional coverage as compared to U.S. EPA Class VI requirements for additional post-injection site care activities, including air pollutant and surface CO_2 monitoring, subsurface plume monitoring that extends to 100 years after CO_2 injection ends, seismic monitoring, and for an emergency and remedial response plan that incorporates seismic monitoring and proposed remedial response. These additional requirements are designed to meet the statutory mandate that GCS projects financially assure against liability associated with seismic activity triggered by the reservoir, loss of CO_2 containment, and protection of drinking water quality and public and environmental health and safety. GCS sites permitted under Class VI would have financial responsibility instruments already approved by the U.S. EPA Director. CARB would accept those EPA-approved financial instruments and require GCS operators to follow the same standards and reporting procedures set forth in 40 CFR Section 146.85 for

any additional instruments covering the costs of monitoring and remediation activities required under the Proposed Project.

Compliance Responses

The only compliance responses associated with this element of the Proposed Project relate to maintaining financial responsibility, which would involve the preparation, posting, and updating of reports and notifications. As a result, the compliance responses under this section are administrative in nature and would not result in any additional physical construction, equipment installation, or other on-site compliance actions.

8. Legal Agreement for the Prevention of Carbon Dioxide Leakage

Summary

The Proposed Project requires that a GCS operator provide CARB with proof of a binding agreement among relevant parties that drilling or extraction that may penetrate the geologic storage reservoir is prohibited to ensure public and environmental health and safety. Such agreements must be in effect for no less than 100 years after injection ends, but must also be a period of time that is sufficiently long to demonstrate that the risk of carbon dioxide leakage poses no material threat to public health, safety, and the environment and to achievement of net zero greenhouse gas emissions in California. The agreement must include a minimum of three criteria that would have to be met in order to terminate the agreement, and subsequently the prohibition of drilling into the reservoir or complex. These include 1) demonstration of approval of site closure plan from the U.S. EPA (according to class VI requirements), 2) demonstration that seismicity has returned to its natural baseline, and that 3) no less than 100 years have elapsed since the last date of injection. The agreement must also be publicly disclosed, and updated with no lapse in prohibition requirements under change of ownership amongst any relevant interest holders

Compliance Responses

The only compliance responses associated with this element of the Proposed Project relate to providing documentation of a legally binding agreement, which would involve the preparation of such an agreement among relevant parties and the prohibition of activity. As a result, the compliance responses under this section are administrative in nature and would not result in any additional physical construction, equipment installation, or other on-site compliance actions.

9. Amendments to LCFS

Summary

The Proposed Project would include amendments to CARB's LCFS program. These amendments would consist of minor text changes for consistency with the GCS Protocol

described in sections E.1.a and E.1.b. Existing references to the CCS Protocol would be replaced with references to the GCS Protocol and/or the LCFS CCS QM.

Compliance Responses

The proposed amendments to the LCFS program are administrative in nature and use of the GCS Protocol and the LCFS CCS QM would remain voluntary under the Proposed Project. Therefore, the proposed amendments would not result in any physical construction, equipment installation, or other on-site compliance actions.

10. Amendments to MRR

Summary

In May 2026, the Board approved amendments to CARB's MRR that incorporated Subpart RR of U.S. EPA's 40 CFR Part 98. These amendments established requirements for GCS sites to report injected CO_2 and any surface leakage in accordance with a robust quantification methodology. The amendments further required GCS sites injecting at least 25,000 metric tons CO_2e annually to obtain annual verification of reported data. GCS operators would also be required to implement monitoring to identify and quantify any surface leakage using a CARB-approved monitoring plan.

Under the Proposed Project, amendments to the MRR would consist of minor text revisions to clarify existing requirements and support the Cap-and-Invest Program by requiring data already collected to be separately categorized and reported. Additionally, the proposed amendments would remove the verification threshold described above, instead requiring all GCS operators to complete annual verification of reported data.

Compliance Responses

Compliance responses under the Proposed Project would involve data reporting and verification activities only; no physical construction or equipment installation would be required. For projects that inject less than 25,000 MT CO_2e annually, compliance responses would include annual verification of injected CO_2. These verification activities would include a site visit by a third-party verifier every three years and analysis of project data annually.

11. Community Communication

Summary

The Proposed Project would require GCS operators to communicate directly with communities adjacent to GCS sites and other interested parties and provide information on project development and operations.

Compliance Responses

Reasonably foreseeable compliance responses would include planning, outreach, and community engagement. While most of these activities are administrative in nature, community engagement activities could lead to development and implementation of additional mitigation actions at a GCS site. However, because the scope and nature of any such mitigation actions are currently unknown, evaluating their potential environmental impacts would be speculative at this time.

12. Enforcement

Summary

The Proposed Project includes regulatory requirements that would carry enforcement implications. This section states that the Executive Officer may seek penalties and injunctive relief for any violations of these proposed requirements. This section also states that the Executive Officer may inspect premises used, leased, or controlled by a regulated entity to investigate activities and documentation relevant to determine compliance.

Compliance Responses

Reasonably foreseeable compliance responses to this element of the Proposed Project include documentation, disclosure, and notification activities. While most of these activities are administrative in nature, enforcement actions could lead to additional required actions, such as halting CO_2 injection at a GCS site until the Executive Officer approves resuming activities. However, because the scope and nature of any such enforcement actions are currently unknown, evaluating their potential environmental impacts would be speculative at this time.

F. Summary of Compliance Responses

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. An analysis of the

Proposed Project's potential environmental impacts related to these reasonably foreseeable compliance responses is provided in Chapter 4 of this document.

Additionally, several reasonably foreseeable compliance responses associated with the Proposed Project are administrative in nature. Those include: creating project reports and monitoring plans; publication of a public-facing webpage that provides general project information and access to project reports, monitoring plans, permits, and compliance status information; and providing required notices to CARB related to financial conditions. Given the administrative nature of these compliance responses CARB has determined that these aspects of the Proposed Project would not result in any potential physical changes to the environment and therefore have no potential to result in adverse environmental impacts. Therefore, these compliance responses are not analyzed further in Chapter 4 of this document.

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3.0 ENVIRONMENTAL AND REGULATORY SETTING

The CEQA Guidelines require an environmental impact report (EIR) to include an environmental setting section that discusses the current environmental conditions in the vicinity of the project. This environmental setting normally constitutes the baseline physical conditions against which an impact is compared to determine whether it is significant (Title 14 CCR Section 15125). For this Draft Environmental Impact Analysis (EIA), CARB is using a 2026 baseline because the environmental analysis commenced in 2026 (the NOP was posted on May 7, 2026).

As discussed in Chapter 1 of this Draft EIA, CARB has a CEQA-certified regulatory program and prepares this type of document in lieu of an EIR. This Draft EIA is a functional equivalent to an EIR under CEQA; therefore, to comply with CEQA's policy objectives, an environmental setting and a regulatory setting, including environmental laws and regulations relevant to the Proposed Project, have been included as Attachment A to this Draft EIA

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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 the California Carbon Capture, Removal, Utilization, and Storage Regulations and Associated Regulatory Amendments (the Proposed Project). 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 Draft Environmental Impact Analysis (Draft EIA) are based on a comparison of the potential environmental consequences of the Proposed Project with the regulatory setting and physical conditions in 2026 (see Attachment A). For the purpose of determining whether the Proposed Project may have a potential effect on the environment, CARB evaluated the potential physical changes to the environment resulting from the reasonably foreseeable compliance responses described in further detail in Chapter 2 of this Draft EIA. A table summarizing all the potential impacts and proposed mitigation for each resource area discussed below is included in Attachment B to this document.

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

The analysis is based on reasonably foreseeable compliance responses that are based on a set of reasonable assumptions. The compliance responses described in this Draft EIA provide a credible basis for impact conclusions that are consistent with available evidence. And, as discussed in this Draft EIA Chapter 2, evaluating 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 the effects of these responses is not required and is not included in this analysis. The analysis also includes actions that could likely occur under a broad range of potential scenarios. The impact discussions reflect a conservative assessment to describe the type and magnitude of effects that may occur (i.e., the conclusions tend to overstate adverse effects) because the specific location, extent, and design of potential new and/or modified facilities cannot be known at this time.

1. Adverse Environmental Impacts

The potentially significant adverse impacts on the environment discussed in this Draft EIA, and significance determinations for those effects, reflect the programmatic nature of the reasonably foreseeable compliance responses of the regulated entities. These reasonably foreseeable compliance responses are described in more detail in Chapter 2, Project Description, of this Draft EIA. The Draft EIA broadly addresses the types of impacts or actions that others may take in the future as a result of the implementation of the Proposed Project.

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

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

2. Mitigation Measures

CARB's CRP requires an EIA to include "[a] discussion and consideration of environmental impacts, adverse or beneficial, and feasible mitigation measures which could minimize significant adverse impacts identified." (See 17 CCR Section 60004.2(a)(3).)

Given the programmatic nature of the Proposed Project, the Draft EIA contains a degree of uncertainty regarding the feasibility of mitigation for potentially significant impacts. "'Feasible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." (PRC Section 21061.1.)

While CARB is responsible for adopting the Proposed Project, it does not have general land use authority, nor specific land use authority over the potential infrastructure and development projects that could be undertaken in response to the Proposed Project. Other agencies are responsible for the site-specific review and approval – including any required environmental analysis – of any facilities and infrastructure. These project-specific environmental reviews would include identifying and adopting any feasible

project-specific mitigation measures, and any monitoring of mitigation implementation. For example, local cities or counties must review and decide whether to approve proposals to construct new facilities. By contrast, CARB does not have jurisdiction over land use permitting of any potential development associated with the compliance responses, such as carbon capture and GCS sites. (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 [noting that cities have broad authority, under their general police power, to regulate the development and use of real property]; *Big Creek Lumber Co. v. County of Santa Cruz* (2006) 38 Cal.4th 1139, 1151-1152 [noting that "[l]and use regulation in California historically has been a function of local government under the grant of police power" rather than from delegation of authority from the state]; Health and Safety Code, Sections 39000-44474 [CARB's statutory authority provides no authority to regulate local land use permitting].) Likewise, SB 905 does not give permitting authority over carbon capture, sequestration, or storage facilities. State and/or federal permits may be needed for specific environmental resource impacts, such as take of endangered species, filling of wetlands, and streambed alteration.

Because CARB cannot predict the location, design, or setting of specific projects that may result and does not have authority over the implementation of development that may occur, the programmatic analysis in the Draft EIA does not allow for identification of the precise details of project-specific mitigation. In addition, Public Resources Code Section 71464(c) requires project operators to create an air monitoring and mitigation plan to minimize potential toxic air contaminants and criteria air pollutants. As a result, there is inherent uncertainty in the degree of feasible mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in the Draft EIA.

Health and Safety Code Section 39741.1 concerns strategies to minimize certain types of impacts from carbon capture, removal, or sequestration projects. However, that section does not confer any approval authority over such projects to CARB. SB 905 did not create new permitting requirements for carbon capture, removal, or sequestration projects. The Proposed Project includes stringent monitoring requirements, consistent with Section 39741.1.

Note also that the entire Proposed Project is designed to reduce GHG emissions through capture and use or sequestration. The Proposed Project involves the establishment of the CCUS Program to set forth regulatory requirements for carbon management projects operating in the state, as well as aspects that help integrate carbon management technologies (such as adopting a protocol for use with the Cap-and-Invest Program) into California's climate programs.

Given the foregoing, and due to legal factors affecting the feasibility of mitigation for several of the identified potential significant indirect impacts associated with the

Proposed Project**,** CARB's implementation of the identified project-level impact mitigation set forth in the Draft EIA is infeasible, based on the following: (1) the lack of certainty of the scope, siting and specific design details of compliance-response development projects, which prevents CARB from being able to determine the projects' significant environmental impacts; and (2) even 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, which, inherently, prevents CARB from legally imposing any enforceable mitigation measures on the projects pursuant to CEQA. Therefore, while the project-level mitigation measures identified below in this Draft EIA are considered by CARB to be potentially feasible for other agencies to implement—meaning they are capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors—CARB cannot legally enforce them. Therefore, the project-level mitigation measures cannot be counted as feasible CEQA mitigation measures for the Proposed Project because they lack the adequate enforceability required.

Consequently, where appropriate, this Draft EIA takes the conservative approach in its post-mitigation significance conclusions and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable, due to the lack of jurisdiction by the lead agency to enforce the potential mitigation measures. It is also possible that not all of the mitigation measures identified as potential mitigation to be implemented by future lead agencies at the project level would be necessary to reduce environmental impacts to below a significant level. Many potentially significant impacts of facility and infrastructure projects may be avoidable or mitigable as a result of their project-specific environmental review processes, conducted by the appropriate permitting agency with jurisdiction, serving as the lead agency under CEQA, but CARB lacks the authority to enforce measures that could appropriately be implemented at the individual infrastructure project level.

B. Resource Area Impacts and Mitigation Measures

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

1. Aesthetics

Landscape character can be defined as the visual and cultural image of a geographic area. It consists of the combination of physical, biological, and cultural attributes that

make each landscape identifiable or unique. Visual character may range from predominantly natural to heavily influenced by human development. Its value is related, in part, to the importance of a site to its viewers. Viewer groups typically include residents, motorists, and recreation users.

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites.

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

Although it is reasonably foreseeable that activities associated with installation of new monitoring equipment and construction or modification of carbon capture projects and construction of supporting infrastructure for CO_2 transportation and injection could occur, there is uncertainty regarding the exact location or character of any new facilities or modifications to existing facilities. For example, some reasonably foreseeable compliance responses could be implemented with minimal ground disturbance or other changes to the existing visual setting. For instance, CO_2 monitoring stations could be mounted on existing equipment (or be standalone) on a bracket or a standalone pole, and near-surface monitoring could be as shallow as 1.5 feet, with a 2-foot by 4-foot by 21-inch concrete instrument enclosure, depending on site-specific geologic conditions. These systems could be powered by a solar panel. These modifications would likely be located adjacent to, or within, legacy wells, fault zones, and injection well pads

throughout existing GCS sites and would involve structures of similar size, scale, and visual character to those typically found within these types of facilities; thus, visual impacts would not be substantial in these cases.

The reasonably foreseeable compliance responses involve construction or modification of carbon capture projects and construction of supporting infrastructure to transport and inject CO_2. These facilities would be expected to occur in areas appropriately zoned (i.e., in zones that would allow for this activity); however, such facilities could conceivably introduce or increase the presence of visible artificial elements (e.g., heavy-duty equipment, new or expanded structures, tall antennae, supporting infrastructure) in areas of scenic importance, such as visibility from State scenic highways. The visual impact of such development would depend on several variables, including the type and size of the facilities, the distance and angle of view, visual prominence (including the presence of visual obstructions), and placement in the landscape. Above-ground supporting infrastructure for seismic monitoring systems could involve a small weatherproof enclosure on a concrete pad to house the data hub and power supply, which may include a solar panel and a 6- to 9-foot antenna. Meteorological monitoring stations would be mounted on poles up to 40 feet in height. In addition, carbon capture facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime lighting for safety and security purposes. Additionally, facility retrofits and expansions to accommodate carbon capture systems would likely be located adjacent to, or within, existing industrial facilities and would involve structures of similar size, scale, and visual character to those typically found within these types of facilities; thus, visual impacts would not be substantial in these cases. However, new infrastructure such as pipelines could extend beyond the boundaries of existing sites. These types of activities could result in significant effects on aesthetic resources.

Projects that would require the use of biomass for feedstocks, such as the collection of forest materials or agricultural wastes for cellulosic ethanol, renewable gasoline, renewable diesel, and renewable propane facilities, are likely to involve regular silvicultural, forest thinning and harvest, plantation of short rotation forestry and oil 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 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 timber harvest procedures). As a result, the generation of biomass feedstocks would not substantially alter existing aesthetic resources.

Development of direct air capture facilities could introduce new visual elements to a landscape, including large buildings coupled with compressed CO_2 gas storage tanks and extensive piping systems. There are approximately 130 direct air capture facilities in the world and 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 adverse visual elements into a natural landscape.

Additionally, potential compliance responses related to implementation of the Proposed Project could include the construction of new anaerobic digester facilities to receive manure from dairies, sewage from wastewater treatment plants, and diverted organic waste from landfills. These may be associated with individual businesses, or larger centralized facilities may be constructed to support anaerobic digestion of several facilities. In addition to construction of new facilities, minor alterations, such as pipeline installation, could also occur at dairies, landfills, and wastewater treatment plants. While the location and size of new or modified facilities are not currently known, the development of new AD facilities could have an adverse effect on aesthetic resources.

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

Mitigation 1-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on aesthetics associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA. Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview, in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on aesthetic resources. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to visual resources. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to visual resources.

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

Significance Conclusion

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

Consequently, while there is the potential for significant impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at a project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related and long-term operational-related effects on aesthetics resulting from the Proposed Project would remain **potentially significant and unavoidable** because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

2. Agriculture and Forestry Resources

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Short-term construction-related and long-term operational impacts on agriculture and forestry resources may occur. Construction or modification of carbon capture facilities and supporting infrastructure to transport and inject CO_2 would likely be developed 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 Farmland, the potential cannot be entirely dismissed. Thus, there exists the potential that Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Williamson Act conservation contracts, and forest land or timberlands could be converted to industrial uses.

New monitoring equipment (i.e., equipment used for seismic monitoring, CO_2 monitoring, and meteorological monitoring) could be installed in areas with agriculture or forestry resources. This equipment is expected to be installed in appropriately zoned areas (i.e., zones that allow this activity); however, such equipment could conceivably be introduced in agricultural or forested areas and may require either temporary or permanent conversion of these resources.

Reasonably foreseeable compliance responses involving carbon capture facilities that could impact agricultural resources include the modification or construction of facilities or infrastructure that could result in the conversion of agricultural land. Although there is uncertainty as to the exact location or character of any new or modified facilities or infrastructure, there is substantial overlap between locations of basins with carbon sequestration potential and areas of designated farmland.[31,32] Therefore, there is potential for impacts to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance and Williamson Act conservation contracts.

Reasonably foreseeable compliance responses associated with the Proposed Project that could affect agricultural and forest resources are associated with feedstock cultivation, methane collection at dairies, and new anerobic digester facilities. Regarding impacts to agricultural resources, it is unknown how much of the land on which digesters would be constructed is currently designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance; land zoned for agricultural uses; or land under a Williamson Act contract. However, new digester facilities (including any potential new community digester facilities) would be an agricultural use; they support livestock operations by providing additional benefits from the livestock manure. Therefore, development of new digester facilities would be consistent with existing agricultural uses or would not result in the conversion of agricultural land to non-agricultural uses, conflict with existing zoning, or conflict with Williamson Act contracts.

If facilities are proposed in response to the Proposed Project, potential impacts to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, Williamson Act conservation contracts, or forest land or timberland, must be reviewed by local or State lead agencies in the context of future project approvals. Many local governments have adopted land use policies to protect important agricultural and forest land from conversion to urban development, including industrial facilities. While it is reasonable to anticipate that land use policies controlling the location of new industrial facilities would generally avoid conversion of important agricultural land, the potential cannot be entirely dismissed. If a facility were located on important farmland or property under a Williamson Act Contract, conversion of the agricultural land to urban uses could occur.

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 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

[31] California Geological Survey. 2011 (August). *Studies Impacting Geologic Carbon Sequestration Potential in California. Final Project Report*. Available: https://babel.hathitrust.org/cgi/pt?id=uc1.31822038769360. Accessed December 2017.

[32] California Department of Conservation. 2017. Important Farmland in California, 2014. January. Available: https://data.ca.gov/dataset/california-important-farmland-2014. Accessed August 2017.

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 therefore result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of biomass feedstock in forestlands, resulting in the conversion of forest resources.
These types of short-term construction-related and long-term operational activities could result in significant effects on agriculture and forestry resources.

Mitigation 2-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on agriculture and forestry resources associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview, in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on agriculture and forestry resources. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to agriculture and forestry resources. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to agriculture and forestry resources.

- 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 before deciding whether to convert 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 the purchase of easements or the contribution of funds to a land trust or other agency.

Significance Conclusion

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

Consequently, while impacts could likely be reduced to some degree (although not to a less-than-significant level if Important Farmland were converted) with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for an individual compliance-response related project, CARB does not have control over the mitigation measures that permitting agencies impose at a project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related and long-term operational impacts on agriculture and forestry resources associated with the Proposed Project would remain **potentially significant and unavoidable** because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

3. Air Quality

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at

wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Any physical construction, equipment installation, or other proposed modification to facilities resulting from any of the Proposed Project's measures would require any necessary 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, as discussed in Chapter 2 above. Thus, CARB has not quantified the potential construction-related emissions impacts, as these would be too speculative to provide a meaningful evaluation. The Proposed Project involves a broad statewide program that relates to a spectrum of potential carbon management projects that are expected to vary considerably in type and scale, as discussed in Chapter 2.

Nonetheless, the analysis presented herein provides a good-faith disclosure of the general types of construction emissions impacts that could occur with implementation of these reasonably foreseeable compliance responses. Further, subsequent environmental review would be conducted as required when an individual project is proposed, and land use or construction approvals are sought.

Generally, construction activities associated with reasonably foreseeable compliance responses could generate emissions of criteria air pollutants and toxic air contaminants (TACs). These emissions would be temporary and occur intermittently, depending on the equipment used, the emissions source, and the intensity of construction on a given day. Site grading and excavation activities would generate fugitive particulate matter (PM) dust emissions, which are the primary pollutant of concern during construction. Fugitive PM dust emissions (e.g., respirable particulate matter [PM_{10}] and fine particulate matter [$PM_{2.5}$]) vary as a function of several parameters, such as soil silt content and moisture, wind speed, acreage of disturbance area, and the intensity of activity performed with construction equipment. Accordingly, this variation makes it speculative to determine the extent of emissions without identifying the exact location of each project site. 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 likely that light equipment and personnel for construction activities would be transported by light-duty trucks, while heavy equipment or bulk materials would be transported by heavy-duty trucks. Exhaust emissions from construction-related mobile sources also include reactive organic gases (ROG) and oxides of nitrogen (NO_X). These emissions vary greatly depending on the

type, number, and duration of use across the equipment. CARB implements several regulations to reduce NO_X and PM and to limit idling from in-use vehicles and equipment, such as 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 highest emission levels due to on-site equipment and ground-disturbing activities associated with grading, compacting, and excavation. Site preparation equipment and activities typically include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Although detailed construction information is not available at this time, based on the types of activities that could be conducted (e.g., borehole drilling, excavating), it would be expected that the primary sources of construction-related emissions include fugitive dust resulting from soil disturbance and equipment-related activities (e.g., use of drills, backhoes, excavators, and other related equipment).

Regarding the modification of existing industrial facilities or construction of new industrial facilities to capture CO_2 emissions, and the construction of new infrastructure such as pipelines, wells, and other surface facilities to transport and sequester CO_2 emissions, proposed development of new or modified facilities is expected to be required to secure local or State land use and/or air district approvals 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 management 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 is 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. 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.

Based on typical emissions rates and other parameters for the above-mentioned equipment and activities, construction activities could result in hundreds of pounds of daily NO_X and PM emissions (amount generated from two to four pieces of heavy-duty equipment working eight hours per day), which may exceed general mass emissions limits of a local or regional air quality management district, depending on the location of the emissions. Thus, the implementation of reasonably foreseeable compliance responses could generate emissions 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.

As a result, short-term construction-related air quality impacts associated with implementation of the Proposed Project would be potentially significant.

Mitigation 3-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on air quality associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on air quality. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to air quality. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to air quality.

- Proponents of new or modified facilities or infrastructure constructed as a result of reasonably foreseeable compliance responses would coordinate with local land use and State regulatory agencies to seek required 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 offsite mitigation funds).
- Project proponents shall comply with all applicable State and Air District requirements relating to construction and operational emissions, including all applicable Air District rules relating to dust control and facility operations, and all applicable CARB regulations relating to combustion equipment and vehicle use.
- Project proponents shall prepare and comply with a dust abatement plan that addresses emissions of fugitive dust during construction and operation of the project. Examples include, but are not limited to, the following measures:
  - All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day
  - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  - All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  - All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
  - All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the Project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related air quality effects resulting from compliance responses associated with the Proposed Project would remain **potentially significant and unavoidable** because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. It is not planned or expected that the Proposed Project would cause additional new carbon management deployment because the Proposed Project does not mandate or require the deployment of any projects. Even so, it is foreseeable that the amendments to Cap-and-Invest could potentially support carbon capture technologies, resulting indirectly in construction of new or modified carbon capture projects and supporting infrastructure to enable the transport and injection of CO_2 into a geologic formation for storage, as discussed in the compliance responses described in Chapter 2. The number, location, and type of new projects that may be deployed in response to the Proposed Project are not reasonably foreseeable, in part because deployment would ultimately depend on additional factors outside the scope of the Proposed Project itself. CARB includes information in Chapter 2 Section C.4 describing the potential number of carbon management projects that are currently planned in California and could be developed in the future. However, those estimates are themselves inherently speculative, as there is no way to predict with any certainty either the number of potential projects, or what proportion of new projects might result from the Proposed Project as opposed to the various other factors that influence business decisions to pursue carbon management projects, as discussed in Chapter 2 Section C.4. Accordingly, CARB has not quantified the potential operational-related emissions impacts as these would be too speculative to provide a meaningful

evaluation. Further, subsequent environmental review addressing project-specific emissions would be conducted at such time that an individual project is proposed, and land use or construction approvals are sought.

There are several operational-related emissions sources that could result from the compliance responses described above. In general, carbon capture projects require additional onsite energy to power the capture system. This energy can come from a dedicated natural-gas- or biofuel-fired electricity generating unit or from diverting electricity and/or heat from an existing electricity generating unit. These systems are designed to capture CO_2 emissions from any additional onsite electricity generation. Still, electricity generation from combusting natural gas or biofuels can generate air pollutant emissions like NO_x and $PM_{2.5}$.

Another potential operational-related emissions source that could result from the compliance responses described above is CO_2 capture technologies. For carbon capture projects that produce low-purity CO_2 streams, such as power plants, the CO_2 capture technology would likely be primarily based on chemical adsorption using amine-based solvents, such as monoethanolamine (MEA). 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. However, these solvent-based capture technologies could also emit volatile organic compounds (VOCs) and ammonia during operation or while handling the solvent.[33] The potential amounts and types of VOCs are not known to CARB at this time because the exact chemical constituents of the solvents are highly proprietary, but it is reasonably foreseeable that operational-related VOCs could be emitted. Additionally, operational mobile source emissions could be generated from the transportation of captured CO_2 emissions if operators aren't using CO_2 pipelines. These sources could include those such as trains, ships, and on-highway trucks.[34]

It should be noted that the presence of certain air pollutants like SO_2, NO_x, and $PM_{2.5}$ in flue gas or exhaust interfere with the chemical processes used to capture CO_2, which could require operators to install additional pollution controls to ensure effective capture performance.[35,36] These competing factors make it speculative to infer net air quality impacts from operating new carbon capture projects at the programmatic level. Nevertheless, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant.

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[33] Rochelle, Gary T. "Air Pollution Impacts of Amine Scrubbing for CO_2 Capture." *Carbon Capture Science & Technology*, vol. 11, 2024, article no. 100192, https://doi.org/10.1016/j.ccst.2024.100192.

[35] Clean Air Task Force. *Air Pollutant Reductions from Carbon Capture: An Analysis of the Air Quality and Public Health Benefits of Carbon Capture and Storage*. Clean Air Task Force, Dec. 2023.

[35] Clean Air Task Force. *Air Pollutant Reductions from Carbon Capture: An Analysis of the Air Quality and Public Health Benefits of Carbon Capture and Storage*. Clean Air Task Force, Dec. 2023.

[36] Rochelle, Gary T. "Air Pollution Impacts of Amine Scrubbing for CO_2 Capture," 2024.

Operational emissions related to the Proposed Project's monitoring requirements would be extremely minimal. Seismic monitoring equipment, meteorological monitoring stations, air pollutant monitors, and CO_2 monitors are typically deployed with co-located solar panels and backup batteries, which do not generate operational emissions. The only potential source of emissions would be periodic field maintenance visits by operators to verify the performance of monitoring equipment. Moreover, the Proposed Project would extend the operation and maintenance of subsurface monitoring equipment used for plume tracking, which would similarly incur vehicle trips for field maintenance. These visits would involve employee vehicle trips to GCS sites, which may produce small amounts of criteria air pollutants and TAC emissions from gasoline or diesel use.

Field checks for monitoring equipment maintenance are typically conducted on a monthly to quarterly basis, depending on instrument requirements. Even under a conservative scenario in which every GCS site would require monthly field checks, the anticipated resulting air pollutant emissions from monitoring trips is expected to be low, because there are currently only twelve planned GCS sites statewide.[37] These periodic field checks would be infrequent and geographically dispersed, and the associated criteria air pollutants and TAC emissions would be well below applicable CEQA thresholds of significance.[38] For example, emissions resulting from one round-trip field check, assuming a light-duty on-road truck and a round-trip distance of 50 miles,[39] are shown in Table 2 based on current emission factors.[40] These emissions would be negligible compared to applicable local air district thresholds for criteria air pollutants and TACs (e.g., daily and annual mass-based emissions thresholds for ROG, NOx, and PM; a concentration-based threshold for localized CO; and health-based thresholds for TACs).

Table 2: Tailpipe Emissions for a 50-Mile Round Trip Field Check

Pollutant Species	EMFAC2025 (v2.1.1) Fleet-averaged Emission Rate (g/mile)*	Tailpipe emissions for a 50-mile round trip field check (g)
NOx	0.12	5.80
$PM_{2.5}$	0.003	0.15
PM_{10}	0.003	0.16
CO	3.61	180.24

[37] U.S. EPA, UIC Class VI Data Repository. Accessed 27 Apr. 2026.

[38] Governor's Office of Planning and Research, *Technical Advisory on Evaluating Transportation Impacts in CEQA*. Apr. 2018, https://mtc.ca.gov/sites/default/files/20190122-743_Technical_Advisory.pdf?cb=2a6007b7. Accessed 27 Apr. 2026.

[39] Because the exact locations of future projects and contractor dispatch points are not known, staff assumed a standardized distance to estimate potential vehicle emissions. The 50-mile round-trip distance reflects a conservative, mid-range estimate to avoid over or underestimating potential impacts.

[40] California Air Resources Board. (2026). *EMFAC2025* (Version 2.1.1) [Emissions model and data]. Retrieved from https://emfac.arb.ca.gov/emfac2025-model-and-documentation.

Pollutant Species	EMFAC2025 (v2.1.1) Fleet-averaged Emission Rate (g/mile)*	Tailpipe emissions for a 50-mile round trip field check (g)
SOx	0.002	0.08
ROG	0.034	1.69

As described above, the Proposed Project could introduce operational emissions from new carbon capture projects, which could result in localized air quality impacts, contribute to cumulative impacts, or exacerbate existing air quality conditions in any air district. The Proposed Project would not affect the existing authority of local air districts to regulate criteria air pollutant and TAC emissions from stationary sources. Project proponents for newly constructed carbon capture projects would apply for, secure, and comply with all appropriate air quality permits from local air districts, including New Source Review (NSR), which may require operators to install air pollutant control systems meeting Best Available Control Technology (BACT) requirements determined by the air district. Carbon capture projects would also likely need to obtain Title V operating permits, which establish enforceable emission limits along with monitoring and reporting requirements for ongoing operations. Additionally, air districts issue authority-to-construct and permit-to-operate approvals for equipment that may emit air pollutants, which can apply to smaller emissions sources that fall below minor-source thresholds like compressor stations and diesel generators that could be located at GCS sites. For carbon capture retrofits at existing industrial facilities, a modified Title V permit would likely be required. These permit modifications undergo technical review by the permitting authority and may trigger additional BACT or other mitigation requirements for the new equipment.

There are also a number of air pollution control technologies that can be applied to Carbon capture projects to mitigate the potential operational emissions sources described above and that are generally accepted to meet BACT requirements. Large emissions sources, such as natural gas combined cycle powerplants, typically control NO_x emissions by implementing selective catalytic reduction systems and low-NO_x burners. VOC and ammonia emissions can be controlled using vapor recovery systems, water or acid washes, thermal or catalytic oxidizers, and carbon adsorption filters. Bag house filters, electrostatic precipitators, cyclones, and wet scrubbers can be used to reduce $PM_{2.5}$ emissions. Additional information on accepted control technologies and current BACT determinations can be found in CARB's BACT Technology Clearinghouse.[41]

The Proposed Project requires operators to disclose permitting and regulatory information related to air pollutant monitoring and mitigation measures, including air permit and BACT requirements determined by local air districts. If the project-level

[41] *California Air Resources Board*, "BACT Determination Tool." https://ww2.arb.ca.gov/capp/cst/tch/bact-determination-tool.

CEQA review determines that avoiding potentially significant on-site air pollution impacts is not feasible, and mitigation measures are required under CEQA (Division 13, commencing with Section 21000), operators could invest in mitigation within the community located near the carbon management project to address significant local air quality impacts. The Proposed Project also requires operators to disclose these community-based mitigation measures, which might include voluntary emissions-reduction agreements, community investments, or other offset strategies. Additionally, the Proposed Project Requires GCS operators to implement minimization measures for potential air quality impacts from project activities.

Air quality impacts associated with the operation of anaerobic digesters and associated equipment at existing or new wastewater treatment facilities could also potentially increase long-term emissions. The quantity and type of potential emission increases would be dependent of the type of digester technologies installed and the end use of captured biogas, and may include CO, PM, SO_x, VOCs and NO_x emissions. In addition, the potential re-design or expansion of existing wastewater treatment plants to process or co-digest regional sources of organic materials could result in vehicle emissions associated with this traffic. Other long-term potential air quality impacts might include truck and vehicle fueling activities at these facilities, and increased odor from the storage and digestion of organic materials (as discussed below). CARB will carefully consider these factors during program design and implementation going forward. Additionally, anaerobic digesters may also be installed and operated at existing dairy operations, which would reduce VOC, ammonia, and hydrogen sulfide emissions from lagoons that collect manure and other waste.

Additionally, there could be emissions associated with these sources at anaerobic digestion, because the operation of such facilities could divert organics out of landfills. By doing so, there would be less activity at landfills, such as potentially fewer pieces of off-road equipment and a potential decrease in the vehicle miles traveled (VMT) for haul trucks. The operation of anaerobic digestor facilities could also help offset other emission sources by generating electricity or producing biogas as a substitute for fossil vehicle fuels.

While there is the potential for impacts to be reduced to a less-than-significant level on a project-level basis, if each permitting agency imposes conditions of approval on individual future projects as described above, CARB does not have control over the mitigation measures that permitting agencies impose at the project level, and therefore this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational-related air quality impacts from the Proposed Project would be potentially significant.

* Reported emission factors were calculated by averaging the emission factors for Tier 1 and Tier 2 Light Duty Trucks that use diesel and gasoline and then weighing that average by the number of vehicles in each category in California in 2025. These data come from CARB's on road emission factor model (EMFAC) 2025 v2.1.1 Running Exhaust Emissions.

Mitigation 3-2

There are no feasible mitigation measures that CARB can implement to reduce the effects on air quality associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on air quality. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to air quality. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to air quality.

- Proponents of new or modified facilities constructed and operated as a result of reasonably foreseeable compliance responses would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local jurisdiction with land use authority would determine that the environmental review process complied with CEQA and other applicable regulations, prior to project approval.
- Based on the results of the environmental review, proponents would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the operational-related air quality impacts of the project.
- Project proponents would apply for, secure, and comply with all appropriate air quality permits for project operation from the local agencies with air quality jurisdiction and from other applicable agencies, if appropriate, prior to commencement of project operation.

- Project proponents would comply with the federal Clean Air Act and the California Clean Air Act (e.g., New Source Review and Best Available Control Technology criteria, if applicable).
- Project proponents would comply with local plans, policies, ordinances, rules, and regulations regarding air quality-related emissions and associated exposure (e.g., indirect source review, and payment into offsite mitigation funds).

For projects located in PM nonattainment areas, prepare and comply with a dust abatement plan that addresses emissions of fugitive dust during operation of the project.

Significance Conclusion

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although implementation of recognized practice included in Mitigation 3-2 may reduce impacts, it is possible that significant impacts on air quality resources could still occur.

Consequently, while CARB does not believe significant localized increases are likely, there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore 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 impacts resulting from the operation of new or modified facilities associated with the Proposed Amendments would be **potentially significant and unavoidable,** because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well

pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Construction associated with reasonably foreseeable compliance responses could generate short-term odors from the use of diesel-powered construction equipment; however, these emissions would likely be short-term and produce localized impacts. The significance of these impacts would be determined by the proximity of a project to sensitive receptors and the duration of the construction schedule. If future construction activities were located near the locations of sensitive receptors, construction-related odor impacts would be potentially significant.

With respect to operations, the Proposed Project would result in a small increase in vehicle activity to monitor well sites. Sources of operational odors typically include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, and food packaging plants.

Implementation of the Proposed Project may encourage the collection of biomethane gas from dairies, landfills, and wastewater treatment plants. The release of methane gas from these sources is usually accompanied by odorous compounds (e.g., ammonia and hydrogen sulfide). Generally, odor is a perceived nuisance and an environmental impact. Factors that would affect odor impacts include the design of collection facilities and exposure duration. Methane gas collection systems at landfills would involve wells for extraction of landfill methane produced from decomposing waste, and wastewater treatment plants would modify existing digesters in enclosed operations. Wastewater treatment plants also typically maintain odor control systems to address fugitive emissions at existing facilities. However, 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 undergo decomposition, and as a result, odorous compounds are released into the environment.

The implementation of new AD facilities at existing livestock operations would result in the manure being placed into the digester rather than into on-site storage ponds or stockpiles, potentially reducing odors that would otherwise occur without the new digester facilities. This would limit open air degradation (resulting in the breakdown of volatile organic compounds through anaerobic processes that would occur in the closed system) and would result in more control over the exhaust emissions.

Nevertheless, air quality impacts on odors associated with the Proposed Project would be potentially significant, because of the short-term construction-related and long-term operational-related odor impacts.

Mitigation 3-3a: Implement Mitigation 3-1

Mitigation 3-3b

There are no feasible mitigation measures that CARB can implement to reduce the effects on odors associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on odors. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that govern odor emissions. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to odors.

- Projects constructed as a result of reasonably foreseeable compliance responses would coordinate with local or State land use agencies to seek entitlements for development, including the completion of all necessary environmental review requirements (e.g., CEQA). The local jurisdiction with land use authority would determine that the environmental review process complied with CEQA and other applicable regulations, prior to project approval.
- Based on the results of the environmental review, proponents would implement all feasible mitigation identified in the environmental document to reduce or sustainably lessen the operational odor impacts of the project.
- Project proponents would comply with local plans, policies, ordinances, rules, and regulations for reducing exposure to existing sources of odor or odiferous processes, including the incorporation of setbacks and buffer areas between odor sources and sensitive land uses.

Significance Conclusion

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although implementation of recognized practice included in Mitigation 3-3a and 3-3b may reduce impacts, it is possible that significant impacts on operational emissions of odors could still occur.

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the Project level. Therefore, this EIA takes the conservative approach in its post-mitigation significance conclusions and discloses, for CEQA compliance purposes, that short-term construction-related odor impacts associated with reasonably foreseeable compliance responses to the Proposed Project would be **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

4. Biological Resources

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Short-term construction-related impacts on biological resources may occur. Construction of seismic monitoring wells and supporting infrastructure would typically involve drilling boreholes with heavy equipment. Installation of monitoring stations may include ground disturbance from the associated installation of solar panels as a power source. In addition, a reasonably foreseeable compliance response to the Proposed Project is an

increase in carbon capture projects and associated infrastructure above baseline conditions, which may include construction of new structures and infrastructure resulting in ground disturbance and vegetation removal. Depending on the location of these activities, ground disturbance and vegetation removal could adversely affect biological resources. The biological resources affected would depend on the specific location of the compliance responses, which is not known at this time. These impacts would occur from modifications to habitat for special-status plants or wildlife species including the removal, degradation, and fragmentation of riparian vegetation, 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.

Seismic monitoring wells and supporting infrastructure, as well as monitoring stations, would be located at GCS sites, in areas that are likely already developed or disturbed. Furthermore, new or modified carbon capture projects 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. In addition, some plant and animal species occur in developed or disturbed areas, and impacts on these species would not be entirely avoided through siting project construction in industrial or otherwise developed or disturbed areas. Direct mortality of individual plants and animals could result from the destruction of dens, burrows, or nests due to ground compaction, ground disturbance, or vegetation removal. Noise and visual stimulus associated with construction (e.g., vehicles, heavy equipment, power tools, personnel) could cause nest or den abandonment and loss of reproductive or foraging potential around the site during construction. Short-term construction-related impacts on biological resources would be potentially significant.

Reasonably foreseeable compliance responses associated with direct air capture and other CCS actions include the construction of new facilities to capture ambient CO_2, modification of existing or new industrial facilities to capture CO_2 emissions, and construction of new infrastructure, such as pipelines, wells, and other surface facilities, to enable the transport and injection of CO_2 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_2 from the industrial facilities to the sequestration sites. The transport distances and pipeline construction requirements for the captured CO_2 would vary depending on the locations of specific industrial sources of the captured CO_2 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 could be met by increased generation, both on-site and off-site.

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

Mitigation 4-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on biological resources associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on biological resources. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to biological resources. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to biological resources.

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the Proposed Project would coordinate with local land use and State regulatory 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 impacts on biological resources 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 resources constraints analysis on the site prior to ground disturbance or construction. If protected species or their habitats are present or have potential to be present, comply with applicable federal and State laws and regulations, including the Endangered Species Act and California Endangered Species Act. Construction and operational planning will require that important fish or wildlife movement corridors or nursery sites are not impeded or destroyed by project activities.
  - Retain a qualified biologist to prepare a delineation of onsite state or federally protected wetlands or other sensitive habitats (e.g., riparian habitat, sensitive natural communities). This survey shall be used to establish setbacks and prohibit disturbance of riparian habitats, sensitive natural communities, streams, intermittent and ephemeral drainages, and other wetlands. Wetland delineation is required by Section 404 of the Clean Water Act and is administered by the US Army Corps of Engineers.
  - Prohibit construction activities during the rainy season, with requirements for seasonal weatherization and the implementation of erosion-prevention practices.
  - Prohibit construction activities in the vicinity of raptor nests or nests of non-raptor special-status bird species during the nesting season or establish protective buffers and provide monitoring, as needed, to modify project activities that could cause an active nest to fail.
  - Prepare site design and development plans that avoid or minimize disturbance of sensitive biological resources and prevent stormwater discharge that could contribute to sedimentation and degradation of local waterways. Depending on disturbance size and location, a National Pollution Discharge Elimination System (NPDES) construction permit may be required from the California State Water Resources Control Board.

- Prepare spill prevention and emergency response plans, and hazardous waste disposal plans as appropriate to protect against the inadvertent release of potentially toxic materials.
- Plant replacement trees and establish permanent protection of riparian habitat, sensitive natural communities, and State or federally protected wetlands at ratios considered acceptable to comply with "no net loss" requirements.
- Contractor will keep the site and materials organized and store them in a way to prevent attracting wildlife by not creating places for wildlife to hide or nest (e.g., capping pipes, covering trash cans, and emptying trash receptacles consistently and promptly when full).

Significance Conclusion

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although the implementation of recognized practices included in Mitigation 4-1 may reduce impacts, it is possible that significant impacts on biological resources could still occur.

Consequently, while there is the potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency, acting as a lead agency for an individual project under CEQA, imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related impacts on biological resources associated with the Proposed Project would remain **potentially significant and unavoidable** because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and

diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Anticipated operation-related impacts on biological resources from the reasonably foreseeable compliance responses listed above would likely occur primarily from operation of new carbon capture projects. Long-term operation of carbon capture projects would often include the presence of employees; 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 carbon capture facility could deter wildlife from the surrounding habitat or could impede wildlife movement through the area. This impact could be substantial if adequate habitat does not exist nearby. Vegetation management may be necessary to comply with fire codes and defensible space requirements, which may involve tree trimming and other habitat modifications that could, for example, result in the mortality of special-status plants or wildlife, or nest failure. Furthermore, the operation of facilities could result in the accidental introduction of hazardous substances to the environment, which could adversely affect biological resources.

Direct air capture 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.

A reasonably foreseeable compliance response to the Proposed Project would be to implement anerobic digestionAD systems at dairies, wastewater treatment plants, and/or landfills. 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 AD 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.

Potential impacts on biological resources could result from operation of new infrastructure (e.g., dry manure management systems, AD 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.

Impacts could include degradation of sensitive habitats, disturbance or loss of special-status wildlife species, water contamination, and conflict with a habitat conservation plan or natural community conservation plan. Long-term operational impacts on biological resources associated with the Proposed Project would be potentially significant.

Mitigation 4-2

There are no feasible mitigation measures that CARB can implement to reduce the effects on biological resources associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB's purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on biological resources. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to biological resources. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to biological resources.

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the Proposed Project would coordinate with local land use and State regulatory 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 facility would be determined by the local lead agency.
  - Prohibit vegetation management activities in the vicinity of raptor nests or nests of non-raptor special-status bird species during the nesting season or establish protective buffers and provide monitoring as needed to ensure that project activity does not cause an active nest to fail.
  - Maintain site design and development plan features that avoid or minimize disturbance of biological 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 habitat that were identified for protection during the construction phase of the project.

Significance Conclusion

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although implementation of recognized practices included in Mitigation 4-2 may reduce impacts, it is possible that significant impacts on biological resources could still occur.

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency, acting as the lead agency for an

individual projects under CEQA, imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impost at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational impacts on biological resources associated with the Proposed Project would remain **potentially significant and unavoidable** because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

5. Cultural Resources

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. The Proposed Project could result in installation of seismic monitoring wells, CO_2 monitoring equipment, and repair of existing carbon capture systems, which would require construction and ground disturbance. Seismic monitoring wells could involve installing new boreholes several hundred feet deep into the subsurface. 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. In addition, 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 and are known to contain, or likely to contain, significant cultural resources, these areas may not always be feasibly avoided. It is also possible that ground disturbance could damage previously unknown/undocumented cultural resources. As such, it is foreseeable that known and/or undocumented cultural or paleontological resources could be unearthed or otherwise discovered during ground-disturbing and construction activities. Unique archaeological or historical resources might include stone tools, tool-making debris, stone milling tools, shell or bone items, and fire-affected rock or soil darkened by cultural activities. Paleontological resources include fossils. Historic materials might include metal, glass,

or ceramic artifacts. Human remains could also be present outside of dedicated cemeteries. Finally, historic structures could be removed or damaged if present within or adjacent to a proposed construction site. Tribal cultural resources are addressed below in Section 18, “Tribal Cultural Resources.”

Regarding the modification of existing industrial facilities or construction of new industrial facilities to capture CO_2 emissions (e.g., anaerobic digesters, CDR, CCUS), and the construction of new infrastructure such as pipelines, wells, and other surface facilities to transport and sequester CO_2 emissions, these construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines and pipelines for CO_2 transport, boring of wells, erection of new buildings and structures, and paving of parking lots, delivery areas, and roadways. Demolition of existing structures may also occur before the construction of new buildings and structures. The cultural resources that could potentially be affected by ground disturbance activities could include but are not limited to prehistoric and historical archaeological sites, paleontological resources, historic buildings, structures, or archaeological sites associated with agriculture and mining, and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, also may exist. Historic buildings and structures may also be adversely affected by demolition-related activities. Such resources may occur individually, in groupings of modest size, or in districts. Because culturally sensitive resources can also be located in developed settings, historic, archeological, and paleontological resources, and places important to Native American communities could also be adversely affected by construction of new facilities.

Operation of facilities and infrastructure would not result in additional ground disturbance beyond that which occurred during construction and modification because operational 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. Operational activities associated with carbon capture facilities, pipelines, monitoring wells, and related infrastructure would generally occur at existing industrial facilities and geologic storage sites, such as depleted oil and gas fields, where industrial development is already present. In addition, reasonably foreseeable monitoring equipment would be located within GCS sites and associated facility footprints rather than at off-site community monitoring locations. Accordingly, operational activities would not generally alter the visual character of surrounding areas beyond changes resulting from construction of the facilities and infrastructure. However, in some cases, the presence of new aboveground facilities or infrastructure could affect the setting of nearby historic resources or historic districts that derive significance from their visual surroundings.

Proposed forest, shrubland, and grassland management actions would substantially increase forest fuel reduction activities in several regions of the state through such practices as 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 which could affect archaeological, paleontological, or historical resources. This impact would be potentially significant.

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

Mitigation 5-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on cultural resources associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on cultural resources. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to cultural resources. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to cultural resources.

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the Proposed Project would coordinate with local land use and State regulatory agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to avoid, reduce or substantially lessen the potentially significant impacts on cultural resources associated with the project.
- Actions required to mitigate potentially significant cultural resources impacts may include the following; however, any mitigation specifically required for a modified facility would be determined by the local lead agency.
  - Retain the services of cultural resources specialists with training and background that conforms to the US Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61.
  - In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find shall cease and a qualified cultural resource specialist (e.g., archaeologist, architectural historian, depending on the resource identified) meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period.
    - Seek guidance from the State and federal lead agencies, as appropriate, for coordination of Nation-to-Nation consultations with the Native American Tribes.
  - Regulated entities shall consult with lead agencies early in the planning process to identify the potential presence of cultural properties. The agencies shall provide the project developers with specific instruction on policies for compliance with the various laws and regulations governing cultural resources management, including coordination with regulatory agencies and Native American Tribes.
  - If a resource determined to be significant by the qualified archaeologist or architectural historian (i.e., because the find is determined to constitute either an historical resource, cultural resource, or a unique archaeological resource), the archaeologist shall work with the project proponent to avoid disturbance to the resource, and if complete avoidance is not possible, follow accepted professional standards in recording any find. Preservation in place is the preferred manner of mitigating impacts on archaeological sites. For historically significant structures, if avoidance is infeasible, an appropriate documentation plan (e.g., recordation consistent with Historic American Buildings Survey Guidelines) shall be required.

- Regulated entities shall define the area of potential effect (APE) for each project, which is the area where project construction and operation may directly or indirectly cause alterations in the character or use of historic properties. The APE shall include a reasonable construction buffer zone and laydown areas, access roads, and borrow areas, as well as a reasonable assessment of areas subject to effects from visual, auditory, or atmospheric impacts, or impacts from increased access.
- Regulated entities shall retain the services of a paleontological resources specialist with training and background that conforms with the minimum qualifications for a vertebrate paleontologist as described in Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures, Society of Vertebrate Paleontology.[42]
- 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.

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

- 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.

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related and long-term operational impacts on cultural resources associated with the Proposed Project would remain **potentially significant and unavoidable** because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

6. Energy

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including

the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Temporary increases in energy demand associated with construction of new and modified facilities and associated infrastructure would include fuels used during construction, and gas and electric demands. Typical earth-moving equipment that may be necessary for construction includes excavators, graders, 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. Construction activities would be required to comply with all relevant regulations related to energy consumption applicable at the time of construction. Notably, construction activities would become more energy efficient over time as regulations continue to require the phasing out of older, less efficient equipment in favor of newer equipment powered by more efficient combustion engines, alternative fuels, or electricity.

Regarding the construction of new or modified carbon capture and CDR projects, and the construction of new infrastructure such as pipelines, wells, and other surface facilities to remove, transport and sequester CO_2 emissions, temporary increases in energy demand for these construction activities would include fuels used during construction, and construction-related gas and electric demands. Construction-related activities associated with the implementation of forest management activities, new AD systems, biomass drying equipment, new or modified facilities and/or pyrolysis units to produce biochar and bio oil, and the development of infrastructure for the collection and processing of yard waste and agricultural residues would similarly require increased fuel, and electricity consumption. 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 and infrastructure, it would be temporary and limited in magnitude such that a reasonable amount of energy would be expended.

Although construction associated with reasonably foreseeable compliance responses would require the consumption of energy resources, these actions would enable the capture and long-term storage of CO_2, and thus would not involve the wasteful or inefficient use of energy. The goal of the Proposed Project is to support technologies that can capture CO_2 emissions from industrial sources or remove emissions directly from the atmosphere to help California meet its long-term climate targets, including carbon neutrality by 2045. Some energy would be required to construct the necessary infrastructure and technical components to support this objective.

Although energy demand would increase during the construction of future projects in response to implementation of the Proposed Project, these energy expenditures would be necessary to facilitate the actions that would result in environmental benefits such as

reduced GHG emissions, especially for hard-to-decarbonize sectors. Therefore, short-term energy consumption would not be considered unnecessary. Moreover, energy needed to power necessary equipment would not be anticipated to generate high electrical demand beyond baseline energy load, as construction contractors and managers typically manage fuel and energy costs and therefore do not typically allow for substantial fuel and other energy waste. Short-term construction-related energy impacts associated with the Proposed Project would be **less-than-significant**.

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. The Proposed Project could result in a change in energy resources needed to remove, capture, transport, and store or sequester CO_2. Operational activities associated with compliance responses would include carbon capture and CDR project operations, seismic monitoring to locate and characterize seismic events, CO_2 monitoring, and emergency repairs. The level of energy demand generated from these actions along with supporting infrastructure (e.g., solar panels), and the potential for a change in energy demand would be site-specific and dependent on the location and scale of the project. There could be site-specific increases in energy demand related to electricity and natural gas consumption in new or modified carbon capture and CDR facilities. Increases in energy demand could result from operating new plants, during development of innovative technologies, and from increased transportation such as truck, rail, and barge transit to transport CO_2. On-site energy generation and storage are key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Increased electricity demand for the on-site energy demands of new and modified carbon capture and CDR facilities will be met by increased generation, both on-site and off-site. In addition, operation of seismic monitoring wells, monitoring stations, and supporting infrastructure could result in a nominal increase in employee vehicle miles traveled (VMT) and an associated increase in gasoline and diesel fuel consumption associated with these trips. Reasonably foreseeable compliance responses from implementation of AD systems could also generate truck trips associated with the transport of biogas, manure, organic waste, and other feedstocks to centralized processing, digestion, upgrading, or compression

facilities. As compared to a regional VMT inventory, these trips would not be substantial. See Section 17, "Transportation," for further discussion of potential project-generated increases in operational VMT. The State's energy capacity is expected to increase with implementation of GHG reducing regulations and policies such as the Proposed Project. To meet the statewide targets of 40 percent below 1990 levels of GHG emissions by 2030 (i.e., SB 32) and an 85 percent reduction in anthropogenic emissions compared to a 1990 baseline and carbon neutrality by no later than 2045 (AB 1279), reductions will need to be made from several sectors including the energy and mobile source sectors. 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.

Additional energy capacity in the State would be achieved through improved energy efficiency, energy storage, demand response, and generation of renewable resources. The efficiency of new homes is continually improving through triennial updates to the Parts 6 and 11 of the Title 24 Building Standards Code (California Energy Code and California Green Building Standards Code), which achieve energy reductions through use of mandatory and prescriptive energy efficiency design features and green building practices. The California Energy Code is anticipated to trend towards decarbonization, or the elimination of on-site natural gas combustion to power stoves and water heaters consistent with the findings of the Adopted 2024 Integrated Energy Policy Report Update, 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 anthropogenic GHG emissions by 85 percent of 1990 levels and achieving carbon neutrality by no later than 2045).

Moreover, as mandated by SB 1020, 90 percent of all retail sales of electricity to California end-users be procured from renewable energy and zero-carbon resources by December 31, 2035. The requirement increases to 95 percent by December 31, 2040, and to 100 percent by December 31, 2045. The abovementioned factors combine to expand the State's energy capacity as compared to previous years. For example, in-state energy capacity rose from 81,460 megawatts (MW) in 2020 to 90,189 MW in 2025, an increase of approximately 11 percent. In addition, as mentioned above, the California Energy Code is expected to increase the energy efficiency of buildings within the State, which would reduce energy demand generated by the building sector.

Implementation of the Proposed Project would establish regulatory requirements for GCS sites operating in the State including surface CO_2 monitoring requirements, air pollutant monitoring requirements, and seismic monitoring requirements. Implementation of the Proposed Project would help evaluate, demonstrate, and regulate carbon capture and GCS sites and technology; which are critical to address emissions of carbon into the atmosphere and achieve carbon neutrality, in accordance with state

plans for energy efficiency. Therefore, implementation of the Proposed Project would not result in the wasteful, unnecessary, or inefficient use of energy.

CARB's current energy-related strategies for reducing statewide GHG emissions involve targeting GHG reductions in key sectors identified in the 2022 Scoping Plan. The 2022 Scoping Plan includes discussion that focuses on implementing carbon capture and storage and to ensure anthropogenic emissions are reduced by at least 85 percent below 1990 levels in 2045, as directed by AB 1279.[43] By supporting the goal of the 2022 Scoping Plan, the Proposed Project would not conflict with or obstruct an applicable plan for renewable energy or energy efficiency.

Nevertheless, implementation of the Proposed Project could increase per capita energy consumption because facilities using carbon capture systems would require increased energy input compared to facilities not using carbon capture systems. This could include energy consumption such as the use of electricity to power DAC facilities and the combustion of natural gas to power capture units at facilities such as natural gas power and cement plants that could incorporate point-source capture. Thus, the anticipated reasonably foreseeable compliance responses associated with the Proposed Project would increase overall energy demand and would be considered a potentially significant long-term operational impact.

As described above, reasonably foreseeable compliance measures, including carbon capture and storage technologies, require additional energy to operate. As a result, overall operational energy consumption could increase over time. Thus, long-term operational-related impacts on energy resources associated with implementation of the Proposed Project would be potentially significant.

Mitigation 6-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on energy resources associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

[43] California Air Resources Board. 2022. *2022 Scoping Plan to Achieve Carbon Neutrality.* Available: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf. Accessed June 1, 2026.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB's purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on energy resources. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to energy resources. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to energy resources.

- Proponents of new or modified facilities and infrastructure constructed as a result of reasonably foreseeable compliance response 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 would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the potentially significant impacts to energy resources. The definition of actions required to mitigate potentially significant energy impacts may include the following; however, any mitigation specifically required for a new or modified facility and infrastructure would be determined by the local lead agency.
    - For existing facilities, retain a qualified energy efficiency expert to evaluate energy use (electricity, natural gas, and other fuels) of the existing facility and processes and any proposed modifications. This survey shall be used to design facility modifications and changes to existing facilities and processes to minimize energy usage.
    - For new facilities and infrastructure, design facilities and processes to minimize energy use.
    - Incorporate renewable energy generation facilities, such as photovoltaic solar panels to reduce energy consumption from fossil fuels.

Significance Conclusion

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although implementation of recognized practices included in Mitigation 6-1 may reduce impacts, it is possible that significant impacts on energy resources could still occur.

As stated above, the Proposed Project would increase overall energy demand and would be considered a potentially significant long-term operational impact. There is a potential for energy impacts to be reduced on a project-level basis, if each land use and/or permitting agency with approval authority over the particular development projects, imposes conditions of approval on individual future projects. However, because CARB does not have control over the mitigation measures that permitting agencies impose at the project level, this impact would be **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

7. Geology and Soils

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites.

Although it is reasonably foreseeable that construction activities could occur, there is uncertainty as to the exact location of any new facilities, modification of existing carbon capture and CDR-related facilities, new AD systems, new or modified facilities and/or pyrolysis units to produce biochar and bio oil, infrastructure for the collection and processing of yard waste and agricultural residues, land management or reforestation sites, or infrastructure such as pipelines, wells, and other surface facilities. Construction activities could require disturbance of undeveloped areas, such as clearing of

vegetation, earth movement and grading, trenching for utility lines and pipelines for CO_2 transport, boring of wells, erection of new buildings and infrastructure; and paving of parking lots, delivery areas, and roadways.

Activities related to implementation of CDR approaches, such as BiCRS and nature-based strategies, could also require the disturbance of undeveloped areas. Reasonably foreseeable activities include silvicultural, forest thinning and harvest, plantation of short rotation forestry and oil crops; farmland soil preparation activities; the planting of new trees or other vegetation; removal of forest litter and agricultural residues; and removal of forest products including small-diameter trees, burned standing or downed snags, slash, and understory vegetation. Many of these activities would require the use of equipment ranging from heavy off-road dozers, excavators, and backhoes to handheld equipment such as chainsaws and shovels. Because the types of activities and the anticipated equipment that could be used closely resemble construction-related activities, the construction and operational phases of CDR approaches, such as BiCRS and nature-based strategies, are indistinguishable and thus considered to be the same. For the purposes of this analysis, however, potential impacts from these activities as they relate to geology and soils are assessed as part of the construction-related analysis.

Regarding the modification of existing industrial facilities or construction of new industrial facilities to capture CO_2 emissions, and the construction of new infrastructure such as pipelines, wells, and other surface facilities to transport and sequester CO_2 emissions, environmental review would be conducted as necessary to verify site compatibility. Still, new facilities and infrastructure could be located in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that could 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 facilities and infrastructure are not known at this time and would be analyzed on a site-specific basis at the project level. Potential soil and geologic resource impacts could be reduced to a less-than-significant level by mitigation measures prescribed by local, State, federal, or other land use or permitting agencies (either in the U.S. or abroad) with approval authority over the particular development projects. However, because CARB has no land use authority, mitigation is not within its purview to reduce potentially significant impacts to less-than-significant levels. Thus, short-term construction-related impacts on geology and soils associated with the Proposed Project would be potentially significant.

Mitigation Measure 7-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on geology and soils associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in

nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB's purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on geology and soils. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to geology and soils. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to geology and soils.

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

- Proponents of new or modified facilities or infrastructure shall provide a complete site grading plan, and drainage, erosion, and sediment control plan with applications to applicable lead agencies. Proponents will avoid locating facilities on steep slopes, in alluvial fans and other areas prone to landslides or flash floods, or with gullies or washes, as much as possible.
- Disturbed areas outside of the permanent construction footprint shall be stabilized or restored using techniques such as soil loosening, topsoil replacement, revegetation, and surface protection (i.e., mulching).

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency acting as lead agency for an individual project under CEQA, imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction impacts on geology and soils associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

Impact 7-2: Long-Term Operational Impacts on Geology and Soils

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at

wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites.
Operations and maintenance activities could involve the use of crews and equipment to access and maintain or repair infrastructure implemented as part of the reasonably foreseeable compliance responses. For example, operations and maintenance of new pipelines could involve crews using trucks to access remote sections of pipelines in need of repair or maintenance and the use of equipment ranging from heavy equipment (e.g., cranes, backhoes, excavators) to handheld tools (e.g., shovels, drills, and welders). New infrastructure such as pipelines could be located in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that could be susceptible to soil compaction, soil erosion, and loss of topsoil during operations and maintenance activities. Environmental review would be conducted as necessary to verify compatibility of site geology, soils, and slope conditions as they relate to operations and maintenance activities. New facilities and infrastructure could also be located in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that could be susceptible to soil compaction, soil erosion, and loss of topsoil during operations. The level of susceptibility varies by location. However, the specific design details, siting locations, and soil compaction and erosion hazards for particular facilities and infrastructure are not known at this time and would be analyzed on a site-specific basis at the project level.

Some of the reasonably foreseeable compliance responses identified above could 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, CO_2 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.

CDR methods including nature-based strategies and biomass carbon removal and storage associated with implemented under the Proposed Project 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 activities 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 likely that mechanical methods (relative to other activities) would be used to some extent for many land management and vegetation removal activities. The amount of vegetation in all affected 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.

Removal of vegetation during CDR methods including nature-based strategies and biomass carbon removal and storage associated with implementation of the Proposed Project 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 assessing the stability of steep slopes would avoid or minimize the risk of landslide resulting from these activities. This impact could be potentially significant.

GCS is a technology that injects and stores captured CO_2 in porous and permeable subsurface rock formations thousands of feet underground, thereby preventing the release of the CO_2 into underground drinking water or the atmosphere, which can contribute to global warming. Most seismic events result from natural geologic processes–such as tectonic plate movement, volcanic activity, and natural fault slip–that reshape the earth. Due to the nascency of the CO_2 injection and geological storage industry, there is not recorded observational data of seismic activity induced by these activities. However, human activities, such as primary or secondary oil recovery, solution mining, explosions, large impoundments of water, geothermal stimulation, or other fluid injection (e.g., wastewater injection), have also been demonstrated to increase the risk of seismic events by raising subsurface pressure and lubricating preexisting faults and fractures. When this happens, subsurface movement can occur, resulting in human-induced seismic events.

The potential for human-induced seismic events depends on how injection activities interact with site-specific subsurface geologic conditions–such as fault structures, in-situ stress, and the formation properties–which vary from project to project. Fluid injection into reservoirs that lie directly above geological basement rock (the hard, igneous and metamorphic rock that exists below the oldest sedimentary rock cover) has the most potential for induced seismicity. Injecting fluids into a reservoir can cause overpressure within the reservoir. If the caprock seal above the reservoir maintains mechanical integrity–preventing fluids from rising through the seal out of the reservoir–the overpressure will be forced downward toward the bottom of the reservoir. In reservoirs located directly above the crystalline basement, such overpressure can cause the basement to fracture, leading to induced earthquakes. However, if fluids are injected into reservoirs in which there exists at least one permeable interval between the storage zone and the basement, the interval will dissipate the overpressure such that it does not

reach the basement, thus reducing the likelihood of induced seismic events associated with injection of fluids into the subsurface.[44]

Notably, any ground-shaking events resulting from GCS-related activities would generally classify as small to moderate in intensity. As such, any perceivable events that could occur would be largely inconsequential. An earthquake could result in the movement of a fault extending several kilometers by a few centimeters. The physical effects of such events would be substantial, such that populated areas would be able to perceive an occurrence; however, human or structural damage or harm would be unlikely.[45]

Nevertheless, even small amounts of slip (e.g., several centimeters) could compromise the caprock's sealing integrity and create a permeable pathway within a fault. As such, the efficacy of a storage complex as a GHG-reducing measure could be adversely affected.[46] For more details regarding this topic, see Section 8, "Greenhouse Gas Emissions."

To reduce the likelihood of induced seismic events, the Proposed Project would include seismic monitoring requirements for GCS operators to monitor over the surface projection of the storage complex and the pressure front.[47] This element of the Proposed Project would also include a performance standard requiring a magnitude of completeness -0.5 to 0.5 to ensure microseismic events can be located and analyzed for potential risk to nearby populations and the storage complex.

There exists the potential for CO_2 stored in underground reservoirs to leak and affect soil conditions. It has been observed in research conducted at both artificial and natural CO_2 leakage areas that CO_2 leakage from geological storage leads to an increase in soil total organic carbon (TOC), a decrease in total nitrogen (TN), a decline in soil pH, and a reduction in oxygen content, thereby creating an anoxic and acidic soil environment.[48] To reduce CO_2 leakage, the Proposed Project would include robust CO_2 monitoring and subsurface CO_2 plume monitoring to support early detection of possible CO_2 leakage. These provisions would include a suite of surface and subsurface CO_2

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[44] Oldenburg, Curtis M., Preston D. Jordan, and Elizabeth Burton. 2017. *Recommendations for Geologic Carbon Sequestration in California: I. Siting Criteria and Monitoring Approaches, II. Example Application Case Study Final Report Deliverable under ARB Agreement No. 15ISD007*. June 15. Available: https://ww2.arb.ca.gov/sites/default/files/2018-12/LBNL_CARB_QM_Final_Report_6-15-17.pdf. Accessed April 30, 2026.

[45] Zoback, Mark D. and Steven M. Gorelick. 2012 (June 26). Earthquake Triggering and Large-Scale GCS of Carbon Dioxide. *Proceedings of the National Academy of Sciences of the United States of America.* 109 (26): 10164-10168. Available: http://www.pnas.org/content/109/26/10164.full.pdf. Accessed April 30, 2026.

[46] Ibid.

[47] California Air Resources Board. 2018. Appendix A-1_Proposed Regulation Order. Section 95701. Definitions— "Storage Complex" and "Pressure Front"

[48] Tang, Pan, and B. Cao. 2025. A Review on Ecosystem Monitoring for CO_2 Geological Storage. *ACS Omega*, 2025. Vol. 10. https://doi.org/10.1021/acsomega.5c06876?urlappend=%3Fref%3DPDF&jav=VoR&rel=cite-as.

detection technologies that can be used to model and assess the risk of leakage to underground drinking water or the atmosphere. This risk would also be reduced by the U.S. EPA's existing Class VI well requirements, which include safeguards such as proper well construction to isolate formations, the use of compatible materials, thorough pre-construction site characterization, and avoiding locations where faults penetrate the primary confining layer.

In cases where leaks are detected, CARB or the agency responsible would require GCS operators to take all necessary steps to stop the leakage and remediate the affected area, where feasible.

The specific long-term effects of potential GCS sites on local geology and soils remain largely unknown. Even with the above described provisions, an increased risk of soil compaction, soil erosion, loss of topsoil, induced-seismic events, and potential leakage into soils could still occur, especially given the uncertainty of individual project locations and site-specific geologic characterization. Therefore, long-term impacts on geology and soils associated with the Proposed Project would be potentially significant.

Mitigation 7-2a: Implement Mitigation 7-1

Mitigation 7-2b

There are no feasible mitigation measures that CARB can implement to reduce the effects on geology and soils associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB's purview in an effort to provide full disclosure and transparency, included below are recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on geology and soils. Additionally, the

Regulatory Setting in Attachment A includes applicable laws and regulations that relate to geology and soils. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to geology and soils.

Permits and/or agreements to reduce potential geology and soils impacts could include, but are not limited to, several classes of Underground Injection Control (UIC) permits administered pursuant to the Safe Drinking Water Act at the federal and State levels. U.S. EPA issues Class VI permits under the aforementioned regulations, which apply to injection wells that are drilled for the sole purpose of CO_2 injection in an underground formation as part of a GCS sites, without any other intended purpose.

To obtain these permits, the project proponent would be required to conduct various evaluations, such as site characterization, 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. Because these permits would address inspection, enforcement, mechanical integrity testing, plugging and abandonment oversight, data management, and public outreach, this impact could be reduced.

Significance Conclusion

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although implementation of recognized practices included in Mitigation 7-2a and 7-2b may reduce impacts, it is possible that significant long-term impacts on geology and soils could still occur.

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational impacts on geology and soils associated with the Proposed Project would be **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

8. Greenhouse Gas Emissions

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Construction related to new or modified carbon capture and CDR projects; including new AD systems, biomass drying equipment, new or modified facilities and/or pyrolysis units to produce biochar and bio oil, and the development of infrastructure for the collection and processing of yard waste and agricultural residues; as well as the construction of new infrastructure such as pipelines, wells, and other surface facilities to transport and sequester CO_2 emissions; would require the use of vehicles and equipment that would consume fuel and emit GHGs for construction activities, materials transport, and worker commutes. Construction-related GHG emissions would be temporary, lasting only during construction. Local agencies, such as air pollution control districts, are generally charged with determining acceptable thresholds of GHG emissions, measured in metric tons of carbon dioxide equivalent per year ($MTCO_2$ e/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 various versions of CARB's OFFROAD and EMFAC models (e.g., 2017, 2021, 2025) and the California Air Pollution Control Officers Association's California Emissions Estimator Model. These models require consideration of assumptions, including construction timelines and energy demand (e.g., fuel and electricity).

Air districts differ in how they treat construction emissions. For instance, the Sacramento Metropolitan Air Quality Management District recommends that construction emissions be compared against a bright-line significance threshold of 1,100 $MTCO_2e$ per year.[49] Other air districts, such as the Bay Area Air District, do not have a numerical threshold for assessing the significance of construction-generated

[49] Sacramento Metropolitan Air Quality Management District. (2021). *CEQA Guide*. Available at http://www.airquality.org/LandUseTransportation/Documents/Ch6GHG2-26-2021.pdf. Accessed January 13, 2026.

GHG emissions.[50] 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.[51]

Installation of new monitoring equipment at GCS sites; implementation of CDR approaches, such as BiCRS and nature-based strategies, silviculture, forest thinning and harvest; planting of short rotation forestry and oil crops; farmland soil preparation activities; planting of new trees or other vegetation; removal of forest litter and agricultural residues; and removal of forest products including small-diameter trees, fire snags, slash, and understory; would require minor construction activity or occur within a previously disturbed area. Any proposed construction resulting from the Proposed Project compliance responses would require approval from the applicable local or state land use authority prior to 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 Proposed Project would require construction-related activities to implement reasonably foreseeable compliance responses including construction of new or modified facilities and infrastructure related to the capture, removal transportation, and storage or sequestration of CO_2 emissions. Therefore, the Proposed Project would result in direct construction-related emissions of GHGs. Moreover, installation of monitoring equipment at GCS sites would ensure that CO_2 is properly and safely stored. Therefore, a relatively smaller increase in construction emissions would be necessary to realize the greater long-term net reductions in GHG emissions that could result from increased carbon capture development.

The long-term operational impacts of the monitoring requirements under the Proposed Project are minimal: the Proposed Project would not require any changes to industrial processes, fuel combustion, or facility operations that would result in increases or reductions in GHG emissions. As discussed above, the required monitoring activities would only produce minor GHG emissions from vehicle trips for equipment maintenance. These infrequent vehicle trips are not expected to meaningfully contribute to long-term operational GHG emissions from GCS sites.

[50] Bay Area Air District. (2022). CEQA Air Quality Guidelines Appendix B: CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans. Available: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/appendix-b-thresholds-for-evaluating-significance-of-climate-impacts_final-pdf.pdf?rev=10305f45037b41dba2cd1b45b288d54b&sc_lang=en. Accessed January 16, 2026.

[51] South Coast Air Quality Management District. (2008). *Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold*. Available at http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf. Accessed January 13, 2026.

As discussed in Chapter 2, amendments to the Cap-and-Invest Program may indirectly encourage carbon capture project development and increased demand for GCS capacity. New carbon capture and CDR would reduce operational GHG emissions from covered entities, resulting in long-term reductions in GHGs. Additionally, required monitoring activities at GCS sites would reinforce existing regulatory safeguards by providing early detection and mitigation of potential leakage pathways, further reducing the risk of CO_2 releases from GCS operations.

U.S. EPA already requires GCS operators to conduct plume tracking during injection operations and for up to 50 years after injection ends. The Proposed Project would bolster these monitoring activities by requiring GCS operators to extend the post-injection site care (PISC) period by up to an additional 50 years (i.e., 100 years total). The Proposed Project would also require GCS operators to conduct seismic monitoring. U.S. EPA's Class VI rules do not require dedicated seismic monitors as a standalone requirement but have published guidance for GCS operators that includes recommendations for seismic monitoring.[52] While GCS operators are not explicitly required to conduct seismic monitoring, several Class VI permit applications for projects planned in California show that operators are planning to install seismic monitoring wells.[53]

The Proposed Project would also require GCS operators to prepare ERRPs that, in addition to Class VI ERRP requirements, address detecting and responding to seismic events and potential CO_2 leakage for the entire 100-year PISC period. GCS operators would identify seismic and long-term CO_2 leakage risk thresholds and outline the corresponding notification procedures, operational pause as required, and remedial actions they would implement in the event of an emergency. CARB has authority to require operational changes and temporary pauses in injection in the event leakage occurs, which would further reduce long-term GHG risk.

Plume tracking and seismic monitoring allow GCS operators to detect plume migration and track risk factors (e.g., unexpected plume movement, micro seismicity) within the storage reservoir so mitigation measures can be implemented prior to potential leakage events. These requirements add an additional layer of assurance on top of existing permitting requirements and project-level CEQA review. Although the risk of CO_2 leakage from properly characterized GCS sites is extremely low,[54] corrective actions could be delayed in the absence of these enhanced monitoring requirements.

GHG emissions would also be generated by transportation vehicles during operation of CDR methods such as DAC (truck, rail, or barge transit to transport CO_2 from the direct

[52] U.S. EPA, *Technical Guidance on Class VI Well Testing and Monitoring*. Office of Water (4606M), Mar. 2013, EPA 816-R-13-001, https://www.epa.gov/sites/default/files/2015-07/documents/epa816r13001.pdf. Accessed 27 Apr. 2026.
[53] U.S. EPA. UIC Data Repository Public Portal. Accessed 22 June 2026.
[54] IEAGHG (2025). *Reviewing the implications of unlikely but potential CO_2 migration to the surface or shallow subsurface*. Technical Report 2025-01, January 29, 2025.

air capture facilities and industrial facilities or to GCS sites), bioenergy with carbon capture (transportation of finished alternative fuels to blending terminals or retail fuel sites via truck or rail.), nature-based strategies (materials hauling and transportation of workers to and from project sites), and biomass carbon removal and storage (transportation of biochar and bio oil using trucks, rail, barge, or pipelines). Additionally, reasonably foreseeable compliance responses from implementation of AD systems could also generate truck trips associated with the transport of biogas, manure, organic waste, and other feedstocks to centralized processing, digestion, upgrading, or compression facilities. While these activities would constitute new transportation-related GHG emissions, these activities and their associated emissions would be necessary to realize the long-term net reductions in GHG emissions that could result from the Proposed Project. With the anticipated net reduction in GHG emissions, these transportation-related emissions would be offset by the overall reduction in GHGs.

Implementation of the Proposed Project could encourage the collection of biomethane gas from dairies, landfills, and wastewater treatment plants. The release of methane gas from these sources would contribute GHG emissions to the atmosphere. Methane gas collection systems at landfills would involve wells for extraction of landfill methane produced from decomposing waste, and wastewater treatment plants would modify existing digesters in enclosed operations, reducing fugitive methane emissions. Wastewater treatment plants also typically maintain emissions control systems to address fugitive emissions at existing facilities. However, 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 undergo decomposition, and as a result, methane is released into the environment. However, the implementation of new AD facilities at existing livestock operations would result in the manure being placed into the digester rather than into on-site storage ponds or stockpiles, potentially reducing methane emissions that would otherwise occur without the new digester facilities. This would limit open air degradation and would result in more control over the exhaust emissions. The Proposed Project could result in increased GHG emissions related to the generation and consumption of energy used to remove, capture, transport, and store or sequester CO_2 and decreased GHG emissions from the operational activities associated with compliance responses, such as carbon capture and CDR project operations, seismic monitoring to locate and characterize seismic events, CO_2 monitoring, and emergency repairs. There could be site-specific increases in energy demand related to electricity and natural gas consumption in new or modified facilities. The level of energy demand, and therefore associated GHG emissions, generated from these actions along with supporting infrastructure (e.g., solar panels), and the potential for a change in energy demand and associated GHG emissions would be site-specific and dependent on the location, type, and scale of the project. Because temporary increases in GHG emissions for project development and long-term decreases in GHG emissions from operations would both occur, overall, the Proposed Project would not increase GHG emissions.

As a result, short-term construction-related and long-term operational-related effects, associated with the Proposed Project on GHG emissions would be **less-than-significant**.

9. Hazards and Hazardous Materials

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Regarding the implementation of new or modified carbon capture and CDR projects; including new AD systems, biomass drying equipment, new or modified facilities and/or pyrolysis units to produce biochar and bio oil, and the development of infrastructure for the collection and processing of yard waste and agricultural residues; as well as the construction of new infrastructure such as pipelines, wells, and other surface facilities to transport and sequester CO_2 emissions; the Proposed Project could also require the construction of seismic monitoring wells, supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels), and installation of CO_2 and meteorological monitoring stations. Construction activities associated with these compliance responses 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 of fuel is most likely. Although precautions would be taken to ensure that any spilled fuel is properly contained and disposed of, and such spills are typically minor and localized to the immediate area of the fueling (or maintenance), the potential remains for a substantial release of hazardous materials into the environment.

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

Mitigation 9-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on hazards and hazardous materials associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on hazards and hazardous materials. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to hazards and hazardous materials. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to hazards and hazardous materials.

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

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agencies, acting as lead agencies for these individual projects under CEQA, imposes conditions of approval on individual future projects, if and when a project proponent seeks a permit for compliance-response related project, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential short-term construction-related impacts regarding hazards and hazardous materials associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce. .

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to

capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Operational hazards associated with reasonably foreseeable compliance responses to the Proposed Project could include the transport, use, storage, and disposal of hazardous materials associated with monitoring and CO_2 transportation infrastructure, system maintenance, and increased carbon capture, CDR, and GCS activities. Notably, in the near term, most potential carbon capture projects would likely occur in processes at existing facilities that already produce high-purity CO_2 streams, such as ethanol production and certain forms of steam methane reforming. These projects may not always require a CO_2 capture step and are expected to occur sooner because of their lower cost. CDR projects associated with methods such as carbon dioxide utilization could also occur at existing facilities in the near term through the integration of CO_2 streams into existing industrial processes including fuel, chemical, and construction material production. Operation of seismic monitoring wells, monitoring stations, injection infrastructure, and related equipment may require fuels, lubricants, batteries, solvents, or other hazardous materials, which could result in adverse effects in the event of an accidental release, equipment failure, or improper handling. In addition, increased carbon capture and CDR projects and GCS sites could involve operation of CO_2 compression, transport, and injection systems, as well as the use and management of process chemicals or waste streams depending on the specific carbon capture technology employed. Certain carbon capture technologies may involve the use of chemical solvents or other hazardous substances that require treatment, recycling, transport, and disposal. Accidental releases during operation, maintenance, transport, or disposal activities could result in release of hazardous materials into the environment.

Bioenergy projects would involve operation of new or expanded AD facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills. Dairy operators and wastewater facility operators may also implement digester facilities as a compliance response. 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 heath ranging from a cough to lung hemorrhage.

Compliance with existing safety regulations and contemporary industry standards and practices 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. The handling of hazardous materials would be required to comply with all applicable federal, State and local laws.

Operation of GCS and associated injection infrastructure could also present hazards related to the unintended release or migration of injected CO_2 or hazardous materials through improperly sealed wells, natural fractures, or other subsurface pathways. However, GCS sites are subject to extensive federal and State regulatory requirements intended to protect public safety and groundwater resources, including UIC permitting requirements for Class VI wells administered pursuant to the Safe Drinking Water Act. These regulations require site characterization, well integrity testing, monitoring, and demonstration of adequate confining geologic conditions prior to injection activities. Because the specific location, scale, and design of seismic monitoring wells and supporting infrastructure are unknown, the extent of operational hazards would be evaluated further at the project-specific level based on the technologies and site conditions present. Although 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, the potential remains for the release of hazardous materials into the environment.

Compliance with applicable hazardous materials regulations would minimize the potential for accidental releases or fires. The Proposed Project would not obstruct emergency access routes, impair implementation of an adopted emergency response or evacuation plan, or otherwise increase wildfire-related risks that could interfere with emergency response.

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

Mitigation 9-2: Implement Mitigation 9-1

Significance Conclusion

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

Consequently, while there is the potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agencies, acting as lead agencies for these individual projects under CEQA, imposes conditions of approval on individual future projects, if and when a project proponent seeks a permit for compliance-response related project, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential long-term operation-related impacts regarding hazards and hazardous materials associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

10. Hydrology and Water Quality

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar

panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Construction activities could involve vegetation removal, soil disturbance, grading, excavation, drilling, trenching, and installation of monitoring wells, monitoring stations, access improvements, and other supporting infrastructure associated with implementation of the reasonably foreseeable compliance responses. Although specific construction projects would be required to comply with applicable erosion, water quality standards, and waste discharge requirements (e.g., NPDES, Stormwater Pollution Prevention Plan [SWPPP]), it cannot be guaranteed that adverse impacts on hydrology and water quality would not occur from construction activities associated with the Proposed Project.

Consistent with Health and Safety Code Section 39741.1(a)(3)(B), carbon dioxide capture, CDR, and sequestration projects and GCS sites would be subject to federal and state permitting requirements that minimize potential impacts to surface waters, wetlands, and groundwater. Construction projects disturbing one acre or more generally must obtain coverage under the State Water Resources Control Board's NPDES Construction Stormwater General Permit, which requires preparation of a Stormwater Pollution Prevention Plan and implementation of erosion, sediment, and runoff control measures to protect water quality during construction. Projects affecting wetlands or other waters of the United States may require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers, which requires avoidance, minimization, and mitigation of impacts to aquatic resources. Projects requiring a Section 404 permit generally must also obtain Clean Water Act Section 401 Water Quality Certification (or equivalent Waste Discharge Requirements) from the applicable Regional Water Quality Control Board to ensure compliance with California water quality standards. Depending on site-specific conditions, additional approvals such as waste discharge requirements or dewatering permits may be required. Collectively, these regulatory programs would reduce potential water quality impacts from project construction and help ensure projects minimize local water pollution from construction- and transportation-related impacts from projects in communities adjacent to geologic storage sites, as required by Health and Safety Code Section 39741.1(a)(3)(B).

Nonetheless, short-term construction-related effects on hydrologic resources associated with the Proposed Project would be potentially significant.

Mitigation 10-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on hydrology and water quality associated with implementation of the Proposed

Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB's purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on hydrology and water quality. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to hydrology and water quality. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to hydrology and water quality.

- 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, as well as completing 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 water-related impacts of a project, including impacts to water quality, water supply, erosion and drainage. Actions required to mitigate potentially significant hydrology and water quality impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency. Project proponents shall implement the following measures as applicable:
  - Implement Best Management Practices to reduce sedimentation and pollution of surface waters, such as installation of silt fencing around the

perimeter of active construction areas, sediment traps, revegetation, and rock and gravel cover.
    - Train construction workers for proper response to hazardous materials spills as well as responsibilities for maintaining best management practices on site.
    - Drainage plans for runoff shall be designed to contain adequate capacity for projected flows on site.
    - Avoid filling of waters of the United States and waters of the State to the extent feasible. If activities require a waste discharge requirement or Section 401 Water Quality Certification, comply with all avoidance, reduction, and compensatory measures.
- Under the oversight of the local lead agency, prior to issuance of any construction permits, the proponents for the proposed project shall prepare a stormwater drainage and flood control analysis and management plan. The plans will be prepared by a qualified professional and will summarize existing conditions and the effects of project improvements, and will include all appropriate calculations, a watershed map, changes in downstream flows and flood elevations, proposed on- and off-site improvements, features to protect downstream uses, and property and drainage easements to accommodate downstream flows from the site. Project drainage features will be designed to protect existing downstream flow conditions that will result in new or increased severity of offsite flooding.
- Project proponents shall establish drainage performance criteria for off-site drainage, in consultation with county engineering staff, such that project-related drainage is consistent with applicable facility designs, discharge rates, erosion protection, and routing to drainage channels, which could be accomplished by, but is not limited to: (a) minimizing directly connected impervious areas; (b) maximizing permeability of the site; and, (c) stormwater quality controls such as infiltration, detention/retention, and/or biofilters; and basins, swales, and pipes in the system design.
- The project proponent shall design and construct new facilities to provide appropriate flood protection such that operations are not adversely affected by flooding and inundation. These designs will be approved by the local or State land use agency. The project proponent will also consult with the appropriate flood control authority on the design of offsite stream crossings such that the minimum elevations are above the predicted surface-water elevation at the agency's designated design peak flows. Drainage and flood prevention features shall be inspected and maintained on a routine schedule specified in the facility plans, and as specified by the county authority.
- As part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to

groundwater by incorporating technically achievable and feasible modifications into the project to avoid offsite groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions.

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA 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 Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Operation of seismic monitoring wells, new or modified carbon capture and CDR projects; including new AD systems, biomass drying equipment, new or modified facilities and/or pyrolysis units to

produce biochar and bio oil, and infrastructure for the collection and processing of yard waste and agricultural residues; monitoring stations, injection infrastructure, and associated equipment could result in accidental releases of fuels, lubricants, drilling fluids, produced water, or other contaminants that could affect surface water or groundwater quality. In addition, continued operation of monitoring wells, legacy wells, and geologic injection systems could create or exacerbate fluid migration pathways, alter reservoir pressure, or change groundwater chemistry. Increased GCS sites could alter localized groundwater pressures, flow regimes, or subsurface geochemistry through continued CO_2 injection activities. Ongoing operation and maintenance activities may further generate wastewater requiring treatment and disposal and could incrementally increase impervious surfaces and stormwater runoff associated with well pads, monitoring stations, access roads, and related infrastructure.

Potential CDR projects implemented as a reasonably foreseeable compliance response include DAC systems. DAC technology is evolving quickly. 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 DAC 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 DAC facilities.

Bioenergy projects would involve operation of new or expanded AD facilities to digest manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills. Dairy operators and wastewater facility operators may also implement digester facilities as a compliance response. 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 and wastewater contain nutrients, organic matter, salts, microorganisms, pathogens, and fecal bacteria. If improperly managed, constituents and/or byproducts of anaerobic digestion could 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, environmentally protective Waste Discharge Requirements may be 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.

The extent and severity of these impacts would generally depend on site-specific conditions, project design, operational practices, and compliance with applicable groundwater protection, stormwater, and Underground Injection Control regulatory requirements. Thus, water quality impacts could occur because of implementation of the reasonably foreseeable compliance responses associated with the Proposed Project.

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

Mitigation 10-2: Implement Mitigation 10-1

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA 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 Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

11. Land Use

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring

wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Short-term construction-related effects on land use and planning associated with implementation of the Proposed Project 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 Draft EIA.

Potential environmental impacts associated with land use change on agriculture and forestry, biology, geology and soils, hydrology, and others resource area impacts and their corresponding mitigation are discussed in further detail under Impacts 2-1, 4-1, 4-2, 7-1, 7-2 10-1, 10-2 and other sections as applicable. Nevertheless, as discussed in Chapter 4.0 Sections B.2, “Agriculture and Forestry Resources,” B.4, “Biological Resources,” B.7, “Geology and Soils,” and B.10, “Hydrology and Water Quality,” potential environmental effects associated with land use change would be significant. Therefore, land use impacts would be significant.

Construction and operation of seismic monitoring wells and supporting infrastructure, installation of CO_2 and meteorological monitoring stations, and construction of new or modified carbon capture and CDR projects; including new AD systems, biomass drying equipment, new or modified facilities and/or pyrolysis units to produce biochar and bio oil, and the development of infrastructure for the collection and processing of yard waste and agricultural residues; as well as the construction of new infrastructure such as pipelines, wells, and other surface facilities to transport and sequester CO_2 emissions; may require the conversion of non-industrial land uses to industrial land uses. Potential environmental effects associated with land use change on agriculture and forestry, biological resources, geology and soils, and hydrology and their related mitigation measures are discussed in further detail in their respective section of this Draft EIA.

Construction of seismic monitoring wells and CO_2 and meteorological monitoring stations, new or modified carbon capture and CDR projects, and supporting infrastructure 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. However, there is the potential that linear projects, such as CO_2 transportation pipelines, could divide an established community. Therefore, the Proposed Project would have the potential to divide a community and would have a potentially significant effect on this particular impact.

As discussed in Chapter 4, Sections 2, “Agriculture and Forestry Resources,” 4, “Biological Resources,” 7, “Geology and Soils,” and 10, “Hydrology and Water Quality,” potential short-term construction-related and long-term operational effects associated with land use change would be potentially significant.

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

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agencies, acting as lead agencies for these individual projects under CEQA, imposes conditions of approval on individual future projects, if and when a project proponent seeks a permit for compliance-response related project, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the potential short-term construction-related and long-term operation-related impacts related to land use conversions associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB’s authority to implement and enforce.

12. Mineral Resources

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well

pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. 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. Reasonably foreseeable compliance responses could result in construction and operation of carbon capture, CDR, and feedstock processing facilities; AD systems; construction of supporting infrastructure for the transportation and injection of CO_2; installation of seismic monitoring wells and supporting infrastructure; installation of monitoring stations; and long-term prohibition of drilling into a GCS reservoir for at least 100 years after injection has ceased. However, the location and extent of such activities related to new or modified facilities and infrastructure cannot be determined at this time. While most construction and operation activities would likely occur within existing footprints or in areas with consistent zoning where original permitting and analyses considered mineral issues, some construction of new infrastructure could occur outside of existing footprints. Construction activities associated with reasonably foreseeable compliance responses could temporarily affect access to known mineral resources and permanent facilities and infrastructure could also affect mineral resource availability depending on their location. In addition, the Surface Mining and Reclamation Act (SMARA) requires local planning documents to include policies that protect and conserve mineral resource zones designated by the State. Compliance with local policies and regulations pertaining to the preservation of mineral resources, compliance with SMARA noticing requirements, and coordination with the State Geologist and State Mining and Geology Board would further minimize impacts on locally important mineral resource sites.

The Proposed Project includes requirements that prohibit drilling or extraction activities from GCS reservoirs for no less than 100 years after injection of CO_2 has ended. These requirements could result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. In addition, access to mineral resources in reservoirs above or below a GCS site may also be restricted, depending on the geology of the site. For example, injection and storage of CO_2 into a former oil reservoir where oil production is not economically feasible at the time of sequestration would prevent further oil production from the reservoir for at least 100 years after injection ends, even if further oil production from the reservoir becomes economically feasible in the future. Therefore, the Proposed Project would have potentially significant impacts to Mineral Resources.

Mitigation 12-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on mineral resources associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on mineral resources. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to mineral resources. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to mineral resources.

- Proponents of new or modified facilities and infrastructure 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 known mineral resources impacts may include the following; however, any mitigation specifically required for a new or modified facility and infrastructure would be determined by the local lead agency.

- Conduct a survey to identify mineral resources of local regional, or state value at the project site.
- Site and design new or modified facilities and infrastructure to avoid or minimize restrictions to known mineral resources and recovery sites.

Significance Conclusion

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although implementation of recognized practices included in Mitigation 12-1 may reduce impacts, it is possible that significant impacts on mineral resources could still occur.

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the long-term operational-related impact regarding mineral resources resulting from the operation of new or modified facilities and infrastructure associated with the Proposed Project could be **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement.

13. Noise and Vibration

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Construction noise

levels resulting from building new or modified carbon capture and CDR projects; including feedstock processing facilities, AD systems, biomass drying equipment, new or modified facilities and/or pyrolysis units to produce biochar and bio oil, and the development of infrastructure for the collection and processing of yard waste and agricultural residues; and associated infrastructure related to the capture, removal transportation, and storage or sequestration of CO_2 emissions; as well as seismic monitoring wells, monitoring stations, associated infrastructure, and repairs at GCS sites, would vary with the type, number, size, and duration of use of the equipment. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment in the receptor's vicinity. Construction generally occurs in several discrete stages, each phase requiring a specific complement of equipment with varying types, quantities, and intensities. These variations in the equipment's operational characteristics affect the noise environment at the project site and in the surrounding community throughout the construction process.

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

In addition, 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 decline, construction activities performed during these more noise-sensitive periods of the day can increase annoyance and disrupt sleep for occupants of nearby residences.

Although a detailed construction equipment list is not currently available, based on this project type, it is expected that the primary sources of noise would include auger drill rigs, air compressors, and generators. Noise emission levels from typical types of construction equipment can range from approximately 74 to 94 A-weighted decibels (dBA) at 50 feet.

Based on this information and accounting for typical usage factors of individual pieces of equipment and activity types, on-site construction could result in hourly average noise levels of 81 dBA equivalent level measurements (L_{eq}) at 50 feet and maximum noise levels of 86 dBA maximum sound level (L_{max}) at 50 feet from the simultaneous operation of heavy-duty equipment and drilling activities. 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).

In addition, construction activities may result in varying degrees of temporary groundborne noise and vibration, depending on the specific construction equipment used and activities involved. Groundborne noise and vibration levels caused by various types of construction equipment and activities (e.g., bulldozers, blasting) range from 58–109 vibration decibels (VdB) and from 0.003–0.089 inch per second (in/sec) peak particle velocity (PPV) at 25 feet. As discussed above, although a detailed construction equipment list is not currently available, based on this project type, the primary sources of groundborne vibration and noise are expected to include drilling equipment and trucks. According to the Federal Transit Administration (FTA), levels associated with the use of drilling equipment and trucks are 0.089 and 0.076 in/sec PPV (87 and 86 VdB) at 25 feet, respectively. With respect to the prevention of structural damage, construction-related activities would not exceed recommended levels (e.g., 0.2 in/sec PPV). However, based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, bulldozing and truck activities could exceed recommended levels with respect to the prevention of human disturbance (e.g., 80 VdB) within 275 feet.

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

Short-term construction-related effects on noise and vibration associated with the Proposed Project would be potentially significant.

Mitigation 13-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on noise and vibration associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB's purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on noise and vibration. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to noise and vibration. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to noise and vibration.

- 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. Actions required to mitigate potentially significant noise impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.
  - Ensure noise-generating construction activities (including truck deliveries, pile driving, and blasting) are limited to the least noise-sensitive times of day (e.g., weekdays during the daytime hours) for projects near sensitive receptors.
  - Use noise barriers, such as berms, as needed (where feasible) to limit ambient noise at property lines, especially where sensitive receptors may be present.
  - Ensure all project equipment has sound-control devices no less effective than those provided on the original equipment.
  - All construction equipment used would be adequately muffled and maintained.
  - Use battery-powered forklifts and other facility vehicles, as needed to remain within acceptable noise levels.
  - Ensure all stationary construction equipment (i.e., compressors and generators) is located as far as practicable from nearby sensitive receptors or shielded.
  - Properly maintain mufflers, brakes, and all loose items on construction- and operation-related-related vehicles to minimize noise and address operational safety issues. Keep truck operations to the quietest

operating speeds. Advise about downshifting and vehicle operations in sensitive communities to keep truck noise to a minimum.
- Use noise controls on standard construction equipment; shield impact tools.
- Use flashing lights instead of audible back-up alarms on mobile equipment, if necessary to maintain acceptable noise levels.
- Install mufflers on air coolers and exhaust stacks of all diesel and gas-driven engines.
- Equip all emergency pressure relief valves and steam blow-down lines with silencers to limit noise levels.
- Contain facilities within buildings or other types of effective noise enclosures.
- Employ engineering controls, including sound-insulated equipment and control rooms, to reduce the average noise level in normal work areas.

Significance Conclusion

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

Consequently, while there is the potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project-level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that the short-term construction-related effect regarding noise and vibration resulting from the construction of new facilities or reconstruction of existing facilities associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air

pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Operation of monitoring wells and associated monitoring stations would generally involve passive or low-noise equipment, such as sensors, data loggers, solar panels, and data transmission systems. Reasonably foreseeable compliance responses could also involve the modification of existing industrial facilities or construction of new industrial facilities to capture CO_2 emissions, and the construction of new infrastructure such as pipelines, wells, and other surface facilities to transport and sequester CO_2 emissions.

New sources of noise associated with implementation of the Proposed Project could include operation of new and expanded facilities and infrastructure, including natural gas processing plants, ethanol plants, hydrogen plants, and biomass gasification plants as well as carbon capture and CDR systems; including new AD systems, biomass drying equipment, new or modified facilities and/or pyrolysis units to produce biochar and bio oil, and the development of infrastructure for the collection and processing of yard waste and agricultural residues; as well as new infrastructure such as pipelines, wells, and other surface facilities to transport and sequester CO_2 emissions.

These facilities could include stationary mechanical equipment and other operational noise sources. CDR facilities could include intake fans and other mechanical equipment, and AD systems could include internal combustion engines, fuel cells, microturbines, natural gas upgrading equipment, pumps, and other associated equipment. Digesters may also include flares; however, these would generally be used only for emergency purposes. Collection of yard waste and agricultural residues and forest management activities could also increase noise from vehicles and equipment used for collection, removal, transport, and vegetation management. Ongoing operational noise would be generated by new or expanded facilities implemented to, for example, process increased volumes of biomass feedstock or organic waste in support of the reasonably foreseeable compliance responses identified above.

Operation of new or modified facilities would likely occur within footprints of existing facilities, areas with zoning that would permit the development of industrial uses; however, some facilities could be located on public lands where the appropriate State or federal agency has determined that such uses are allowable. The locations of infrastructure to transport captured CO_2 emissions (e.g., pumping stations for CO_2 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.

There could also be site-specific increases in noise levels related to increased transportation such as truck, rail, and barge transit to transport captured CO_2. Transportation of feedstocks, manure, biogas, yard waste, and agricultural residues could also generate vehicle-related noise. In addition, to the extent the Proposed Project results in an increase in carbon capture CDR, feedstock processing, AD, and other reasonably foreseeable compliance response activities above baseline conditions, operational noise could increase from associated stationary equipment, vehicle trips, and facility operations. Depending on the proximity to existing noise-sensitive receptors, stationary source noise levels could exceed applicable noise standards and result in a substantial increase in ambient noise levels.

Long-term operational noise and vibration effects associated with the Proposed Project would be potentially significant.

Mitigation 13-2: Implement Mitigation 13-1

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational noise effects associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to mitigate.

14. Population and Housing

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring

wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Certain construction activities would require relatively small crews, and demand for these crews would be temporary (e.g., 6 to 12 months per project), including those related to the construction of carbon capture, CDR, and feedstock processing facilities; AD systems; biomass drying equipment; new or modified facilities and/or pyrolysis units to produce biochar and bio-oil; supporting infrastructure to transport and inject CO_2; monitoring wells and associated infrastructure; and infrastructure for the collection and processing of yard waste and agricultural residues, as well as forest management activities. Construction, modification, and maintenance activities associated with the Proposed Project would be expected to be performed primarily by operators and construction workers who are already employed in the local workforce and routinely conduct similar activities. Construction activities would be anticipated to require relatively small crews (i.e., less than 100 workers), and demand for these crews would be temporary, only lasting as long as the construction phase. For example, the Environmental Impact Report for the Carbon TerraVault I project in Kern County expected to employ approximately 80 workers during the peak construction phase.[55]

Operation of new or modified carbon capture, CDR, and feedstock processing facilities would generate varying levels of employment opportunities. The Carbon TerraVault I project discussed above also estimated its long-term workforce would be 5 full-time employees. Generally speaking, the number of jobs produced is expected to be related to the maintenance needs of these facilities. The existing employment base at these facilities is expected to be sufficient to serve the additional demands to achieve compliance with the Proposed Project. Although it is conceivable that additional employment could be needed to execute the Proposed Project, such a rise in employment opportunities would not be substantial enough to increase a community's population or require the construction of housing. As such, no additional housing would be required to implement the reasonably foreseeable compliance response to the Proposed Project.

In addition, it is unlikely that any new facilities would be constructed in areas with existing housing because of the nature of the facilities. That is, industrial facilities would be sited in areas zoned for them. Additionally, CO_2 transportation pipelines would be

[55] Kern County Planning and Natural Resources Department. (2024). Reci*rculated Draft Environmental Impact Report: Carbon TerraVault I (Kern County)* by California Resources Corporation (SCH No. 2022030180) Available: https://ceqanet.lci.ca.gov/2022030180/4. Accessed June 29, 2026.

limited to areas designated for pipeline alignments. Therefore, it is unlikely the Proposed Project would displace existing housing.

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

15. Public Services

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Although it is reasonably foreseeable that activities associated with modified or new facilities and infrastructure could occur, there is uncertainty as to the exact location or character of any modified or new facilities and infrastructure. However, these would likely occur within footprints of existing facilities, or in areas with zoning that would permit the development of manufacturing or industrial uses. 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). Similarly, operational activities would be anticipated to require relatively small workforces or small increases to workforces. Therefore, it would be anticipated that the need for a substantial amount of construction and operational worker migration would not occur and that a sufficient employment base would likely be available for construction and operation of the facilities and infrastructure. Construction and operational activities would not require new additional housing to accommodate or generate changes in land use.

An increased need for public services is generally associated with growth in population. As discussed under Impact 14-1, the Proposed Project is not expected to result in a rise

in employment opportunities that is great enough to substantially increase a community's population. As a result, short-term construction-related and long-term operational-related effects, associated with the Proposed Project on response time for fire protection, police protection, schools, parks, and other facilities would be **less-than-significant**.

16. Recreation

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Implementation of the Proposed Project would include construction of new or modified carbon capture, CDR, and feedstock processing facilities; supporting infrastructure for CO_2 transport and injection; new AD systems; biomass drying equipment; pyrolysis units to produce biochar and bio-oil; installation of seismic monitoring wells, monitoring stations, and supporting infrastructure for monitoring equipment; infrastructure for the collection and processing of yard waste and agricultural residues; and forest management activities, including planting of new trees and vegetation. Construction associated with the Proposed Project would likely occur within footprints of existing facilities, areas designated for pipeline alignments, or in areas with appropriate zoning that permit such uses and activities. Therefore, the Proposed Project would not displace any recreational facilities. As identified above, construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary. Therefore, substantial construction worker migration is not expected, and the existing regional construction workforce would likely be sufficient to meet Proposed Project needs.

An increased need for recreational facilities and the accelerated degradation of existing recreational facilities is associated with growth in population. As discussed under Impact 14-1, the Proposed Project is not expected to generate employment opportunities at a scale great enough to substantially increase a community's population. Similarly, operational staffing needs would be limited and would not introduce new demand for recreational facilities.

Therefore, new or expanded recreational facilities would not be needed, and existing facilities would not experience accelerated degradation. As a result, short-term construction-related and long-term operational-related effects, associated with the Proposed Project on recreational facilities would be **less-than-significant**.

17. Transportation

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Implementation of the Proposed Project could include construction or modification of carbon capture, CDR, and feedstock processing facilities; new AD systems; biomass drying equipment; pyrolysis units to produce biochar and bio-oil; supporting infrastructure for CO_2 transport and injection; seismic monitoring wells, monitoring stations, and associated infrastructure; infrastructure for the collection and processing of yard waste and agricultural residues; and forest management activities, including planting of new trees and vegetation. Construction activities, including the type, number, and duration of usage of various equipment, would vary based on the project and the phase of construction. The size of construction crews would vary depending on the project type, location, and accessibility for heavy equipment. However, as discussed under Section 14, “Population and Housing,” construction activities would be anticipated to require relatively small crews (i.e., less than 200 workers), and demand for these crews would be temporary only lasting as long as the construction phase. As discussed throughout this EIA, predicting the precise location, timing, duration and intensity of individual projects undertaken as compliance responses to the Proposed Project 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 Proposed Project is not possible at this high-level planning stage. Construction activities associated with the Proposed Project would not result in long-term vehicular trips along the roadway network surrounding the project because construction would be intermittent and temporary in nature. Therefore, construction activities associated with reasonably

foreseeable compliance responses would not conflict with CEQA Guidelines Section 15064.3(b) regarding VMT.

However, depending on the location of new or expanded carbon capture facilities, and design of the surrounding roadway network, reasonably foreseeable compliance responses could conflict with applicable programs, plans, ordinances, or policies related to the transportation network; and/or result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially due to project-generated heavy-duty truck trips. Therefore, this short-term construction-related effect would be potentially significant.

Mitigation 17-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on transportation associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on transportation. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to transportation. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to transportation.

- 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 transportation. Actions required to mitigate potentially significant transportation impacts may include the following; however, any mitigation specifically required for a new or modified facility will be determined by the local lead agency.
  - Minimize the number and length of access, internal, service, and maintenance roads and use existing roads when feasible.
  - Provide for safe ingress and egress to/from a proposed project site. Identify road design requirements for any proposed roads, and related road improvements.
  - If new roads are necessary, prepare a road siting plan and consult standards contained in federal, State, or local requirements. The plans should include design and construction protocols to meet the appropriate roadway standards and be no larger than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Access roads should be located to avoid or minimize impacts 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 in accordance with the latest version of the California Manual on Uniform Control Devices.

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related effects on transportation associated with the Proposed Project would remain **potentially**

significant and unavoidable, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Implementation of the Proposed Project could result in the operation of new carbon capture projects, CDR projects including direct air capture and industrial carbon capture and feedstock processing facilities; supporting CO_2 transport and storage infrastructure; operation and maintenance of monitoring equipment (e.g., seismic monitoring wells, CO_2 monitoring equipment) at GCS sites; collection and processing of yard waste and agricultural residues; forest management activities, including herbicide use and planting of new trees and vegetation; and operation of new AD systems. As discussed under Section 14, "Population and Housing," operation of new and modified facilities would generate varying levels of employment and the number of jobs produced would be directly related to the maintenance and operational needs of the facilities. The level and frequency of employment associated with reasonably foreseeable compliance responses would vary, ranging from regular on-site operational staffing at new facilities to periodic or seasonal personnel associated with monitoring, maintenance, collection, and land management activities. The number of employee-generated trips would depend on several factors such as facility location (e.g., urban, rural) and the availability of alternative transportation facilities (e.g., bicycle parking). For the purpose of this analysis, it is assumed that implementation of the Proposed Project could increase the number of employee-generated trips above existing conditions and result in a nominal increase in employee VMT. As compared to a regional VMT inventory, these trips would not be substantial. Although pipelines are the most common method of transporting large quantities of CO_2, transport of CO_2 by truck, rail, and ship are alternative options.[56] Thus, implementation of the Proposed Project could require the construction and operation of new truck, rail, and ship infrastructure to transport CO_2. All infrastructure

[56] Global CCS Institute. 2025. Transporting CO_2 . Available: https://www.globalccsinstitute.com/wp-content/uploads/2025/10/fact-sheet-transporting-CO_2 .pdf. Accessed July 2026.

would be designed and constructed in accordance with applicable federal, state, and local regulations which would minimize transportation hazards associated with design and operation. Additionally, reasonably foreseeable compliance responses from implementation of AD systems could also generate truck trips associated with the transport of biogas, manure, organic waste, and other feedstocks to centralized processing, digestion, upgrading, or compression facilities.

In addition, depending on the location of new or expanded facilities and design of the surrounding roadway network, implementation of reasonably foreseeable compliance responses could conflict with applicable programs, plans, ordinances, or policies related to the transportation network; and/or result in hazardous design features and emergency access issues, especially due to project-generated heavy-duty truck trips. Therefore, long-term operational-related effects on transportation would be potentially significant.

Mitigation 17-2

There are no feasible mitigation measures that CARB can implement to reduce the effects on transportation associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on transportation. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to transportation. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to transportation.

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

Significance Conclusion

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although implementation of recognized practice included in Mitigation 17-2 may reduce impacts, it is possible that significant impacts on transportation resources could still occur.

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that long-term operational-related effects on transportation associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

18. Tribal Cultural Resources

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

Consistent with the requirements of AB 52, on May 7, 2026, CARB issued letters to tribes that requested formal notice. Specifically, CARB issued letters to the Colusa Indian Community Council, the Ohlone Costanoan-Esselen Nation, the San Gabriel Band of Mission Indians, the Viejas Band of Kumeyaay Indians, and the San Manuel Band of Mission Indians. No requests for consultation were received.

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring

wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. Implementation of the Proposed Project could include construction or modification of carbon capture, CDR, and feedstock processing facilities; new AD systems; biomass drying equipment; pyrolysis units to produce biochar and bio-oil; supporting infrastructure for CO2 transport and injection; seismic monitoring wells, monitoring stations, and associated infrastructure; infrastructure for the collection and processing of yard waste and agricultural residues; and forest management activities, including planting of new trees and vegetation, which would require ground disturbance. In general, construction and ground disturbance activities would occur in areas of compatible zoning (e.g., industrial). Regardless, there is a possibility that these activities may occur in or adjacent to a region consisting of known significant tribal cultural resources. As such, it is foreseeable that known or undocumented tribal cultural resources could be unearthed or otherwise discovered during ground-disturbing and construction activities.

Operation of facilities and infrastructure could result in additional ground disturbance beyond that which occurred during construction and modification if, for example, earth-moving activities are required for maintenance or repairs on infrastructure such as underground pipelines. Additionally, the presence of new facilities and infrastructure may change the visual setting of the surrounding area, which could adversely affect trial cultural resources, as determined by a California Native American Tribe. As a result, operation impacts would be potentially significant.

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

Mitigation 18-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on tribal cultural resources associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding

the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB's purview in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on tribal cultural resources. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to tribal cultural resources. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to tribal cultural resources.

- Proponents of construction activities implemented as a result of reasonably foreseeable compliance responses associated with the Proposed Project would coordinate with local land use and State regulatory agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant impacts on tribal cultural resources associated with the project.
- Actions required to mitigate potentially significant tribal cultural resources impacts may include the following; however, any mitigation specifically required for a modified facility would be determined by the local lead agency.
    - Retain the services of tribal cultural resources specialists with training and background that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61.
    - Seek guidance from the State and federal lead agencies, as appropriate, for coordination of Nation-to-Nation consultations with the Native American Tribes.
    - Follow notification procedures and conduct consultation as required with California Native American Tribes under AB 52 (including Public Resources Code Section 21080.3.1 and 21080.3.2.). Provide notice to

Native American Tribes of project details to identify potential tribal cultural resources (TCRs). In the case that a TCR is identified, consistent with Public Resources Code Section 21084.3(b), prepare mitigation measures that:

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

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

Significance Conclusion

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

Consequently, while there is a potential for impacts could likely to be reduced on a project-level basis, if each land use and/or permitting agencies, acting as lead agencies for these individual projects under CEQA, imposes conditions of approval on individual future projects, if and when a project proponent seeks a permit for compliance-response related project, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that short-term construction-related and long-term operational impacts on tribal cultural resources associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

19. Utilities and Service Systems

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Implementation of the Proposed Project could include construction or modification of carbon capture, CDR, and feedstock processing facilities; new AD systems; biomass drying equipment; pyrolysis units to produce biochar and bio-oil; supporting infrastructure for CO2 transport and injection; seismic monitoring wells, monitoring stations, and associated infrastructure; infrastructure for the collection and processing of yard waste and agricultural residues; and forest management activities, including planting of new trees and vegetation. Reasonably foreseeable compliance responses associated with the Proposed Project could result in new and/or increased demand for water, wastewater, electricity, and gas services for new or modified carbon capture, CDR, and feedstock processing facilities, new GCS sites, AD systems, and related infrastructure. While utilities modifications would generally be cited in areas with existing or easily accessible utility infrastructure, new and modified facilities could be developed in areas where there is no existing or easily accessible utility infrastructure, requiring new utilities installations, connections, and expansions. As discussed in Section 2.C.3 and shown in Figure 1, the general distribution of future sites that have the highest suitability for CO_2 injection are located in the central region of the state. New or modified utility installation, connections, and expansion would be subject to the requirements of the applicable utility providers.

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. Power supplies are expected to be provided by nearby renewable energy sources. Carbon capture and CDR-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 of CO_2 into storage reservoirs could compete with other water demands within the vicinity of carbon capture and CDR operations.

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.

AD systems could result in new or increased demand for water, wastewater, stormwater, solid waste, electricity, and natural gas services, depending on the type, size, location, and feedstock of the facility. On-site dairy digesters would generally use existing water supplies and would not be expected to require expanded wastewater or stormwater facilities, while off-site centralized dairy digesters and stand-alone organic waste digesters could require new or expanded water, wastewater, and stormwater infrastructure. Digestate management could also require wastewater treatment or landfill services. In addition, digesters that export electricity or biogas could require interconnections and upgrades to existing electric or natural gas distribution systems.

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

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

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

Mitigation 19-1

There are no feasible mitigation measures that CARB can implement to reduce the effects on utilities and services systems associated with implementation of the Proposed Project. First, while the Draft EIA analyzes reasonably anticipated compliance responses reasonably expected under the Proposed Project, the analysis is programmatic in nature, and decisions by the regulated entities regarding compliance options and the precise location of the many components covered in the Proposed Project are unknown. Furthermore, attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken in response to implementation of the Proposed Project would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, there is inherent uncertainty in what and the degree of mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EIA.

Second, 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. Project-specific impacts and mitigation would be identified during the environmental review by the local or State land use approval agencies with project-approval authority.

While not under CARB’s purview, in an effort to provide full disclosure and transparency, the below list includes recognized practices routinely required by local or State land use agencies to avoid and/or minimize impacts on utilities and services systems. Additionally, the Regulatory Setting in Attachment A includes applicable laws and regulations that relate to utilities and services systems. It is reasonably foreseeable that these laws and regulations are implemented to reduce impacts to utilities and services systems.

- 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. Actions required to mitigate potentially significant utility or service-related impacts may include the following; however, any mitigation specifically

required for a new or modified facility would be determined by the local lead agency.

- Comply with local plans and policies regarding the provision of water supply, wastewater treatment, and storm water drainage utilities, and solid waste services.
- Where an on-site wastewater system is proposed, submit a permit application to the appropriate local jurisdiction.
- Where appropriate, prepare a Water Supply Assessment (WSA) consistent with the requirements of Section 21151.9 of the Public Resources Code and Section 10910 et seq. of the Water Code. The WSA would be approved by the local water agency/purveyor prior to construction of the project.

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

Significance Conclusion

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

Consequently, while there is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval on individual future projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this Draft EIA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, long-term operational-related effect to utilities and service systems associated with the Proposed Project would remain **potentially significant and unavoidable**, because there are no feasible mitigation measures that are within CARB's authority to implement and enforce.

20. Wildfire

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

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring

wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste, food waste, and agricultural residues and diverting the organic waste from landfills for other uses; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites. Implementation of the Proposed Project could include construction or modification of carbon capture, CDR, and feedstock processing facilities; new AD systems; biomass drying equipment; pyrolysis units to produce biochar and bio-oil; supporting infrastructure for CO2 transport and injection; seismic monitoring wells, monitoring stations, and associated infrastructure; infrastructure for the collection and processing of yard waste and agricultural residues; and forest management activities, including planting of new trees and vegetation. In the event of an emergency, such as a wildfire, evacuation coordination is handled at various levels of government through state, federal, or local agencies, as appropriate. The California Department of Forestry and Fire Protection (CAL FIRE) is responsible for coordinating wildfire response and protection within State Responsibility Areas. CAL FIRE does not have responsibility for fire response in Local Responsibility Areas or Federal Responsibility Areas, which are defined based on land ownership, population density, and land use. These areas include densely populated areas, such as cities and towns; agricultural lands; and lands administered by the federal government. In densely populated areas, local fire departments respond to fires and emergencies. Fire response on federal lands is coordinated by the appropriate federal agency. For example, on National Forest System lands, the U.S. Forest Service coordinates fire response; on lands administered by the U.S. Bureau of Land Management, the Bureau of Land Management coordinates fire response.

Facilities and associated infrastructure, such as seismic monitoring wells, monitoring stations, new carbon capture, CDR, and feedstock processing facilities, AD systems, and infrastructure for CO_2 transportation and injection would be constructed and operated within response areas across various jurisdictions and would be treated in the same manner as existing infrastructure. Seismic monitoring wells and supporting infrastructure, as well as monitoring stations, would be located at GCS sites, in areas that are likely already developed or disturbed. Furthermore; new or modified carbon capture, CDR, and feedstock processing projects and AD systems would likely occur in areas of compatible zoning (e.g., industrial) or at existing facilities such as wastewater treatment plants and dairies. Therefore, changes or modifications to existing fire response and evacuation plans would not be necessary. As discussed under Impact 14-1, compliance responses implemented under the Proposed Project would not create growth substantial enough to impede emergency response or affect evacuation route capacity.

Seismic monitoring wells would require power sources, consisting of solar panels and underground cables connecting the sensor equipment to the data hub and power supply. Underground cabling would not exacerbate the risk of wildfire ignition. Other reasonably foreseeable compliance responses, including carbon capture and feedstock processing facilities and AD systems, could require electrical equipment and associated power infrastructure. The location and characteristics of these facilities would vary depending on the specific compliance response and project. New facilities and infrastructure 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, and adherence to the California Fire Code and the provisions of wildfire prevention plans—would substantially reduce the risk of wildfire ignitions caused by infrastructure development. Because the risk of wildfire ignitions would not be exacerbated, the Proposed Project would not expose occupants at future project sites to pollutant concentrations from wildfire or to the risk of downslope or downstream flooding or landslides.

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

5.0 CUMULATIVE AND GROWTH-INDUCING IMPACTS

A. Approach to Cumulative Analysis

This section satisfies the requirements of CEQA by discussing how the project under analysis would contribute to cumulative impacts. The California Air Resources Board's (CARB's) certified regulatory program (Title 17 CCR Sections 60000–60008) does not provide specific direction on a cumulative impacts analysis, and while CARB is exempt from Chapters 3 and 4 of CEQA and corresponding sections of the CEQA Guidelines by virtue of its certified program, the Guidelines nevertheless contain useful guidance for preparation of a thorough and meaningful cumulative analysis. The CEQA Guidelines require a lead agency to discuss a cumulative impact if the project's incremental effect combined with the effects of other projects is "cumulatively considerable" (Title 14 CCR Section 15130(a)). The discussion of cumulative impacts need not provide as much detail as the discussion of effects attributable to the project alone (Title 14 CCR Section 15130). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant but must briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

In considering cumulative impacts, an agency may choose from two approaches: it can prepare a list of past, present, and probable future projects that would produce related or cumulative impacts; or, it can rely on a summary of projections contained in an adopted planning document or an adopted or certified environmental document for the planning document (Title 14 CCR Section 15130(b)). Further, the CEQA Guidelines state that the pertinent discussion of cumulative impacts contained in one or more previously certified environmental impact reports (EIRs) may be incorporated by reference pursuant to provisions for tiering and program EIRs, and that no future cumulative analysis is required when the lead agency determines the regional and area wide impacts have already been addressed in the prior certified EIR for that plan (Title 14 CCR Section 15130).

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

Because of the statewide reach of the Proposed Project and the longer-term future horizon for achievement of emissions reductions, the impact analyses for the resource topics in Chapter 4 are programmatic, rather than site or project specific, to address the statewide context. The document contains a description and analysis of a series of actions that are part of one large program. The recommended mitigation measures in Chapter 4 provide a series of generally recognized methods to reduce potentially significant impacts but do not offer details for specific project locations. As a result, the impact conclusions and mitigation measures in the resource-oriented sections of Chapter 4 are cumulative by nature, because they describe the potential impacts associated collectively with the full range of reasonably foreseeable compliance responses.

Additional community-level strategies to reduce emissions and exposure, beyond existing efforts, focus on amending current State measures and implementing new ones. For purposes of disclosure and broad consideration of potential actions to address carbon reduction, CARB has identified relevant projects that would result in related impacts. Related projects include the 2022 Scoping Plan to Achieve Carbon Neutrality (2022 Scoping Plan), which outlines a range of measures to reduce air pollutant and GHG emissions and exposures within communities across the State.[57]

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

B. Significance Determinations and Mitigation

Implementation of the Proposed Project would potentially result in cumulatively considerable contributions to significant cumulative impacts on certain resource areas, as discussed below. While recommended mitigation is provided for each potential cumulatively considerable contribution to a significant impact, other agencies would be responsible for implementing the mitigation measures. Consequently, it is uncertain whether those other agencies would implement the mitigation measures, which precludes assurance that significant impacts would be avoided or reduced to a less-than-significant level. Where impacts cannot feasibly be mitigated or where there is uncertainty about the implementation of mitigation, the Draft EIA recognizes the impact

[57] CARB. 2022 Scoping Plan, 2022, last accessed May 8, 2026, https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf.

as significant and unavoidable. The Board would need to adopt Findings and a Statement of Overriding Considerations for any significant and unavoidable environmental effects of the Proposed Project as part of the approval process.

C. Projects Resulting in Related Effects

The CEQA Guidelines (Title 14 CCR Section 15000 et. seq.) state that a previously approved plan may be used in cumulative impacts analysis; the pertinent discussion of cumulative impacts contained in one or more previously certified EIR(s) may be incorporated by reference; and in certain circumstances, no further cumulative impact analysis is required for a project that is consistent with a plan that has a certified EIR (14 CCR Section 15130 (d)). The related plan considered for cumulative impacts of the Proposed Project is the 2022 Scoping Plan. The Final Environmental Analysis (EA) for the 2022 Scoping Plan Update analyzes a series of statewide GHG emissions reducing measures similar to the Proposed Project (i.e., the CDR measures included in the 2022 Scoping Plan Update), as well as projections regarding those measures.

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

Final EA for the 2022 Scoping Plan Update (2022 Scoping Plan EA)[58]

The portions of the document relevant to this discussion are summarized below and within the respective resource area analyses. The document is available upon request from CARB and online here: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-b-final-environmental-analysis.pdf.

1. 2022 Scoping Plan Update

In April 2015, Governor Brown issued Executive Order B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. In doing so, the Governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. This target was later codified in SB 32; however, this target was expanded in 2022 with the passage of AB 1279, which established new long-term GHG emissions reduction targets of reducing statewide emissions by 85 percent from 1990 levels and achieving carbon

[58] California Air Resources Board. *Final Environmental Analysis for the 2022 Scoping Plan Update*, 2022, last accessed May 11, 2026, https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-b-final-environmental-analysis.pdf.

neutrality by no later than 2045. In December 2022, CARB adopted the 2022 Scoping Plan Update, which provides the framework for achieving the ambitious target of achieving statewide carbon neutrality by 2045. The 2022 Scoping Plan identifies carbon management as a critical component to meeting the State's carbon neutrality goal by 2025.

Implementation of the measures to achieve the 2022 target in the Scoping Plan would result in two main types of reasonably foreseeable compliance responses: (1) construction of, or modifications to buildings, infrastructure, and industrial facilities; and (2) new operations or changes to existing operational processes. These compliance responses are discussed in more detail below.

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

Implementation of the 2022 Scoping Plan would result in various types of construction projects across the State. These projects would include infrastructure projects, such as natural gas and hydrogen refueling stations; collection, processing, and distribution of biomethane; wind, solar thermal, solar photovoltaic, geothermal, solid-fuel biomass, biogas, and small hydroelectric to generate electricity (i.e., renewable energy projects); collection of natural gas from landfills, dairies, and wastewater treatment plants; modifications to crude production facilities (onsite solar, wind, heat, and/or steam generation electricity); organic material composting and/or digesting facilities that would convert organic wastes diverted from landfills (e.g., yard waste, green wastes, food);new pipelines for renewable natural gas and low-carbon fuels; and upgraded and new transmission lines. Modifications may also be necessary at: industrial sources in compliance with the Cap-and-Invest Program and reasonably foreseeable carbon capture and GCS-related compliance responses; roadways and urban areas to reduce overall VMT; and oil and gas facilities (which may include modifications to existing facilities, pipeline replacement or reconstruction activities, inspection and monitoring, and disposal of methane vapors). In addition, manufacturing facilities may be necessary to produce lithium-ion batteries. Large-scale energy storage systems would also be installed throughout California, which would reduce energy production demands. Furthermore, fostering more compact, transportation-efficient development in infill areas and increasing transportation choices with the goal of reducing VMT not only reduces demand for transportation fuel but also requires less energy for buildings and helps to conserve natural and working lands that sequester carbon.

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. Construction activities can be short-term and long-term. That is, after

construction of a building is completed, it would stay on a project site until demolished or otherwise removed.

b) New Operations and Changes to Existing Operational Processes

Under the 2022 Scoping Plan Update there would be various methods to reduce GHG emissions that would result in new operations or changes to existing operational processes. New operations could include increased mining for lithium and increased recycling or refurbishment of batteries for on-road light-duty vehicles and heavy-duty vehicles. New operations would also include changes to methods of manure management at dairies, alterations to crop cultivation to meet feedstock demands related to fuels regulations, and improvements to transportation systems to reduce reliance on personal vehicles. Some of these operational process changes may, in turn, require some level of construction activity to effectuate the process change.

In addition, operations could include strategies for the deployment of autonomous vehicles, ride-hailing services, and other new mobility options toward high passenger-occupancy and low VMT-impact service models that complement transit and ensure equitable access for priority populations.

Potential environmental impacts associated with the 2022 Scoping Plan EA are summarized in Table 3.[59]

Table 3: Summary of Environmental Impacts for the 2022 Scoping Plan Update

Resource Areas and Impact Categories	Significance Determination
Aesthetics	
Impact 1.a: Short-Term Construction-Related Impacts	PSU
Impact 1.b: Long-Term Operational-Related Impacts	PSU
Agriculture and Forest Resources	
Impact 2.a: Short-Term Construction-Related Impacts	PSU
Impact 2.b: Long-Term Operational-Related Impacts	PSU
Air Quality	
Impact 3.a: Short-Term Construction-Related Impacts	PSU
Impact 3.b: Long-Term Operational-Related Impacts	B
Biological Resources	
Impact 4.a: Short-Term Construction-Related Impacts	PSU

[59] Ibid.

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

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

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

D. Cumulative Impacts by Resource Area

1. Aesthetics

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. The exact location or character of these new facilities or modification of existing facilities is uncertain. However, new facilities could degrade scenic vistas or views from a State scenic highway due to the presence of heavy-duty equipment, glare, lighting, or disturbed earth. In addition, facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime lighting for safety and security purposes.

These compliance responses could result in significant and unavoidable aesthetics impacts. Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant and unavoidable impacts on aesthetics due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual carbon capture projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

2. Agriculture and Forestry Resources

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. The exact location of these new facilities or modification of existing facilities is uncertain. However, new facilities could be located on Important Farmland, forest land, or timberland. Compliance with existing land use policies would generally avoid conversion of agricultural and forest lands, but the potential remains for conversion. Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant

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

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual carbon capture projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

3. Air Quality

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Implementation of compliance responses for various measures under the Proposed Project could require construction activities that would generate emissions of criteria air pollutants, TACs, and odors. Emissions from construction activities could occur from grading and site preparation, use of heavy-duty equipment, and construction worker commute trips. The exact location and state of ambient air quality where construction activities may take place are uncertain.

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

Operational emissions sources associated with compliance responses include additional onsite energy generation and other operational emissions. For example, carbon capture and CDR projects generally require additional onsite energy to power the capture system, as discussed in Chapter 4 of this Draft EIA. Additional demand for onsite energy could generate emissions such as NO_X and $PM_{2.5,}$ as well as VOCs, and operations could result in emissions from solvent-based capture technologies. At the same time, the presence of certain air pollutants such as SO_2, NO_X, and $PM_{2.5}$ interfere with chemical processes used to capture CO_2, and thus operators could be required to install additional pollution controls on CO_2 sources to ensure effective capture and removal performance. These competing factors make it speculative to infer net operational air quality impacts from new carbon capture projects at the programmatic level.

The Proposed Project's contribution to adverse air quality effects would be significant and unavoidable on its own, as concluded in Chapter 4. The Proposed Project's contribution to adverse effects on air quality would also be cumulatively considerable when combined with other construction-related and operational related activities occurring within the State. Because the Proposed Project on its own would result in a significant and unavoidable impact, and because this impact would combine with other impacts on these resources across the State, the project's contribution to the significant cumulative impact would be cumulatively considerable.

Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed Project to a less-than-considerable level, but the authority to require that mitigation would rest with other agencies authorizing site-specific projects, not with CARB. Thus, as noted in Chapter 4, CARB's implementation and enforcement of project-level mitigation is legally infeasible. Therefore, the Proposed Project **could result in a cumulatively considerable contribution to a significant cumulative impact** on short-ter, construction related and long-term operational-related air quality and odor effects.

4. Biological Resources

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural

residues and forest management activities, including herbicide use and planting of new trees and vegetation. The exact location of these new facilities or the modification of existing facilities is uncertain. Construction could require disturbance of undeveloped areas, such as clearing of vegetation; earth movement and grading; drilling; trenching for utility lines; erection of new buildings; and paving of parking lots, delivery areas, and roadways. These activities would have the potential to adversely affect biological resources (e.g., species, habitat) that may reside or be present in those areas. Because some special-status plant and wildlife species are known to use developed settings, resources could also be adversely affected by construction and operations within disturbed areas at existing facilities or at other sites in areas with zoning that would permit the development of industrial uses. Implementation of the Proposed Project would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, this EIA identified potentially significant and unavoidable impacts on biological resources due to the construction and operation of individual projects. Thus, implementation of the Proposed Project could result in a significant cumulative effect.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual carbon capture projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

5. Cultural Resources

Reasonably foreseeable compliance responses to the Proposed Project include: construction of new industrial facilities or modification of existing industrial facilities to capture CO_2 emissions and process feedstocks; construction of new infrastructure, such as pipelines, wells, roads, and other surface facilities, to enable the transport and injection of CO_2 into a geologic formation for storage; installation of seismic monitoring wells and supporting infrastructure (e.g., seismic sensors, down-borehole sensors, solar panels) at GCS sites; installation of monitoring stations (e.g., CO_2 analyzers, air pollutant monitoring equipment, power source, data logger, meteorological monitoring stations, and data transmission system) at legacy wells, fault zones, and injection well pads at GCS sites; collecting yard waste and agricultural residues; forest management including the use of herbicides; planting of new trees and vegetation; new AD systems at wastewater treatment plants, dairies, and organic waste diverted from landfills; and system repairs if emergent conditions are identified at GCS sites.

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture and CDR projects, construction of supporting infrastructure such as pipelines and wells to transport and inject CO_2, installation of monitoring equipment, and construction of associated infrastructure for monitoring equipment. The exact location of new facilities or the modification of existing facilities is uncertain. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, and construction of new structures. Demolition of existing structures may also occur before the construction of new buildings and structures. The cultural resources that could potentially be affected by ground disturbance activities could include, but are not limited to, prehistoric and historical archaeological sites, paleontological resources, historic buildings or other structures, and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties that possess intangible traditional cultural values, may also exist. Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant and unavoidable impacts on cultural resources due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual carbon capture projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA

compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

6. Energy

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. The cumulative context for the assessment of impacts related to energy is the State. A cumulative impact would occur if the project, in combination with other projects, were to result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy or conflict with a State or local plan for renewable energy or energy efficiency. Energy demand associated with new carbon capture facilities would include temporary fuel use during construction and operational demands for natural gas and electricity. Typical earth-moving equipment that could be necessary for construction includes graders, scrapers, backhoes, and generators. Although energy would be required to complete construction of any new or modified facilities or infrastructure projects, its consumption would be temporary and of limited magnitude and would not result in sustained increases in energy demand that would adversely affect energy supplies. While energy demand would increase during the construction of future projects in response to the implementation of the Proposed Project, these energy expenditures would be necessary to facilitate the actions that would result in environmental benefits, such as reduced GHG emissions. Therefore, short-term energy consumption would not be considered unnecessary and **would not**

result in a cumulatively considerable contribution to a short-term cumulative impact on energy.

Cumulative projects within the State would be required to demonstrate consistency with current building codes and standards related to energy consumption and efficiency, and thus would not result in wasteful, inefficient, or unnecessary energy consumption. However, it cannot be guaranteed that all cumulative projects would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Therefore, this impact would be cumulatively considerable.

Reasonably foreseeable compliance responses could increase per capita energy consumption because facilities using carbon capture systems would require increased energy input compared to facilities not using capture systems. This could include energy consumption such as the combustion of natural gas to power capture units at facilities such as natural gas power and cement plants that could incorporate point-source capture. Therefore, implementation of reasonably foreseeable compliance responses would increase overall energy demand relative to existing conditions and the long-term operational impact would be potentially significant. All projects would be required to comply with applicable energy standards and the most recent building codes, including requirements for achieving appropriate energy efficiency standards (e.g., Title 24 standards). As discussed in Chapter 4, implementation of the Proposed Project would support the goals and strategies in the 2022 Scoping Plan, including reducing emissions from limited sectors and reducing anthropogenic emissions by at least 85 percent below 1990 levels in 2045, as directed by AB 1279. By supporting the goals of the 2022 Scoping Plan, the Proposed Project would not conflict with or obstruct an applicable plan for renewable energy or energy efficiency.

Implementation of the Proposed Project would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the environmental document identified less-than-significant impacts related to short-term construction and a potentially significant impact related to long-term operation of individual projects. Implementation of the project-level mitigation identified in Chapter 4 and other measures prescribed by local, State, federal, or other land use or permitting agencies (either in the U.S. or abroad) with approval authority over the particular development projects could reduce these impacts to less-than-significant levels. However, because CARB has no land use authority, mitigation is not within its purview to reduce potentially significant impacts to less-than-significant levels. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

Therefore, implementation of the Proposed Project **could result in a cumulatively considerable contribution to a significant cumulative impact** related to long-term operational-related energy resources.

7. Geology and Soils

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require disturbance of undeveloped areas, such as clearing of vegetation; earth movement and grading; trenching for utility lines and pipelines for CO_2 transport; boring of wells; erection of new buildings and infrastructure; and paving of parking lots, delivery areas, and roadways. Activities related to implementation of CDR approaches such as BiCRS and nature-based strategies could also require the disturbance of undeveloped areas for activities such as silvicultural, forest thinning and harvest, plantation of short rotation forestry and oil crops, farmland soil preparation activities, the planting of new trees or other vegetation; removal of forest litter and agricultural residues; and removal of forest products including small-diameter trees, fire snags, slash, and understory. -Additional disturbance could also result from the increased mineral ore extraction activities, which would provide raw materials needed to implement facilities and infrastructure under the Proposed Project. 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.

The exact location of these new facilities or the modification of existing facilities is uncertain. New facilities and infrastructure could be located under 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 facilities and infrastructure are not known at this time and would be analyzed on a site-specific basis at the project level.

Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant and unavoidable impacts on geology and soils due to construction and operation of individual projects. Thus, implementation of the Proposed Project could result in a significant cumulative effect.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to

individual carbon capture projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

8. Greenhouse Gases

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. When these short-term construction GHG emissions are considered in relation to the overall long-term operational GHG net reductions, they are not considered substantial. While there would be some increase in vehicle emissions from maintenance trips to existing and future GCS sites, this increase in emissions would be offset from GHG emissions reductions enabled by the Proposed Project and by ensuring that captured and removed CO_2 is injected for long term storage. As discussed in Chapter 4, amendments to the Cap-and-Invest Program could indirectly encourage carbon capture development and increased demand for GCS capacity. New carbon capture and CDR projects would reduce net operational GHG emissions from covered entities, resulting in long-term reductions in GHG emissions. Therefore, the Proposed Project would not result in a cumulatively considerable contribution to a significant cumulative impact on GHG emissions.

Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described under Section 5.C of this Draft EIA. As summarized in

Table 3, the 2022 Scoping Plan EA identified beneficial impacts related to GHG emissions due to construction and operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

Therefore, implementation of the Proposed Project **would not result in a cumulatively considerable contribution to a significant cumulative impact** on GHG emissions.

9. Hazards and Hazardous Materials

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Construction activities generally use heavy-duty equipment that requires periodic refueling and lubrication. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site. There would be a potential risk of accidental release during fuel transfer activities. Although precautions would be taken to ensure that any spilled fuel is properly contained and disposed of, and such spills are typically minor and localized to the immediate area of the fueling (or maintenance), the potential remains for a substantial release of hazardous materials into the environment. Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant and unavoidable impacts related to hazards and hazardous materials due to the construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual carbon capture projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

The Proposed Project's impacts related to hazards and hazardous materials would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant due to the potential for hazardous material spills, exposure, and environmental impacts in the event of an accidental release, equipment failure, or improper handling of hazardous materials. Because the Proposed Project on its own would result in a significant and unavoidable impact, and because the project's impacts

would combine with other impacts across the State, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the Proposed Project to a less-than-considerable level, but authority to require that mitigation would rest with other agencies that would be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the Proposed Project **could result in a cumulatively considerable contribution to a significant cumulative impact** related to hazards and hazardous materials.

10. Hydrology and Water Quality

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Construction could require disturbance of undeveloped areas, such as clearing vegetation, earth movement and grading, trenching, and installation of monitoring wells, monitoring stations, access improvements, and other supporting infrastructure associated with the implementation of reasonably foreseeable compliance responses, which could result in short-term adverse effects on water quality. Operation and maintenance of carbon capture and CDR projects and GCS site infrastructure could affect surface water and groundwater quality through accidental releases, wastewater generation, changes in subsurface conditions associated with geologic injection, and increases in stormwater runoff from associated facilities and infrastructure. These impacts may result from the ongoing operation of monitoring wells, injection systems, access roads, and related equipment.

Although implementation of reasonably foreseeable compliance responses associated with the Proposed Project would be subject to State and federal regulations, it cannot be guaranteed at this time that adverse effects on hydrology and water quality would not occur. CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant and unavoidable impacts on hydrology and water quality due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

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

11. Land Use and Planning

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Impacts related to land use and planning focus on potential conflicts with plans, policies, and regulations intended to minimize environmental impacts, as well as potential division of established communities. These impacts do not typically interact with or combine with other impacts in the cumulative context to produce a significant cumulative impact on land use and planning. Nevertheless, significant project-related impacts associated with land use and planning were identified in Chapter 4, and mitigation measures were developed for various resource areas (i.e., agriculture and forestry resources, biological resources, geology and soils, and hydrology and water quality). CARB cannot determine with certainty that implementing mitigation measures would reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects.

Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant and unavoidable impacts due to the construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative impact.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual carbon capture projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

12. Mineral Resources

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. There is uncertainty as to the exact location of these new or modified facilities and infrastructure. While most construction and operation activities would likely occur within existing footprints or in areas with consistent zoning where original permitting and analyses considered mineral resources issues, some construction could occur in areas outside the footprints of existing facilities. Construction activities associated with reasonably foreseeable compliance responses could temporarily affect access to known mineral resources; and the implementation of permanent facilities and infrastructure could also affect mineral resource availability depending on their location. Compliance with policies and regulations pertaining to the preservation of mineral resources, compliance with SMARA noticing requirements, and coordination with the State Geologist and State Mining and Geology Board would further minimize impacts. Therefore, reasonably foreseeable compliance responses involving construction of new or modified facilities and infrastructure would not be expected to affect the availability of a known mineral resource or result in the loss of

availability of a locally important mineral resource recovery site and would not permanently preclude access to known mineral resources.

As discussed in Chapter 4, the Proposed Project includes requirements that prohibit drilling or extraction activities from GCS reservoirs for no less than 100 years after injection of CO_2 has ended. These requirements could result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. In addition, access to mineral resources in reservoirs above or below a GCS site may also be restricted, depending on the geology of the site. Therefore, the Proposed Project could affect the availability of a known mineral resource or result in the loss of availability of a locally important mineral resource recovery site and could preclude access to known mineral resources. Although cumulative projects would be required to comply with existing laws and regulations to minimize impacts on known or locally important mineral resources, it cannot be guaranteed that all development would be able to entirely avoid mineral resource loss. Therefore, the cumulative loss of mineral resources within the cumulative analysis impact area could be significant.

Implementation of the project-level mitigation identified in Chapter 4 and compliance with local policies and regulations pertaining to the preservation of mineral resources, compliance with SMARA noticing requirements, and coordination with the State Geologist and State Mining and Geology Board would minimize impacts on locally important mineral resource sites during operations. However, because CARB has no land use authority, CARB does not have control over the mitigation measures that permitting agencies impose at a project level, and there are no feasible mitigation measures that are within CARB's authority to implement and enforce. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, implementation of the Proposed Project **could result in a cumulatively considerable contribution to a significant cumulative impact** related to mineral resources.

13. Noise and Vibration

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Noise and vibration associated with the construction and operation of these projects would fluctuate depending on the type, number, size, and duration of use of the equipment. The effects of noise and vibration would depend on

the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment in the receptor's vicinity. Operational activities associated with the new carbon capture, CDR, and feedstock processing facilities; AD systems; GCS activities, monitoring equipment, and associated infrastructure could create new or ongoing noise sources that exceed applicable noise standards and result in a substantial increase in ambient noise levels. Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant and unavoidable impacts related to noise and vibration due to the construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual carbon capture projects, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

14. Population and Housing

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment

and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Activities related to the construction of carbon capture, CDR, and feedstock processing facilities, AD systems; supporting infrastructure to transport and inject CO_2, and installing monitoring wells, and associated infrastructure, as well as forest management and tree and vegetation planting activities, would require relatively small crews, and demand for these crews would be temporary (e.g., 6 to 12 months per project). Therefore, a substantial amount of construction worker migration would not be likely to occur, and a sufficient construction employment base would likely be available. Construction activities would not require new additional housing or generate changes in land use. It would be expected that the aforementioned facilities would be located in areas with consistent zoning and have sufficient staffing and housing to support their operations.

Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified less-than-significant impacts related to population and housing due to the construction and operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

Therefore, the implementation of the Proposed Project **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to population and housing.

15. Public Services

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction activities would likely occur within the footprints of existing facilities or in areas with zoning that permits their development. Construction activities would not require additional housing to accommodate or generate changes in land use and, therefore, would not affect the provision of public services. It would be expected that the aforementioned facilities would be located within areas of consistent zoning and that have sufficient public services to support their operation.

Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As

summarized in Table 3, the 2022 Scoping Plan EA identified less-than-significant impacts related to public services due to the construction and operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

The Proposed Project's impacts on public services would be less than significant, as concluded in Chapter 4. Therefore, the implementation of the Proposed Project **would not result in a cumulatively considerable contribution to a significant cumulative impact** on public services.

16. Recreation

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Although the exact locations of potential new or modified facilities are not known, these activities would likely occur within the footprints of existing facilities or in areas with zoning that permits such development. 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 expanded) recreation-related facilities would not result from construction activities.

Operation associated with the Proposed Project, including staffing for new carbon capture, CDR, feedstock processing, AD, and GCS activities, as well as monitoring, maintenance, collection, and forest management activities, would also be limited in scale and are expected to rely primarily on the existing workforce; therefore, the Proposed Project is not expected to induce population growth. Consequently, the operation of new or modified facilities would not increase demand for recreational facilities or intensify use of existing facilities to the extent that substantial physical deterioration would occur. Facilities developed or modified under the Proposed Project would be located in areas with consistent zoning and existing recreational resources adequate to support their operation.

Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified less-than-significant impacts related to recreation from construction and potentially significant impacts from

the operation of individual projects. Thus, implementation of this plan would not result in a significant cumulative effect.

The Proposed Project's impacts on recreation would be less than significant, as concluded in Chapter 4. Therefore, activities related to the Implementation of the Proposed Project **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to recreation.

17. Transportation

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. Although detailed information about specific construction activities is not currently available, these activities could result in short-term construction trips related to worker commutes and material deliveries. Depending on the construction activity (e.g., roadway closures, detours, etc.), the location of new facilities or infrastructure, and the roadway network surrounding the project site, reasonably foreseeable compliance responses under the Proposed Project could increase transportation hazards and limit emergency access during construction. In addition, the locations of new or modified facilities with newly installed infrastructure are currently unknown; therefore, the total change in VMT resulting from the operation of these facilities cannot be quantified. Many operational activities would take place at existing facilities; however, long-term operations (e.g., deliveries and distribution of goods) could result in new trips and, depending on trip length, increase regional VMT. In addition, depending on the location of new or modified facilities and design of the surrounding roadway network, implementation of reasonably foreseeable compliance responses could conflict with applicable programs, plans, ordinances, or policies related to the transportation network; and/or result in hazardous design features and emergency access issues, especially due to project-generated heavy-duty truck trips.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual projects or activities associated with reasonably foreseeable compliance responses, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

18. Tribal Cultural Resources

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. The exact location of new facilities and infrastructure or the modification of existing facilities is uncertain. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, and new structures. Demolition of existing structures may also occur before the construction of new buildings and structures. Thus, known or undocumented tribal cultural resources could be unearthed or otherwise discovered during ground-disturbing and construction activities.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual projects or activities associated with reasonably foreseeable compliance responses, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes, that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

The Proposed Project's impacts on tribal cultural resources would be significant and unavoidable on their own, as concluded in Chapter 4. These impacts would be significant due to the potential to damage or destroy tribal cultural resources. Because the Proposed Project on its own would result in a significant and unavoidable impact, and because the project's impact would combine with other impacts on these resources

across the State, the project's contribution to the significant cumulative impact would be cumulatively considerable. Implementation of the project-level mitigation identified in Chapter 4 could effectively reduce the incremental contribution from the project to a less-than-considerable level in most cases, but authority to require that mitigation would rest with other agencies that would be authorizing site-specific projects, and not with CARB. Thus, as noted in Chapter 4, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Therefore, the Proposed Project **could result in a cumulatively considerable contribution to a significant cumulative impact** on tribal cultural resources.

19. Utilities and Service Systems

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure; as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. As a result, there could be new demand for water, wastewater, electricity, and gas services for new or modified facilities. While utilities modifications associated with the Proposed Project would generally be cited in areas with existing or easily accessible utility infrastructure, new and modified facilities could be developed in areas where there is no existing or easily accessible utility infrastructure, requiring new utility installations, connections, and expansions. At this time, the specific location and type of construction needed is not known and would be dependent upon a variety of market factors that are not within the control of CARB, including: economic costs, product demands, environmental constraints, and other market constraints. Thus, the specific impacts from construction on utility and service systems cannot be identified with any certainty, and individual compliance responses could potentially result in significant environmental impacts for which it is unknown whether mitigation would be available to reduce the impacts. Implementation of the 2022 Scoping Plan would include the reasonably foreseeable compliance responses described above under Section 5.C of this Draft EIA. As summarized in Table 3, the 2022 Scoping Plan EA identified potentially significant and unavoidable impacts related to utilities due to construction and operation of individual projects. Thus, implementation of this plan could result in a significant cumulative effect.

There is a potential for impacts to be reduced on a project-level basis, if each land use and/or permitting agency imposes conditions of approval that can be applied to individual projects or activities associated with reasonably foreseeable compliance responses, CARB does not have control over the mitigation measures that permitting agencies impose at the project level. Therefore, this EIA takes the conservative approach in its significance conclusions and discloses, for CEQA compliance purposes,

that these impacts would be potentially significant, because there are no feasible mitigation measures that are within CARB's authority to implement.

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

20. Wildfire

Implementation of the reasonably foreseeable compliance responses associated with the Proposed Project could require construction and operational activities associated with new or modified carbon capture, CDR, and feedstock processing facilities; AD systems; supporting infrastructure to transport and inject CO_2; monitoring equipment and associated infrastructure;, as well as collection of yard waste and agricultural residues and forest management activities, including herbicide use and planting of new trees and vegetation. The exact locations of potential new or modified facilities are uncertain. However, construction and operational activities would likely occur at existing facilities or at other sites in areas with zoning that permits industrial uses; therefore, changes or modifications to existing fire response and evacuation plans would not be necessary. New power sources that may be installed for seismic monitoring systems would use underground cabling that would be unlikely to exacerbate the risk of wildfire ignition. In addition, 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. Therefore, activities related to the Proposed Project **would not result in a cumulatively considerable contribution to a significant cumulative impact** related to wildfire.

E. Growth-Inducing Impacts

A project would be considered growth-inducing if it removes an obstacle to growth, includes the construction of new housing, or establishes major new employment opportunities. The reasonably foreseeable compliance responses associated with the Proposed Project would not directly result in any growth in population or housing, as the Proposed Project is meant to support carbon management technologies-- including carbon capture, CDR, and GCS-- to help California meet its long-term climate targets, including carbon neutrality by 2045, which would not require substantial relocation of employees.

6.0 MANDATORY FINDINGS OF SIGNIFICANCE

Consistent with the requirements of the CEQA Guidelines Section 15065 and Section 18 of the Environmental Checklist, this Draft EIA addresses the mandatory findings of significance for the Proposed Project.

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

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

This Draft EIA addresses and discloses potential environmental effects associated with implementation of the Proposed Project, including direct, indirect, and cumulative impacts. As described in Chapter 4, this Draft EIA discloses potential environmental impacts, the level of significance prior to mitigation, mitigation, and the level of significance after the incorporation of mitigation.

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

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

other current projects, and the effects of probable future projects (14 CCR Section 15065(a)(3)).” Cumulative impacts are discussed in Chapter 5 in this Draft EIA.

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

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

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7.0 ALTERNATIVES ANALYSIS

This chapter of the Draft EIA provides an overview of the regulatory requirements and guidance for alternatives analyses under CEQA; a description of each of the alternatives to the Proposed Project; a discussion of whether and how each alternative meets the objectives of the Proposed Project; and an analysis of each alternative's environmental impacts.

A. Approach to Alternatives Analysis

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

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

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

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

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

B. Selection of Range of Alternatives

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

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

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

- Alternative 1: No Project Alternative
- Alternative 2: Relaxed Performance Criteria for Seismic Monitoring
- Alternative 3: Reduced Seismic Monitoring Area
- Alternative 4: Removal of the GCS Protocol Under Cap-and-Invest and the Carbon Management Projects and Quantification Methodologies

C. Project Objectives

The primary objectives of the Proposed Project are to:

1. Support overall deployment of carbon CCUS and CDR projects to meet statutory climate targets as demonstrated in the 2022 Scoping Plan;
2. Implement the CCUS Program to reflect Health and Safety Code Section 39741.1, subdivision (c);
3. Adopt enforceable regulations requiring project operators to maintain financial responsibility for GCS sites as required by Health and Safety Code Section 39741.5;

4. Develop enforceable implementation, monitoring, reporting, and emergency response requirements to support the efficacy, safety, and viability of CCUS and CDR projects in alignment with authority in SB 905;
5. Complement existing federal, state, and local permitting requirements associated with these project types and avoid creating duplicative regulatory requirements;
6. Increase public transparency of CCUS and CDR project information; and
7. Support alignment and integration with existing CARB programs.

D. Alternatives Analysis

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

The Proposed Project must be developed and implemented in a manner consistent with SB 905 statute. Despite these constraints in developing the Proposed Project, staff have included the alternatives listed below, while noting the limitations of each potential alternative.

1. Alternative 1: No Project

a) Alternative 1 Description

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

Under the No Project Alternative, CARB would not adopt or implement the Proposed Project; existing federal, state, and local requirements applicable to carbon capture projects, CDR projects, and GCS sites would remain in effect. GCS operators would continue to comply with the U.S. EPA’s requirements for Class VI wells, including all currently required monitoring, reporting, financial assurance, and long-term site management obligations. Storage sites would also continue to follow U.S. EPA’s mandatory monitoring protocols for injection operations, groundwater quality and geochemistry, and CO_2 plume tracking. No additional seismic monitoring, CO_2 monitoring, or other enhanced oversight measures contemplated under the Proposed Project would be required.

In the absence of the Proposed Project, GCS operators would follow Class VI monitoring requirements for up to 50 years after the last date of CO_2 injection. Although seismic monitoring and surface CO_2 monitoring are not expressly required under standard EPA Class VI requirements, these activities may be required by U.S. EPA or other permitting authorities depending on site-specific conditions. If the U.S. EPA UIC director required an operator to conduct seismic monitoring, that monitoring would cover the EPA-approved Area of Review (AoR), which is equivalent in size to the Proposed Project required monitoring area, including the surface projection of the storage complex and pressure front.

Under the No Project Alternative, GCS operators would prepare an ERRP consistent with Class VI requirements. However, GCS operators would not expand their ERRP to characterize seismic risk levels and response actions, as would be required under the Proposed Project. Additionally, GCS operators would not be required to meet new financial responsibility requirements designed to support monitoring and remediation activities for at least 100 years after the last date of injection. Instead, GCS operators would follow Class VI requirements for financial responsibility, which do not require coverage for remediation related to seismic events and only extend through a 50-year PISC period. Carbon capture, direct air capture, and GCS operators would also not be required to disclose project information on a public-facing website. Overall, carbon management projects would proceed solely under existing federal, state, and local requirements, and no new requirements would be implemented under CARB's CCUS Program.

Under the Proposed Project, several amendments and updates to existing programs are proposed to support voluntary adoption of carbon management technologies, none of which would be implemented under the No Project Alternative. The Proposed Project includes amendments to CARB's Cap-and-Invest Program that clarify how regulated entities may reduce compliance responses by voluntarily implementing carbon capture and storing captured CO_2 pursuant to the GCS Protocol requirements. Under the No Project alternative, the Cap-and-Invest Program would not be amended, and the GCS Protocol would not be made available to regulated entities. No administrative amendments would be made to the MRR or LCFS program, and no technical amendments would be made to the current CCS Protocol under the LCFS program. Likewise, the carbon management project review process would not be implemented and no criteria would be established for the executive officer to review carbon management projects or quantification methodologies.

b) Alternative 1 Discussion

i) Objectives

Objective 1 aims to support overall deployment of carbon management technologies to help the State meet its statutory climate targets demonstrated in the 2022 Scoping plan. Under the No Project Alternative, amendments to existing programs designed to

support voluntary adoption of carbon management technologies would not be implemented. Specifically, the proposed amendments to CARB's Cap-and-Invest Program would enable regulated entities to reduce their compliance obligations by voluntarily implementing carbon capture. Without these amendments, the No Project Alternative would leave the LCFS Program as the only CARB program supporting carbon management technologies, and its applicability is limited to a narrower set of carbon management applications. Additionally, the carbon management project and quantification methodology approval process would not be established. Therefore, the No Project Alternative would only partially meet Objective 1.

Objective 2 aims to implement the CCUS Program as required by Health and Safety Code Section 39741.1(c). In the absence of the Proposed Project, the CCUS Program would not be established and implemented under this rulemaking. Therefore, the No Project Alternative does not meet Objective 2.

Objective 3 aims to adopt requirements for operators to maintain financial responsibility for GCS sites as required by Health and Safety Code Section 39741.5. Under the No Project Alternative, GCS operators would adhere to the financial responsibility requirements for Class VI wells. These existing requirements do not require coverage for remediation related to seismic events and only extend through a 50-year PISC period. In contrast, Section 39741.5 specifically directs CARB to implement financial responsibility requirements that terminate no earlier than 100 years after the last date of injection. Moreover, the Proposed Project includes enhanced protections by requiring financial responsibility for remediation related to potential seismic events. Therefore, the No Project Alternative would only partially meet Objective 3.

Objective 4 aims to develop monitoring, reporting, and emergency response requirements that ensure the efficacy, safety, and long-term viability of carbon management projects. Under the No Project Alternative, GCS sites would follow Class VI well monitoring requirements, which only require seismic monitoring and surface CO_2 monitoring at the discretion of the U.S. EPA's UIC Director based on site-specific geology. As a result, some GCS operators may not be required to conduct seismic monitoring or surface CO_2 monitoring under the No Project Alternative. In addition, plume tracking would only be required for up to 50 years post-injection and could be concluded sooner at the EPA Director's discretion.

In contrast, the Proposed Project provides an added layer of leak detection by requiring surface CO_2 monitoring at all GCS sites. It would also require plume tracking and seismic monitoring for up to 100 years after the last date of CO_2 injection. Emergency response and risk preparedness requirements would be more robust under the Proposed Project because operators would be required to characterize seismic risk levels and identify corresponding response actions, which would not be required under the No Project Alternative. For these reasons, the No Project Alternative would only partially meet Objective 4.

Objective 5 seeks to complement existing federal, State, and local permitting requirements and avoid creating duplicative regulatory requirements. Under the No Project Alternative, no duplicative regulatory requirements would be implemented; however, the complementary monitoring requirements described would also not be implemented. Therefore, the No Project Alternative would only partially meet Objective 5.

Objective 6 aims to facilitate public access to carbon management project information. In the absence of the Proposed Project, carbon capture, direct air capture, and GCS operators would not be required to make certain project information available to the public through the public webpage. General project information, monitoring plans and permit information would not be shared on a centralized website. In some instances, operators may be required by state and local permitting authorities to post project information. Therefore, the No Project Alternative would only partially fulfill Objective 6 of the Proposed Project.

Objective 7 aims to support alignment and integration with existing programs. Under the No Project Alternative, the proposed amendments to LCFS, MRR, and Cap-and-Invest would not be implemented. Moreover, technical updates to the current CCS Protocol under the LCFS program would not occur, further preventing alignment and integration across these programs. Therefore, the No Project Alternative would not meet Objective 7.

ii) Environmental Impacts

Implementation of the No Project Alternative would avoid some of the potential environmental impacts described in Chapter 4 of this Draft EIA, specifically those associated with construction and operation of carbon capture projects, supporting infrastructure for transporting and injecting CO_2, and monitoring equipment. If the proposed amendments to the Cap-and-Invest Program were not implemented, new carbon capture projects would be less likely to be developed. Thus, potentially significant impacts related to construction and operation of new carbon capture projects and associated infrastructure could be avoided. Potentially significant impacts related to installing and maintaining monitoring equipment at GCS sites could also be avoided in many cases, although some monitoring requirements could still be implemented at certain sites if deemed necessary by the U.S. EPA's UIC Director or other permitting authorities.

Without implementing the Proposed Project, GHG reductions from regulated entities using carbon capture to reduce compliance obligations may be impeded, and potential emissions reductions may not be realized. As a result, the State's ability to help avoid the most environmentally damaging impacts of long-term climate change would be limited to benefits achieved through other programs.

The Proposed Project also includes more robust leak detection measures, including seismic monitoring, extended plume tracking, and surface CO_2 monitoring, compared to the No Project Alternative. As a result, leakage from a reservoir could remain undetected for a longer period under the No Project Alternative. In addition, storage operators would only conduct plume tracking for a maximum of 50 years post-injection under the No Project Alternative, consistent with U.S. EPA requirements. If the CO_2 plume migrated outside of the reservoir after monitoring concluded, leakage could remain undetected and unmitigated.

Though leakage from an appropriately sited GCS reservoir is unlikely, it is critical to detect and promptly mitigate any potential leakage or risk factors. Migration of CO_2 from the storage reservoir can threaten USDWs. When left unmitigated, CO_2 leakage could have significant water quality, climate, and human health impacts. Therefore, the No Project Alternative could potentially result in greater environmental impacts than the Proposed Project in the unlikely event of a leak because there are fewer monitoring safeguards to identify leakage risks.

2. Alternative 2: Relaxed Performance Criteria for Seismic Monitoring

a) Alternative 2 Description

Under Alternative 2, CARB would relax the performance criteria for the seismic monitoring network to reduce environmental impacts from drilling seismic monitoring wells. Under the current proposal, GCS operators would implement a seismic monitoring network across the surface projection of the storage complex and pressure front. Across this area, the network must achieve an Mc of –0.5 to 0.5, meaning the network must be capable of detecting all earthquakes, including microseismic events, within that magnitude range through the entire monitored area.

Under Alternative 2, GCS operators would instead be required to meet the tighter Mc threshold (-0.5 to 0.5) only within the portion of the CO_2 plume where the reservoir pressure is highest.[60] Applying the tighter threshold in these zones is important because the highest-pressure areas are where the risks of induced seismicity and fluid migration are greatest. For the remainder of the storage complex and surface projection of the pressure front, GCS operators would be required to achieve an Mc of 1.5. These performance requirements could be met using fewer down-borehole seismic monitoring wells, with GCS operators relying more heavily on shallower post-hole seismic sensors and, where adequate, California Integrated Seismic Network (CISN) where the existing network already meets the relevant Mc thresholds.

[60] Wang, Nenghao, et al. “Numerical Evaluation of Fault Reactivation and Leakage Risk in CO_2 Geological Storage.” *Environmental Earth Sciences*, 15 Apr. 2026, https://doi.org/10.1007/s12665-026-12939-9.

Under Alternative 2, the required duration of seismic monitoring would remain consistent with the requirements of the Proposed Project. All other elements of the Proposed Project (e.g., surface and subsurface CO_2 monitoring, plume tracking, ERRP, financial responsibility, and amendments to existing programs) would remain unchanged under Alternative 2.

b) Alternative 2 Discussion

i) Objectives

Objective 1 aims to support overall deployment of carbon management technologies to help the State meet its statutory climate targets demonstrated in the 2022 Scoping plan. Alternative 2 would meet Objective 1 because it includes proposed amendments to Cap-and-Invest, MRR, or LCFS that are designed to support overall deployment of carbon management technologies.

Objective 2 aims to implement the CCUS Program as required by Health and Safety Code Section 39741.1(c). Alternative 2 would meet Objective 2 because it would establish and implement the CCUS Program.

Objective 3 aims to adopt requirements for operators to maintain financial responsibility for GCS sites as required by Health and Safety Code Section 39741.5. The proposed financial responsibility requirements would remain unchanged under Alternative 2, therefore meeting Objective 3.

Objective 4 aims to develop monitoring, reporting, and emergency response requirements to support the efficacy, safety, and viability of carbon management projects in alignment with authority in SB 905. Under Alternative 2, ERRP and surface CO_2 monitoring requirements would remain unchanged compared to the Proposed Project. However, Alternative 2 is less rigorous in its approach to meeting Objective 4 because it retains seismic monitoring but with reduced performance criteria outside the highest-pressure plume area. This would decrease monitoring resolution across the monitored area compared to the Proposed Project but still maintain detection capabilities for microseismicity in high-risk areas. Therefore, Alternative 2 would only partially meet Objective 4.

Objective 5 seeks to complement existing federal, State, and local permitting requirements and avoid creating duplicative regulatory requirements. Alternative 2 would adopt complementary monitoring requirements that provide additional protection to public health, safety, and the environment. Therefore, Alternative 2 would meet Objective 5.

Objective 6 aims to facilitate public access to carbon management project information. The project disclosure requirements would remain unchanged under Alternative 2, therefore meeting Objective 6.

Objective 7 aims to support alignment and integration with existing programs. Alternative 2 would meet Objective 7 because it does not change the proposed amendments to LCFS, MRR, and Cap-and-Invest. Therefore, Alternative 2 would meet Objective 7.

ii) Environmental Impacts

This section discusses the potential environmental impacts that are reasonably likely to occur under Alternative 2. No significant environmental impacts are expected from compliance responses related to administrative or reporting focused requirements, as these remain unchanged under Alternative 2.

Construction-related impacts would likely be smaller in magnitude under Alternative 2 compared to the Proposed Project. Tighter Mc threshold (-0.5 to 0.5) would only be applicable in the portion of the plume where pressure is the highest. This would likely decrease the number of seismic monitoring wells required to achieve the Mc threshold, and GCS operators could rely on shallow post hole monitoring configurations or leverage existing sensors from the CISN. These approaches require fewer construction activities, less ground disturbance, and less heavy-duty construction equipment. Therefore, Alternative 2 would likely result in a smaller magnitude of environmental impacts from installing seismic monitoring equipment compared to the Proposed Project.

All other impacts from compliance responses that are unrelated to seismic monitoring would remain the same under Alternative 2 as under the Proposed Project.

3. Alternative 3: Reduced Seismic Monitoring Area

a) Alternative 3 Description

Under Alternative 3, the Proposed Project would reduce the required monitoring area for seismic monitoring to reduce environmental impacts from drilling new seismic monitoring wells. GCS operators would be required to conduct seismic monitoring only within the storage complex. All other seismic monitoring requirements would remain consistent with the Proposed Project, including an Mc of –0.5 to 0.5 across the entire monitoring area. Compliance responses under Alternative 3 would include installing and maintaining a seismic monitoring network and conducting monitoring activities for 100 years after the last date of injection.

Under Alternative 3, the required duration of seismic monitoring would remain consistent with the requirements of the Proposed Project. All other elements of the Proposed Project (e.g., surface CO_2 monitoring, plume tracking, ERRP, financial responsibility, and amendments to existing programs) would remain unchanged under Alternative 3.

b) Alternative 3 Discussion

i) Objectives

Objective 1 aims to support overall deployment of carbon management technologies to help the State meet its statutory climate targets demonstrated in the 2022 Scoping plan. Alternative 3 would meet Objective 1 because it does not modify any of the proposed amendments to Cap-and-Invest, MRR, or LCFS that are designed to support overall deployment of carbon management technologies.

Objective 2 aims to implement the CCUS Program as required by Health and Safety Code Section 39741.1(c). Alternative 3 would meet Objective 3 because it would establish and implement the CCUS Program.

Objective 3 aims to adopt requirements for operators to maintain financial responsibility for GCS sites as required by Health and Safety Code Section 39741.5. The proposed financial responsibility requirements would remain unchanged under Alternative 3, therefore meeting Objective 3.

Objective 4 aims to develop monitoring, reporting, and emergency response requirements to support the efficacy, safety, and viability of carbon management projects in alignment with authority in SB 905. Under Alternative 3, ERRP and surface CO_2 monitoring requirements would remain unchanged compared to the Proposed Project. Alternative 3 is less rigorous in its approach to meeting Objective. While Alternative 3 retains seismic monitoring with robust performance criteria, these monitoring activities would be required over a smaller area compared to the Proposed Project. Pressure increases from CO_2 injection spread substantially beyond the injection well, so faults or pressure sensitive zones located farther away may respond before geologic features within the project area. Without monitoring a larger area, early microseismic signals from distant geologic structures may go completely undetected. A broader monitoring network captures these early, low-magnitude events providing critical early warning and more time to adjust injection operations before larger seismic events occur. Therefore, Alternative 3 would only partially meet Objective 4.

Objective 5 seeks to complement existing federal, State, and local permitting requirements and avoid creating duplicative regulatory requirements. Alternative 3 would adopt complementary monitoring requirements that provide additional protection to public health, safety, and the environment. Therefore, Alternative 3 would meet Objective 5.

Objective 6 aims to facilitate public access to carbon management project information. The project disclosure requirements would remain unchanged under Alternative 3, therefore meeting Objective 6.

Objective 7 aims to support alignment and integration with existing programs. Alternative 3 would meet Objective 7 because it does not change the proposed

amendments to LCFS, MRR, or Cap-and-Invest. Therefore, Alternative 3 would meet Objective 7.

ii) Environmental Impacts

This section discusses the potential environmental impacts that are reasonably likely to occur under Alternative 3. No significant environmental impacts are expected from compliance responses related to administrative or reporting focused requirements, as these remain unchanged under Alternative 3.

Construction-related impacts would likely be smaller in magnitude under Alternative 3 compared to the Proposed Project. Fewer seismic monitoring wells would need to be installed because GCS operators would be required to implement seismic monitoring only across the surface projection of the storage complex. Given the tight Mc threshold (-0.5 to 0.5), GCS operators would likely still need to drill downhole seismic monitoring wells across the surface projection of the storage complex to meet the required performance standards, but fewer than would be required to monitor the pressure front. Therefore, Alternative 3 would likely result in a smaller magnitude of environmental impacts from installing seismic monitoring wells compared to the Proposed Project.

All other impacts from compliance responses unrelated to seismic monitoring would remain the same under Alternative 3 compared with the Proposed Project.

4. Alternative 4: Removal of the GCS Protocol Under Cap-and-Invest and the Carbon Management Projects and Quantification Methodologies

a) Alternative 4 Description

The Proposed Project includes amendments to CARB's Cap-and-Invest Program. These amendments would adopt the GCS Protocol (formally called the CCS Protocol under LCFS) by reference, which would enable regulated entities to reduce their compliance obligations by voluntarily implementing carbon capture and storing CO_2 pursuant to the requirements in the GCS Protocol. The Proposed Project also includes a list of broad project types that could be eligible for submittal to CARB to be considered under the proposed carbon management project certification process. Under Alternative 4, the Cap-and-Invest Program would not be amended, and the GCS Protocol would not be made available to regulated entities under Cap-and-Invest. As a result, the proposed administrative amendments to MRR would not be necessary under Alternative 4. The proposed technical amendments would still be made to the current CCS Protocol and administrative amendments would be made to the LCFS program to adopt the updated protocol by reference. Additionally, the carbon management projects and quantification methodologies would not be included as a part of the Proposed Project.

All other elements of the Proposed Project (e.g., surface CO_2 monitoring, plume tracking, ERRP, financial responsibility) would remain unchanged under Alternative 4.

b) Alternative 4 Discussion

i) Objectives

Objective 1 aims to support overall deployment of carbon management technologies across broad economic sectors to help the State meet its statutory climate targets demonstrated in the 2022 Scoping plan. Under Alternative 4, the proposed amendments to CARB's Cap-and-Invest Program would not be implemented. These amendments enable regulated entities to reduce their compliance obligations by voluntarily implementing carbon capture. Without these amendments, the LCFS program would be the only CARB program supporting carbon management technologies, and its applicability is limited to a narrower set of carbon management applications. Additionally, the carbon management projects and quantification methodologies would not be included as a part of the Proposed Project Therefore, Objective 1 would only be partially met under Alternative 4.

Objective 2 aims to implement the CCUS Program as required by Health and Safety Code Section 39741.1(c). Alternative 4 would meet Objective 2 because it would establish and implement the CCUS Program.

Objective 3 aims to adopt requirements for operators to maintain financial responsibility for GCS sites as required by Health and Safety Code Section 39741.5. The proposed financial responsibility requirements would remain unchanged under Alternative 4, therefore meeting Objective 3.

Objective 4 aims to develop monitoring, reporting, and emergency response requirements to support the efficacy, safety, and viability of carbon management projects in alignment with authority in SB 905. Under Alternative 4, all monitoring and ERRP requirements would remain unchanged compared to the Proposed Project. Therefore, Alternative 4 would meet Objective 4.

Objective 5 seeks to complement existing federal, State, and local permitting requirements and avoid creating duplicative regulatory requirements. Alternative 4 would adopt complementary monitoring requirements that provide additional protection to public health, safety, and the environment. Therefore, Alternative 4 would meet Objective 5.

Objective 6 aims to facilitate public access to carbon management project information. The project disclosure requirements would remain unchanged under Alternative 4, therefore meeting Objective 6.

Objective 7 aims to support alignment and integration with existing programs. Under Alternative 4, the GCS Protocol would not be incorporated by reference under Cap-and-Invest. Updates to the current CCS Protocol under the LCFS program would occur, which would improve alignment and integration across LCFS. Therefore, Alternative 4 would only partially meet Objective 7.

ii) Environmental Impacts

This section discusses the potential environmental impacts that are reasonably likely to occur under Alternative 4. No significant environmental impacts are expected from compliance responses related to administrative or reporting focused requirements, as these remain unchanged under Alternative 4.

Implementation of Alternative 4 would avoid some of the potential environmental impacts described in Chapter 4 of this Draft EIA, specifically those associated with construction and operation of carbon capture projects and supporting infrastructure for transporting and injecting CO_2. If the proposed amendments to the Cap-and-Invest Program the carbon management projects and quantification methodologies were not implemented, new carbon capture projects would be less likely to be developed. Thus, potentially significant impacts related to construction and operation of new carbon capture projects and associated infrastructure could be avoided. All other impacts from compliance responses related to monitoring requirements would remain the same under Alternative 4 compared with the Proposed Project.

Without implementing the proposed amendments to Cap-and-Invest and the carbon management projects and quantification methodologies, GHG reductions from regulated entities using carbon capture to reduce compliance obligations may be impeded, and potential emissions reductions may not be realized. As a result, the State's ability to help avoid the most environmentally damaging impacts of long-term climate change and meeting statutory climate targets would be limited to benefits achieved through other compliance mechanisms at large emitters and programs.

E. Alternatives Considered but Rejected

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

Staff evaluated several alternatives while designing the seismic monitoring requirements under the Proposed Project. One option considered was aligning the program's seismic monitoring requirements directly with U.S. EPA's discretionary framework for Class VI wells, while extending all applicable monitoring durations to a standardized 100-year PISC period. However, because U.S. EPA determines seismic monitoring requirements on a case-by-case basis, this approach would not guarantee seismic monitoring at all sites. As a result, this alternative was dismissed because it fails to fully meet Objective 4.

Staff also considered requiring GCS operators to rely solely on the CISN instead of requiring the performance-based monitoring parameters described above. This alternative was eliminated due to infeasibility: CISN network coverage varies

considerably across the state, and in regions where seismic stations are sparse, the network would be unable to detect micro seismicity at a storage site. Although this option could reduce impacts from installing monitoring wells, it would fail to fully meet Objective 4.

F. Environmentally Superior Alternative

The State CEQA Guidelines (Section 15126.6[e][2]) require identification of an environmentally superior alternative among the alternatives evaluated. Alternative 1 would result in the least construction-related disturbance because it would not introduce new monitoring requirements beyond existing federal and State regulations and would not support carbon management deployment that could lead to construction of new projects. However, potential reductions in GHG emissions from new carbon capture projects would not be realized. Moreover, this alternative would provide the least protective framework to guarantee long-term (i.e. at least 100 years) storage of injected CO_2. The absence of mandatory seismic monitoring, extended plume tracking, CO_2 monitoring, and additional oversight measures could allow leakage events to go undetected for longer periods, potentially resulting in greater long-term environmental impacts. Consequently, while Alternative 1 would minimize near-term impacts and operational impacts from carbon capture projects, it would not reduce the risk of significant adverse impacts over time, nor would it reduce GHG emissions by enabling carbon management deployment. Therefore, the No Project Alternative is not environmentally superior.

Alternative 2 would extend PISC to 100 years, improving long-term oversight relative to Alternative 1. It would also require seismic monitoring at GCS sites, though over a smaller area and with relaxed performance requirements compared to the Proposed Project. Extending the duration of plume tracking and introducing seismic monitoring requirements would reduce the likelihood of undetected long-term migration compared to Alternative 1 and would provide site-wide detection capability needed to minimize potential leakage-related impacts. Construction-related impacts from new carbon capture and supporting infrastructure could occur under Alternative 2 because amendments to Cap-and-Invest are expected to support development in California's carbon management industry. However, these impacts are necessary to build projects that will reduce GHG in the long term.

Alternative 3 would reduce some construction-related impacts from seismic monitoring wells and improve micro seismicity detection compared to the other alternatives. Like Alternative 2, PISC would be extended to a 100-year period, expanding the duration of plume tracking and the scope of financial responsibility requirements compared to Alternative 1. This would reduce long-term risks associated with plume migration after injection ceases. Alternative 3 requires seismic monitoring over a smaller area compared to Alternative 2. This means Alternative 3 could require fewer seismic monitoring wells and result in less construction impacts. Like Alternative 2, construction and operation related impacts from new or modified carbon capture projects and

supporting GCS infrastructure could occur under Alternative 3 because amendments to Cap-and-Invest are expected to indirectly encourage industry growth. However, these impacts are necessary to build projects that would reduce GHG emissions in the long term.

Although Alternative 3 could still result in greater impacts than the Proposed Project in the event of leakage, it would avoid some of the construction-related impacts associated with installing additional seismic monitoring infrastructure while still providing meaningful improvements in environmental protection compared to the other alternatives. For these reasons, Alternative 3 is the environmentally superior alternative because it most effectively reduces the likelihood and severity of long-term environmental impacts while minimizing near-term construction disturbance among the alternatives evaluated.

Alternative 4 would result in less construction-related disturbance than alternatives 2 and 3 because it would not support broad carbon management deployment that could lead to new projects. It would also result in fewer operational related impacts associated with new carbon capture projects. Construction and operational related impacts from monitoring requirements would be the same as those of the Proposed Project because these requirements are unchanged under Alternative 4. However, potential reductions in GHG emissions from new carbon capture projects would not be realized. Consequently, while Alternative 4 would minimize near-term impacts and operational impacts from new carbon capture projects, it would not reduce GHG emissions towards achieving the state's climate targets by enabling broad carbon management deployment and therefore is not environmentally superior alternative.

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