RESPONSE TO COMMENTS

on the

DRAFT ENVIRONMENTAL ANALYSIS

Prepared for the

2022 Scoping Plan for Achieving Carbon Neutrality

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

Released December 13, 2022
to be considered at the
December 15, 2022 Board Hearing

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
CARB or Board	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CEC	California Energy Commission
CO_2	carbon dioxide
CFR	Code of Federal Regulations
CPUC	California Public Utilities Commission
Draft EA	Draft Environmental Analysis
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gas
ISOR	Initial Statement of Reasons
kWh	kilowatt hour
NWL	Natural Working Land
NO_x	nitrogen oxide
PG&E	Pacific Gas & Electric
PM	particulate matter
$PM_{2.5}$	particulate matter less than or equal to 2.5 micrometers
PRC	Public Resources Code
PSPS	Planned Service Power Shutoff
ROG	reactive organic gases
RPS	Renewable Portfolio Standard

SB	Senate Bill
SMUD	Sacramento Metropolitan Utility District
SO_x	oxides of sulfur
US	United States

1.0 INTRODUCTION

The California Air Resources Board (CARB) released the Draft 2022 Scoping Plan for Achieving Carbon Neutrality, herein referred to as the 2022 Scoping Plan, along with the First Draft Environmental Analysis (First Draft EA) on May 10, 2022, for a 45-day public review and comment period that closed June 24, 2022. In addition, oral and written comments were accepted at a public hearing on June 23, 2022. CARB received 1,172 written and oral comments during that time. Written comment letters received during the First Draft EA 45-day comment period are available on CARB's website[1].

After the end of the First Draft EA public review period, CARB identified revisions to certain aspects of the proposal that merited revisions to the project description. CARB determined that recirculation of the Draft EA was warranted. The Recirculated Draft EA was released for a 45-day comment period from September 9, 2022 through October 24, 2022. CARB received 42 written comment letters to the comment docket for the Recirculated Draft EA. Written comment letters received during the Recirculated Draft EA 45-day comment period are provided on CARB's website.[2]

CARB staff will return to the Board for a final vote on the 2022 Scoping Plan (currently scheduled on December 15, 2022). The public hearing notice and related materials (i.e., the final 2022 Scoping Plan and Final EA) for the 2022 Scoping Plan are provided on CARB's website at https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents.

A. Requirements for Responses to Comments

These written responses to public comments on the First Draft EA and Recirculated Draft EA are prepared in accordance with CARB's certified regulatory program (CRP) to comply with the California Environmental Quality Act (CEQA). CARB's CRP regulations state:

> *California Code of Regulations, title 17, Section 60004.2(b)(3). Response to Public Comment*
>
> *CARB shall evaluate comments on environmental issues received during the noticed comment period and shall respond as follows:*
>
> > *(A) Comments received during the noticed public comment period regarding environmental impacts that may result from the proposed project shall be considered, and a written response shall be prepared*

[1] at: Board Meeting Comments Log (ca.gov)

[2] at: Board Meeting Comment Logs (ca.gov)

where required by section 15088 of title 14 of the California Code of Regulations.

(B) CARB may, but is not required to, respond to late comments made outside the noticed comment period.

(C) When responding to a comment raising significant environmental impacts from a public agency, a written proposed response shall be provided to that agency at least 10 days prior to certifying an Environmental Impact Analysis.

(D) The response to comment may be prepared in the form of (1) a revision to the draft Environmental Impact Analysis, (2) a separate section in or attachment to the Final Environmental Impact Analysis, or (3) a separate response to comments document.

(E) The response to comment shall include the following:

1. Comments and recommendations concerning significant environmental issues received during the noticed public review period on the draft Environmental Impact Analysis, either verbatim or in summary;

2. A list of persons, organizations, and public agencies commenting on the draft Environmental Impact Analysis during the noticed public review period; and

3. The responses to significant environmental issues raised during the noticed public review period.

Public Resources Code (PRC) Section 21091 also provides guidance on reviewing and responding to public comments in compliance with CEQA. This section is outside the chapters exempted by a certified regulatory program, so it is applicable to CEQA compliance by CARB. Although it refers to environmental impact reports, proposed negative declarations, and mitigated negative declarations, rather than an EA, it contains useful guidance for preparing a thorough and meaningful response to comments.

PRC Section 21091, subdivision (d) states:

(1) The lead agency shall consider comments it receives if those comments are received within the public review period.

(2) (A) With respect to the consideration of comments received, the lead agency shall evaluate any comments on environmental issues that are received from persons who have reviewed the draft and shall prepare a written response

> *pursuant to subparagraph (B). The lead agency may also respond to comments that are received after the close of the public review period.*
>
> *(B) The written response shall describe the disposition of each significant environmental issue that is raised by commenters. The responses shall be prepared consistent with section 15088 of Title 14 of the California Code of Regulations.*

Section 15088 of the CEQA Guidelines (Title 14 CCR Section 15088) also includes useful information and guidance for preparing a thorough and meaningful response to comments. It states, in relevant part, that specific comments and suggestions about the environmental analysis that are at variance from the lead agency's position must be addressed in detail with reasons why specific comments and suggestions were not accepted. Responses must reflect a good faith, reasoned analysis of the comments.

Title 14 CCR Section 15088 (a–c) states:

> *(a) The lead agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response. The Lead Agency shall respond to comments received during the noticed comment period and any extensions and may respond to late comments.*
>
> *(b) The lead agency shall provide a written proposed response to a public agency on comments made by that public agency at least 10 days prior to certifying an environmental impact report.*
>
> *(c) The written response shall describe the disposition of significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections). In particular, the major environmental issues raised when the Lead Agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted. There must be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice.*

B. Comments Requiring Substantive Responses

A total of 978 written comments were submitted electronically on or before June 24, 2022 to the 45-day comment docket for the 2022 Scoping Plan and its appendices, including the First Draft EA. In addition, 194 verbal comments were received during the June 23, 2022 public hearing, bringing the total comments received during this comment period to 1,172 comments. CARB determined that 84 of the comments received raised significant environmental issues or addressed the analysis in the First Draft EA. CARB staff was conservative and inclusive in determining which comments warranted a written response, such as comments that did not directly mention the

analysis in the First Draft EA but did raise an issue related to potential adverse impacts associated with implementation of the 2022 Scoping Plan.

Additionally, a total of 42 comment letters were submitted electronically on or before October 24, 2022 to the comment docket established for the Recirculated Draft EA While not all of the 42 comments received raised significant environmental issues related to the Draft EA, they were all submitted to a comment docket that was created exclusively for the Recirculated Draft EA. Therefore, in an abundance of caution, all 42 comments are included in Section 2.0 below.

2.0 RESPONSES TO COMMENTS

The comment letters responded to in this document were coded by the order in which they were received and consistent with the comment docket for which they were submitted.[3] Comment letters have been presented using the number assigned in the comment docket (i.e., generally, the order in which they were uploaded to the docket). Comments submitted on the First Draft EA are coded only with the docket number. Written comments submitted during the June 23, 2022 Board Hearing contain the prefix "H". Verbal comments submitted during the June 23, 2022 Board Hearing contain the prefix "PH". Comments submitted on the Recirculated Draft EA contain the prefix "R".

Table 2-1 provides the list of comment letters that were submitted to the original 45-Day comment docket (including verbal and written comments submitted at the Board Hearing on June 23, 2022) that purport to raise environmental issues, as well as all of the comment letters submitted to the Recirculated Draft EA docket (as described above). Subsection A below includes master responses that were drafted to address recurring themes within comment letters received from multiple commenters. Subsection B below provides responses to comments received related to the First Draft EA. Subsection C below provides responses to comments received on the Recirculated Draft EA. Where applicable, verbatim excerpts from the comment letters are presented prior to the responses to the comments, which are provided below.

Table 2-1: List of Comment Letters Receiving Responses for CEQA Purposes

Comment Number	Date	Name	Affiliation
2	5/11/2022	Thomas Becker	T. Becker Power Systems
18	5/23/2022	Dawn Durfee	Logical Citizen
24	5/24/2022	Rhoads Stephenson	
26	5/25/2022	Catherine Turman	
27	5/23/2022	Gary Latshaw	Securethefuture2100
50	6/7/2022	Thomas Becker	T. Becker Power Systems
56	6/10/2022	Dean Wallraff	Advocates for the Environment
137	6/14/2022	Kenneth Johnson	
166	6/17/2022	Ann Alexander	Natural Resources Defense Council
177	6/17/2022	Wendy Ring	Climate 911
252	6/20/2022	Daniel Chandler	Northcoast Environmental Groups

[3] Comments on the First Draft EA are viewable at: https://www.arb.ca.gov/lispub/comm/iframe_bccommlog.php?listname=scopingplan2022&_ga=2.230822490.455946107.1670264336-1590124318.1525112280. Comments on the Recirculated Draft EA are viewable at: https://www.arb.ca.gov/lispub/comm2/iframe_bccommlog2.php?listname=sp22-recirc-ea-ws&_ga=2.129734217.455946107.1670264336-1590124318.1525112280. These comment dockets can also be accessed through CARB's main 2022 Scoping Plan website at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents.

Comment Number	Date	Name	Affiliation
273	6/20/2022	Nora Privitera	350 Bay Area Action
296	6/20/2022	Monica Embrey	Sierra Club
321	6/20/2022	Cate Steane	350 Bay Area
344	6/21/2022	Chris Paros	
346	6/21/2022	Rebecca Wright	Indigo
356	6/21/2022	Jennifer Hernandez	The Two Hundred for Homeownership
362	6/21/2022	Jorge De Cecco	
369	6/21/2022	Jean Tepperman	1000 Grandmothers for Future Generations
372	6/21/2022	Robert Hambrect	Allotrope Partners
384	6/21/2022	Jane Sellen	Californians for Pesticide Reform
390	6/21/2022	Kelly Lyndon	
422	6/22/2022	Jennifer Hernandez	Holland & Knight LLP
427	6/22/2022	Christopher Lish	
451	6/22/2022	Thomas Moran	
458	6/22/2022	Cheryl Weiden	
461	6/22/2022	Amy Vasquez	
464	6/22/2022	John Hopkins	California Habitat Conservation Planning Coalition
466	6/22/2022	Matt Regan	Bay Area Council
501	6/22/2022	Abby Young	Bay Area Air Quality Management District
558	6/24/2022	Rina Singh	Alternative Fuels & Chemicals Coalition
560	6/24/2022	Faraz Rizvi	Asian Pacific Environmental Network
561	6/24/2022	Helena Murray	
563	6/24/2022	Rahel Kemal	Physicians For Social Responsibility LA
566	6/24/2022	Sylvia Regan	Center for Biological Diversity
572	6/24/2022	Ariana Matthews	California Chamber of Commerce
574	6/24/2022	Sean Charpentier	C/CAG – City/County Assn of Govts SMC
581	6/24/2022	Michael Boccadoro	Dairy Cares
582	6/24/2022	Ignatio Fernandez	Joint Utilities Group
597	6/24/2022	Collen Clementson	SANDAG
612	6/24/2022	Sydney Chamberlain	The Nature Conservancy
617	6/24/2022	Jennifer Hernandez	
620	6/24/2022	Susie Berlin	Northern California Power Agency

Comment Number	Date	Name	Affiliation
622	6/24/2022	Jessica Nelson	Golden State Power Cooperative
630	6/24/2022	Tanya DeRivi	Western States Petroleum Association
632	6/24/2022	Sasan Saadat	Earthjustice
635	6/24/2022	Jennifer Hernandez	The Two Hundred for Homeownership
636	6/24/2022	Katellyn Roedner Sutter	Environmental Defense Fund
639	6/24/2022	Sarah Wiltfong	Los Angeles County Business Federation
643	6/24/2022	Michael Wara	Stanford University
651	6/24/2022	George Peridas	Various
668	6/24/2022	Chelsea Tu	California Environmental Justice Alliance
670	6/24/2022	Chelsea Tu	California Environmental Justice Alliance
678	6/22/2002		Leadership Counsel for Justice and Accountability; Animal Legal Defense Fund; Food & Water Watch; Association of Irritated Residents; Center for Food Safety
H115	6/23/2022	Marijane Lopez-Taff	Citrus Heights Chamber of Commerce
H118	6/23/2022	Jeff Montejano and Adam Wood	Building Industry Association of Southern California Building Industry Legal Defense Foundation
H120	6/23/2022	Caroline Farrell	
H122	6/23/2022	Marc Hardy	Tejon Ranch Company
H147	6/23/2022	Erin Rodriguez	Union of Concerned Scientists
H152	6/23/2022	Greg Karras	Community Energy reSource
H162	6/23/2022	Irena Asmundson	
H163	6/23/2022	Jennifer Normoyle	
H168	6/23/2022	Susan Lessin	
H174	6/23/2022	Kristen Lee	
H185	6/24/2022	Noah Garcia	Advanced Energy Economy
H186	6/24/2022	Katharine Larson	Southern California Public Power Authority
H210	6/24/2022		Central Valley Defenders of Clean Air and Water

Comment Number	Date	Name	Affiliation
H212	6/24/2022	Frank Harris	California Municipal Utilities Association
H217	6/24/2022	Madlen Saddik	
H220	6/24/2022	Karl Aldinger	
H236	6/24/2022	Jennifer Hernandez	The Two Hundred for Homeownership
H246	6/24/2022	Jeanne Armstrong	Solar Energy Industries Association
H262	6/24/2022	Muriel Strand	
H263	6/24/2022	Danny Cullenward	CarbonPlan
H269	6/24/2022	Douglas Carstens	
H274	6/24/2022	Angela Hacker	California Climate and Energy Collaborative
H287	6/24/2022	Brian Mello	Associated General Contractors
PH-1	6/23/2022	Dr. Catherine Garoupa	Various
PH-2	6/23/2022	Bill Caram	Pipeline Safety Trust
PH-3	6/23/2022	Marjanch Moini	
R1	9/19/2022	Gurwinder Mann	
R2	9/20/2022	Thomas T Becker	T. Becker Power Systems
R3	9/22/2022	Chris Torres	
R4	9/22/2022	Gilbert Adjoyi	
R5	9/22/2022	Kimberly McCoy	
R6	10/3/2022	Martin Mackerel	
R7	10/14/2022	Julie Parker	League of Women Voters
R8	10/15/2022	Carol Wuenschell	
R9	10/24/2022	Julie Parker	League of Women Voters
R10	10/24/2022	Quinn Piening	California Tow Truck
R11	10/24/2022	Jessica Wentz	
R12	10/24/2022	Fernandez Ignacio	
R13	10/24/2022	Charles Davidson	
R14	10/24/2022	Jared Yoshiki	AOPA
R15	10/24/2022	Jennifer Svec-Williams	
R16	10/24/2022	Jessica Marcus	Drax
R17	10/24/2022	Amanda Parsons DeRosier	Global Clean Energy
R18	10/24/2022	Jason Pfeifle	Center for Biological Diversity
R19	10/24/2022	Chelsea Tu	California Environmental Justice Alliance
R20	10/24/2022	Daniel Lashof	World Resources Institute

Comment Number	Date	Name	Affiliation
R21	10/24/2022	Chelsea Tu	CA Environmental Justice Alliance
R22	10/24/2022	Kenley Farmer	Airlines for America
R23	10/24/2022	Nora Brown	Charm Industrial
R24	10/24/2022	Laura Haider	Fresnans Against Fracking
R25	10/24/2022	Fariya Ali	
R26	10/24/2022	Leah Bahramipour	Regenerate California
R27	10/24/2022	Nick Cammarota	California Building Industry Association
R28	10/24/2022	Tanya DeRivi	Western States Petroleum Association
R29	10/24/2022	Chris Gould	
R30	10/24/2022	Julia May	Communities for a Better Environment
R31	10/24/2022	Sarah Sachs	Ceres
R32	10/24/2022	Sarah Sachs	Ceres
R33	10/24/2022	Alicia Rivera, Connie Cho, and Julia May	Communities for a Better Environment
R34	10/24/2022	Sasan Saadat	Sierra Club and Earthjustice
R35	10/24/2022	Robert Spiegel	CMTA
R36	10/24/2022	Katelyn Roedner Sutter	Environmental Defense Fund
R37	10/24/2022	Kathleen Van Osten	MVM Strategy Group
R38	10/24/2022	Evan Edgar	Edgar & Associates
R39	10/24/2022	Ellie Choen	The Climate Center
R40	10/24/2022		Leadership Counsel for Justice and Accountability
R41	10/24/2022	Marc Hardy	Tejon Ranch Company
R42	10/24/2022	Olson, Katrina	

A. Master Responses

Multiple commenters raised similar issues within their comment letters. Rather than respond individually to recurring comments, master responses have been developed to address the comments comprehensively. Master responses are provided for the following topics:

(1) Level of Detail, Specificity, and CARB's Authority;

(2) Safety of CO2 Pipelines, Capture Chemicals, and Geologic Storage of CO2;

(3) Carbon Dioxide Removal and Carbon Capture and Sequestration Related Air Quality and Health Concerns;

(4) Relationship Between the Appendices to the 2022 Scoping Plan and the EA;

(5) Modelling Assumptions; and

(6) Refining for Export and Associated Emissions

Master Response 1: Level of Detail, Specificity, and CARB's Authority

Several commenters express concern over the level of detail and specificity included in the EA. Concern was also raised over CARB's determinations regarding authority over mitigation measures.

The EA presents a programmatic analysis of reasonably foreseeable compliance responses for implementation of the 2022 Scoping Plan. The EA describes the potential for adverse environmental impacts, and if the impact is potentially significant, potentially feasible mitigation measures.

The 2022 Scoping Plan is a Statewide-level planning document that assesses the State's progress toward achieving the 2030 target for reduced greenhouse gas (GHG) emissions and lays out a path for achieving carbon neutrality no later than 2045. The 2022 Scoping Plan does not contain any regulatory mandates. Reviewers should note that the 2022 Scoping Plan is largely advisory in nature, as CARB does not directly regulate many of the sectors the measures address, and therefore these measures remain at the discretion of other agencies. Approval of the 2022 Scoping Plan would not lead directly to any adverse impacts on the environment, because its approval alone would not authorize or otherwise cause any activities that would change the physical environment. Rather, it is the first step in a potential sequence of public agency decisions that may lead to implementation by other public agencies of reasonably foreseeable compliance responses. If approved, the 2022 Scoping Plan would be a statewide plan that would be followed by (and be dependent upon) future CARB rulemaking efforts or other efforts at multiple levels of government to further define requirements for plan components. Other state, regional, or local agencies would consider approval of actions authorizing reasonably foreseeable projects to comply with adopted rules, plans, or strategies. Implementation of the recommended measures in the 2022 Scoping Plan may, through this sequence of events, indirectly lead to adverse environmental impacts from the implementation of reasonably foreseeable compliance responses authorized by other agencies. Despite the statewide level of the 2022 Scoping Plan and the inherent uncertainty in whether other agencies will choose to implement its measures, in an effort to provide the maximum feasible public disclosure, CARB analyzed these measures and recommendations as part of the proposed CEQA "project". While CARB has made best efforts to analyze potential environmental impacts associated with these measures and recommendations, it is not possible to do so in greater detail given the statewide and programmatic nature of these measures, and the lack of available detail in how they may be implemented. Some of the components of the 2022 Scoping Plan are also purely advisory in nature; for more information regarding CARB's approach to analyzing these components, see section 2.0(C)(16) of the Final EA.

Many of the identified potentially significant impacts of the reasonably foreseeable compliance responses could ultimately be avoided or mitigated to a less-than-significant level

as indicated by the mitigation measures included within chapter 4 of the EA. Mitigation measures would also be included when any specific regulatory measures are designed and evaluated during associated rulemaking processes. They may also be adopted by authorizing public agencies with project-specific approvals or entitlement processes related to reasonably foreseeable compliance responses, which typically require a project-level environmental review by another public agency.

With regard to mitigation, CARB has limited authority for mitigation adoption and implementation outside its statutory mandates. The EA therefore recognizes that a degree of uncertainty exists regarding whether other agencies would decide to consider, adopt, and implement feasible[4] mitigation measures for the potentially significant impacts identified in the EA. (Note that where the EA notes uncertainty as to whether an agency would implement feasible mitigation, those statements also assume the agency has chosen to consider and adopt the mitigation.) Therefore, mitigation implementation by other public agencies approving later projects is not, and cannot be, assured. While CARB is responsible for approving the 2022 Scoping Plan, it does not have authority to approve the potential later activities, such as infrastructure and development projects, that could be carried out as compliance responses to the 2022 Scoping Plan.

Other public agencies are responsible for the review and approval of any facilities and infrastructure that are reasonably foreseeable compliance responses to the 2022 Scoping Plan. This review and approval process would include environmental review, definition and adoption of feasible project-specific mitigation measures, and monitoring or reporting of mitigation measures.

Given limitations in CARB's statutory authority, CARB's implementation of the identified mitigation measures would be infeasible. CARB has made this infeasibility determination based on multiple factors, including: (1) the lack of certainty of the scope, siting, and specific design details of future compliance-response development projects, which prevents CARB from being able to determine the significant environmental impacts that may actually result from those projects, and (2) the fact that even if there was certainty with respect to future compliance-response development projects and associated significant environmental impacts, CARB lacks the legal authority to approve these projects or implement them, or to require mitigation for them. Given that it lacks general land use authority, CARB cannot legally impose or enforce mitigation measures on the later compliance-response projects. Therefore, while the mitigation measures identified in the EA are considered by CARB to be feasible for other agencies to implement and/or enforce, CARB cannot legally require them.

[4] "'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).

Master Response 2: Safety of CO_2 Pipelines, Capture Chemicals, and Geologic Storage of CO_2

Several commenters express concern about the adequacy of current regulations for CO_2 pipelines, the safety of chemicals used in the CO_2 capture process, and suitability of geologic reservoirs for permanent sequestration of CO_2. Commenters frame their concerns in the context of potential impacts to nearby communities, and several commenters describe a CO_2 pipeline rupture in Satartia, Mississippi in February 2020 and its impacts on the nearby community.

Senate bill (SB) 905, signed by the Governor on September 16, 2022, directs CARB to establish a Carbon Capture, Removal, Utilization, and Storage (CCUS) Program. However, a provision within SB 905 does not allow for the transport of concentrated carbon dioxide (CO_2) through pipelines until the conclusion of a federal carbon dioxide pipeline safety rulemaking.[5] Therefore, at this time, only projects that do not need to transport carbon dioxide via pipeline would occur in California, particularly in the near term. However, to conservatively disclose the range of potential environmental impacts, the EA assumed all outcomes and actions reflected in the 2022 Scoping Plan are fully realized and not limited by any permitting or federal rulemaking processes on pipeline safety regulations.

The federal Department of Transportation (DOT) regulates the design, construction, operation and maintenance, and spill response planning for CO_2 pipelines under the Hazardous Liquid Pipeline Act of 1979, as amended. The DOT administers pipeline regulations through the Office of Pipeline Safety (OPS) within the Pipelines and Hazardous Materials Safety Administration (PHMSA). Federal regulations (49 CFR Part 195)[6] regulate the transport of CO_2 as a supercritical fluid (i.e., a dense phase) in pipelines. Similar to natural gas pipelines, CO_2 pipelines operate at high pressure within the ambient temperature of the system. Under these conditions, CO_2 transport currently occurs in a supercritical state to maximize the mass flow while avoiding the need for more material- and energy-intensive refrigeration and insulation along the length of the pipelines that would otherwise be necessary to maintain the CO_2 in a liquid state.

CO_2 captured from industrial sources, such as coal-based energy producers and fertilizer manufacturing plants, could contain impurities (i.e., injected agents may include other constituents beyond simply pure CO_2, that could become contaminants). CO_2 pipeline owners and operators have developed and implemented standards for CO_2 composition and quality to safeguard the integrity of CO_2 pipelines.[7] As described further below and in the

[5] See Cal. Health & Safety Code § 71465(a).

[6] https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-D/part-195

[7] United States Department of Energy. 2017. Siting and Regulating Carbon Capture, Utilization and Storage Infrastructure, Workshop Report. January. Available: https://www.energy.gov/sites/prod/files/2017/01/f34/Workshop%20Report--Siting%20and%20Regulating%20Carbon%20Capture%2C%20Utilization%20and%20Storage%20Infrastructure.p

EA, PHMSA announced in May 2022 that it is taking steps to implement new measures to strengthen its safety oversight of CO_2 pipelines within the U.S., including updating CO_2 pipeline standards, to protect communities from pipeline failures.

As described in the EA, although the specific type(s) and sizes of the mechanical carbon dioxide removal and carbon capture and sequestration (CCS) facilities and infrastructure are uncertain, the operation of new and modified facilities could result in the transport, use, and/or disposal of new or higher levels of hazardous chemicals, depending on the type of facility and carbon capture system present. In the near term, most potential CCS projects would likely occur in processes at existing facilities that already produce high-purity CO_2 streams, such as ethanol production and certain forms of steam methane reforming. These projects do not require a CO_2 capture step and are expected to occur sooner because of their lower cost. Therefore, these near-term projects are likely to incur minimal changes in criteria and toxics emissions as a result of CO_2 compression, transport, and injection. For CCS 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. CO_2 capture technology that involves the use of amine-based solvents would produce amine waste related to amine degeneration. The waste amine requires further treatment and disposal. Storage, transport, and disposal of amine wastes would be managed in compliance with applicable federal, State, and local laws and regulations, including the Hazardous Waste Program specified under Subtitle C of the federal Resource Conservation and Recovery Act, the Occupational Safety and Health Administration's Hazardous Waste Operations and Emergency Response standards, California's Hazardous Waste Control Act, and the Department of Toxic Substances Control's Unified Program.

Transport of hazardous materials (e.g., caustic soda, ammonia, acid and solvent wastes, ethanol, and solvents) are regulated by DOT, which requires the safe and reliable transportation of hazardous materials by all modes used to transport it. DOT's Hazardous Materials Regulations govern the transportation of ethanol and other biofuels and blends by rail, air, motor carrier, and barge. In addition, 49 CFR Part 172[8] lists and classifies those materials that DOT has designated as hazardous materials for purposes of transportation and prescribes the requirements for shipping papers, package marking, labeling, placarding, emergency response, training, and safety applicable to the shipment and transportation of those hazardous materials. Requirements for carriage by rail, including operating, loading, and unloading requirements, along with detailed requirements for Class 3 (flammable liquid) materials are provided in 49 CFR Part 174.[9]

df. Accessed September 2022.

[8] https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-C/part-172

[9] https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-C/part-174

Geologic sequestration involves the injection of CO_2 thousands of feet underground, where it is trapped within the pore spaces of solid rock. Naturally occurring underground deposits of CO_2 that have existed for thousands to millions of years and the experiences and information gained from implementation of numerous CO_2-enhanced oil recovery and dedicated CO_2 storage projects over the last several decades demonstrate the feasibility of safe and permanent geologic sequestration of CO_2.[10,11] EPA regulates CO2 geologic sequestration injection wells as "Class VI" wells under its underground injection control program. (See 40 CFR § 146.81.) EPA requires that sequestration sites have confining subsurface zones, or layers of impermeable rock, to keep CO2 from escaping into overlying geologic layers, groundwater, or the surface (40 CFR 146.83(a)(2)).[12] EPA requires that potential geologic sequestration sites be thoroughly studied, including operational wells and plugged and abandoned wells, to protect the safety and security of the project. Geologic sequestration is not allowed where unsuitable subsurface conditions exist or where required corrective action on existing wells or artificial penetrations has not been performed. All underground injection projects must obtain permits to ensure the protection of underground sources of drinking water (USDW) or the surface (40 CFR 146.82(a)(3)).[13] EPA's permit requirements include modeling to verify the storage capacity of the injection reservoir, development and implementation of a testing and monitoring plan, development of an emergency and remedial response plan, demonstration of financial responsibility, and development and implementation of a post-injection site care and closure plan. EPA also requires owners / operators to monitor for CO_2 movement through its confining zones. (See 40 CFR § 146.90(d).)

CARB's CCS Protocol,[14] incorporated as part of the Low Carbon Fuel Standard (LCFS) regulations implemented by CARB in 2018,[15] contains similar requirements to demonstrate the suitability of potential geologic sequestration sites, and Permanence Certification requires that project applicants demonstrate that their sites are capable of permanently and safely sequestering injected CO_2. Permanence Certification is required prior to LCFS crediting for CO_2 sequestered. Furthermore, SB 905 specifies that the California Geological Survey establish a Geologic Carbon Sequestration Group to provide independent expertise and regulatory guidance to CARB in developing the regulations to implement the Carbon Capture, Removal, Utilization, and Storage Program. The group's duties include identifying high-quality, suitable locations of CO_2 injection wells. The statute also specifies similar suitability and permanence attributes to be incorporated into the program, including strategies to minimize the risk of seismic impacts, and monitoring and reporting of CO_2

10 Intergovernmental Panel on Climate Change. 2005. Carbon Dioxide Capture and Storage. Available: https://archive.ipcc.ch/pdf/special-reports/srccs/srccs_wholereport.pdf. Accessed: November 23, 2022.
11 National Energy Technology Laboratory. Permanence and Safety of CCS. Available: https://netl.doe.gov/coal/carbon-storage/faqs/permanence-safety. Accessed: November 23, 2022.
12 https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-146/subpart-H/section-146.83
13 https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-146/subpart-H/section-146.82
14 CARB. 2018. Carbon Capture and Sequestration Protocol under the Low Carbon Fuel Standard. https://ww2.arb.ca.gov/our-work/programs/carboncapture-sequestration.
15 CARB. 2022. Carbon Capture & Sequestration. https://ww2.arb.ca.gov/our-work/programs/carboncapture-sequestration.

within the geologic storage complex for a sufficiently long enough time to demonstrate that the risk of leakage poses no material threat to public health, safety, and the environment, that terminates no earlier than 100 years after the last date of injection of CO_2 into the storage reservoir.

On February 22, 2020, a CO_2 pipeline operated by Denbury Gulf Coast Pipelines LLC (Denbury) ruptured in proximity to the community of Satartia, Mississippi. Heavy rains are believed to have led to a landslide on a steep embankment where the pipeline was located, which created axial strain on the pipeline and resulted in a full circumferential girth weld failure.[16] Following the rupture, the combination of weather and topography resulted in a slower dissipation of the gas. The pipeline was also carrying hydrogen sulfide, a flammable and toxic gas. The Pipelines and Hazardous Materials Safety Administration's (PHMSA) investigation also revealed several contributing factors to the accident, including but not limited to: Denbury not addressing the risks of geohazards in its plans and procedures, underestimating the potential affected areas that could be impacted by a release in its CO2 dispersion model, and not notifying local responders to advise them of a potential failure.

As a result of PHMSA's investigation into the pipeline failure in Satartia, Mississippi, PHMSA announced in May 2022 that it is taking steps to implement new measures to strengthen its safety oversight of CO_2 pipelines within the U.S. and protect communities from pipeline failures. These measures include a new rulemaking to update standards for CO_2 pipelines, requirements related to emergency preparedness, and response; and issuance of an updated nationwide advisory bulletin to all pipeline operators underscoring the need to plan for and mitigate risks related to land-movements and geohazards that pose risks to pipeline integrity.[17] PHSMA also issued an updated advisory bulletin in June 2022 to address hazardous conditions related to pipelines and recommendations to operators. The updated advisory is intended to serve as a reminder to owners and operators of gas and hazardous liquid pipelines, particularly those with facilities located onshore or in inland waters, about the serious safety-related issues that can result from earth movement and other geological hazards. Additionally, changing weather patterns due to climate change may result in heavier than normal rainfall and increased temperatures causing soil saturation and flooding or soil erosion. Either phenomenon may adversely impact the stability of soil surrounding or supporting nearby pipeline facilities.[18] At this time, as noted above, recently signed SB 905

[16] U.S. Department of Transportation, PHMSA, Office of Pipeline Safety. 2022. Failure Investigation Report - Denbury Gulf Coast Pipelines, LLC – Pipeline Rupture/ Natural Force Damage. Available: https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/Failure%20Investigation%20Report%20-%20Denbury%20Gulf%20Coast%20Pipeline.pdf. Accessed September 2022.

[17] Pipeline and Hazardous Materials Safety Administration. 2022 (May 26). PHMSA Announces New Safety Measures to Protect Americans From Carbon Dioxide Pipeline Failures After Satartia, MS Leak. Available: https://www.phmsa.dot.gov/news/phmsa-announces-new-safety-measures-protect-americans-carbon-dioxide-pipeline-failures. Accessed: August 2022.

[18] Mayberry, Alan K. Pipeline Safety: Potential for Damage to Pipeline Facilities Caused by Earth Movement and Other Geological Hazards. 87 FR 33576. Available: https://www.federalregister.gov/documents/2022/06/02/2022-11791/pipeline-safety-potential-for-damage-to-pipeline-facilities-caused-by-earth-movement-and-other. Accessed: August 2022.

prohibits the transport of CO_2 by pipeline until such time that PHSMA updates their Pipeline Safety Regulations.[19] .

Master Response 3: Carbon Dioxide Removal and Carbon Capture and Sequestration Related Air Quality and Health Concerns

Several commenters express concern about the use of carbon dioxide removal (CDR) strategies and carbon capture and storage (CCS) in the 2022 Scoping Plan. Concerns range from viability of current technology and inclusion as part of the state's climate strategy, to potential negative health and air quality impacts, to safety concerns related to potential leaks. As described in chapter 4 of the EA, the potential environmental effects of reasonably foreseeable compliance responses associated with the 2022 Scoping Plan are analyzed in a programmatic manner, given the 2022 Scoping Plan is a high-level statewide planning document, and since the measures described in the 2022 Scoping Plan can be characterized as one large project. While the EA discloses the types of foreseeable compliance responses, the specific location, design, and setting of the potential actions cannot be feasibly known at this time, and therefore later activities with environmental effects not examined in the EA would be analyzed by the public agency with approval authority as required by CEQA or other applicable law.

As outlined in the 2022 Scoping Plan, the Scoping Plan scenario, as well as the alternative scenarios, involve remaining residual GHG emissions in 2045, and therefore all require some level of carbon dioxide removal to achieve carbon neutrality. The residual emissions consist of some remaining combustion emissions, as well as non-combustion emissions (e.g., HFCs, methane, and N_2O). There is no scenario where emissions from all sources reduce to zero and many state, national, and global decarbonization analyses illustrate the need for carbon dioxide removal in the future.[20]

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[19] Pipeline and Hazardous Materials Safety Administration. 2020. A Proposed Rule by the Pipeline and Hazardous Materials Safety Administration on 02/06/2020. Available: https://www.federalregister.gov/documents/2020/02/06/2020-01459/pipeline-safety-valve-installation-and-minimum-rupture-detection-standards. Accessed: November 2022.

[20] E3. October 2020. Achieving Carbon Neutrality in California Report: Final Presentation. *https://ww2.arb.ca.gov/sites/default/files/2020-10/e3_cn_final_presentation_oct2020_2.pdf*; World Resources Institute. January 31, 2020. CarbonShot: Federal Policy Options for Carbon Removal in the United States. Working paper. *https://www.wri.org/research/carbonshot-federal-policy-options-carbon-removal-united-states*; C2ES. No date. Getting to Zero: A U.S. Climate Agenda – Center for Climate and Energy Solutions. *https://www.c2es.org/getting-to-zero-a-u-s-climate-agenda-report/*; IPCC. Climate Change 2022: Mitigation of Climate Change – Summary for Policymakers. https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SPM.pdf. All global modeled pathways that limit warming to 1.5˚C with no or limited overshoot, and those that limit warming to 2˚C, involve rapid and deep GHG emission reductions in all sectors with modeled mitigation strategies to achieve these reductions include transitioning from fossil fuels without CCS to very low- or zero-carbon energy sources (such as renewables or fossil fuels with CCS), improving efficiency, reducing non-CO_2 emissions, and deploying carbon dioxide removal methods to counterbalance residual GHG emissions.

CDR is the category of options for removing CO_2 from ambient air and sequestering it, and is different from CCS. There are two types of carbon dioxide removal: mechanical and nature-based. Mechanical carbon dioxide removal includes approaches like direct air capture (DAC), which relies on chemical scrubbing processes that capture CO2 through absorption as well as adsorption separation processes. Other options include rapid mineralization of CO2 at the Earth's surface and bioenergy processes that capture and store carbon from biomass. The 2022 Scoping Plan relies on both mechanical carbon dioxide removal and nature-based solutions (CO2 captured by natural and working lands), to achieve carbon neutrality.

CCS differs from carbon dioxide removal and is applied to stationary point sources to capture CO2 from combustion exhaust and/or process emissions. CCS is not a new technology, but has not yet been applied to facilities in California. In the 2022 Scoping Plan, CCS is targeted at end-uses that are difficult to decarbonize without capture technology, such as cement plants and refineries, and in the electricity sector in 2045 to ensure anthropogenic emissions are reduced by at least 85 percent below 1990 levels in 2045, as directed by AB 1279. Using CCS at these facilities will address ongoing GHG emissions from the remaining California demand for liquid fuels, electricity, and cement in 2045, also while helping to minimize emissions leakage risks that could result from uncontrolled production leaving California. For cement, electricity generation, and petroleum refineries deploying CCS, the 2022 Scoping Plan estimates 25 MMT of CO2 emissions captured and stored using CCS in 2045. This number should be considered in the context of the approximately 170 *MMT* of CO2e emission reductions in 2045 relative to the Reference Scenario (from fuel transition/demand changes and without CCS, CDR, and natural and working lands emissions) projected from implementation of the 2022 Scoping Plan. For deployment of CCS, the 2022 Scoping Plan assumes a 90% capture efficiency on the individual post-combustion gas streams where CCS is deployed, which is supported by a number of reports[21,22] on CCS capture efficiency from operating plants. The capture efficiency for actual projects has been documented to be over 90% for real world implementation of CCS as was achieved at the Petra Nova facility.[23] For refineries and other industrial facilities, there are multiple CO2 combustion sources (e.g. catalytic cracking units, combined heat and power units, steam methane reformers, process emissions, etc.); therefore, the overall facility-wide CO2 reductions from CCS utilization will likely be closer to 75%. The path to achieving the 2030 GHG emissions reduction target in the 2017 Scoping Plan does not rely on a role for CCS. However, as achieving carbon neutrality was examined in the 2022 Scoping Plan, it became evident that for CCS to scale-up and help achieve the 2045 goal, CCS needs to start deploying during this decade. Therefore, while the 2030 target does not rely on CCS in this decade, achieving the carbon neutrality target by 2045 requires the state to initiate safe and reliable CCS projects in this decade to allow time for technology scale-up and for costs to decrease after 2030. The initial modeling for the 2022 Scoping Plan had aggressive start

[21] https://ccsknowledge.com/pub/Publications/2021Nov_Summary_for_decision%20makers-CCS-LEHIGH-FINAL%20(2022-05-11).pdf

[22] https://climate.mit.edu/ask-mit/how-efficient-carbon-capture-and-storage

[23] W.A. Parish Post-Combustion CO2 Capture and Sequestration Demonstration Project (Final Technical Report) (Technical Report) | OSTI.GOV

times for CCS in the middle of this decade but was updated with CCS deployment delayed until the end of this decade to align with longer timeframes needed for permitting.

Air pollutant emissions associated with use of CCS and mechanical CDR-related reasonably foreseeable compliance responses could include long-term operational related effects on air quality associated with energy consumption.

CCS on facilities increases the energy needed at the facility, which is expected to be supplied by the same source as the facility energy. CCS-related energy consumption is expected to eventually decrease over time at certain source types that may experience decreased demand; for example, a refinery with CCS will require less electricity generated from onsite natural gas, electricity, and/or other fossil fuels as demand for liquid fuels is reduced. Furthermore, as renewables supply a greater portion of electricity demand, existing fossil-based electricity generation will consume less natural gas and onsite electricity to operate; therefore, emissions will be reduced. However, the addition of CCS will require more of those energy sources than if the facility was not equipped with CCS. The PATHWAYS model calculates annual energy demand by fuel type and sector and accounts for the energy needed to support CCS at facilities, with the exception of electrical generation facilities, where energy requirements for CCS for electricity generation facilities were not modeled due to modeling constraints at the time of passage of Assembly Bill (AB) 1279. As described in the 2022 Scoping Plan (see Chapter 3 and Appendix H), the energy required for mechanical CDR via direct air capture (DAC) was assumed to be provided by off-grid solar for consistency with the carbon neutrality target.

With respect to air pollution, the EA in Chapter 4, Section 3.b, discusses the longer-term operational impacts to air quality reasonably foreseeable from implementation of the 2022 Scoping Plan. That section of the EA points to the air quality and public health analysis conducted for the AB 32 GHG Inventory Sectors, which utilized output from the PATHWAYS model to develop spatially and temporally resolved characterizations of pollutant emissions for all sectors and existing sources in California including stationary, area, and mobile source emissions. The EA explains that the 2022 Scoping Plan will achieve carbon neutrality "through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy which also has criteria pollutant and precursor benefits alongside reducing the exposure of sensitive receptors to TAC emissions." The EA in Chapter 4, Section 3.b also includes a summary analysis of the ambient air quality improvement and corresponding health benefits associated with the compliance responses for the AB 32 GHG Inventory Sectors. As described above, CCS energy use is incorporated into these air quality estimates (see also response to comment R19-9 for further discussion on CCS energy use generally). While mechanical CDR energy use is modeled off-grid in the 2022 Scoping Plan, it stands to reason that the significant reduction in air pollutant emissions from drastic decreases in fossil fuel consumption from the 2022 Scoping Plan overall would surpass any increase in indirect electricity-related emissions from CDR deployment. In addition, in California, a new or modified stationary source, such as a refinery or power plant, that emits air pollutants is required to meet certain emission control requirements and obtain preconstruction and

operating permits from the local air district where the facility is located. Changes to existing equipment changes or installations of new equipment that could affect a facility's emissions such as a retrofit to incorporate CCS are expected to require a permit modification through the local air district. This would involve the district preparing an engineering analysis and placing conditions in the preconstruction permits to ensure compliance with the requirements of federal, State, and local air pollution regulations. Any significant emissions increases would be addressed through the air permitting process.

The EA includes the Governor's targets for carbon removal in 2030 and 2045. In recognition of concerns expressed regarding carbon dioxide removal technologies, the EA contains expanded information on CO2 pipeline safety activities within the Hazards and Hazardous Materials resource area (please also refer to Master Response 2-Safety of CO2 Pipelines, Capture Chemicals, and Geologic Sequestration of CO2). Furthermore, given concerns and the importance of building public awareness, recently-chaptered 2022 legislation SB 905 directs CARB to establish a Carbon Capture, Removal, Utilization, and Storage Program to evaluate the efficacy, safety, and viability of carbon capture, utilization, or storage technologies and CDR technologies and facilitate the capture and sequestration of carbon dioxide from those technologies, where appropriate. The bill requires the program to ensure that carbon dioxide capture, removal, and sequestration projects include specified components including monitoring activities. In carrying out the program's objectives, SB 905 requires that CARB adopt regulations to implement the program and, in developing the program, to consult with the Geologic Carbon Sequestration Group, established by the California Geological Survey, to provide independent expertise and regulatory guidance, as well as identifying high-quality, suitable locations of carbon dioxide injection wells.

As summarized above, the EA's conclusion that overall the 2022 Scoping Plan will lead to beneficial air quality impacts is appropriate, reasonable, and supported by evidence in the record. The overall decline in GHG emissions that will be associated with the programmatic project discussed in the EA will be accompanied with co-benefit reductions in criteria and toxic pollutants. Moreover, with regard to CDR and CCS projects, specific analysis is not required at the programmatic level of this analysis; the record and the structure of state air pollution law supports a conclusion that this action will not adversely affect air quality. For the purposes of this programmatic analysis, there is substantial evidence that overall air pollution benefits will result from implementation of the 2022 Scoping Plan project as a whole.

The Recirculated Draft EA discusses potential impacts of CCS on a range of existing industrial facilities in the environmental impacts discussion in Chapter 4. Fossil-fueled electricity generation is one such industrial facility type. As such, the following language will be added to Table 2-1 in the Final EA: "CCS on some generation by 2045."

Master Response 4: Relationship Between the Appendices to the 2022 Scoping Plan and the EA

As explained in the Recirculated Draft EA, Appendices D through F to the 2022 Scoping Plan contain guidance that local and state governments may choose to consider in developing

and improving their communities reducing vehicle miles traveled, and in reducing emissions from buildings. Many of these appendices focus on areas where CARB itself cannot or is not imposing particular regulatory requirements, but in which further action to implement actions consistent with the 2022 Scoping Plan can and should be taken as part of the discretion of other government bodies. Thus, though some actions in the appendices may well be taken, they are not foreseeable consequences of the 2022 Scoping Plan itself and are, except as noted specifically in this document and the main 2022 Scoping Plan, beyond CARB's immediate control. See Recirculated Draft EA at pages 39-40 for more information.

Master Response 5: Modelling Assumptions

Some commenters questioned the modeling undertaken for the Scoping Plan, including questioning whether it supports the Proposed Scenario achieving the state's climate goals.

The Scoping Plan Scenario is summarized in Tables 2-1 and 2-2 of the 2022 Scoping Plan, as well as Tables 2-1 and 2-2 of the Recirculated Draft EA). These tables show the types of technologies and energy needed to drastically reduce GHG emissions from the AB 32 Inventory Sectors. If the Scoping Plan Scenario is fully implemented, the state would also achieve the SB 32 2030 target, which was the focus of the 2017 Scoping Plan Update.

As part of the analysis for the 2022 Scoping Plan, the emissions trajectory for California was also updated. This modeling indicates GHG emissions are lower this decade than predicted in the previous modeling for the 2017 Scoping Plan Update. The difference in the modeling projections is attributable to a number of factors that have occurred since the 2017 Scoping Plan Update was published and were therefore unaccounted for, including:

• Passage of SB 100, requiring a more ambitious Renewables Portfolio Standard in 2030;

• Implementation of a more stringent Low Carbon Fuel Standard;

• Passage of SB 596, which requires specific GHG emissions reductions from the cement sector;

• A more stringent, recently-adopted Advanced Clean Cars ll regulation; and

• Pandemic-related impacts.

In addition, recent and upcoming policies and regulations will further reduce emissions:

• In the transportation sector, the ZEV Executive Order N-79-70 has set deadlines to transition the sector to zero-emissions, and CARB recently adopted, or will be adopting, regulations to meet those targets, including Advanced Clean Cars II, Advanced Clean Trucks, Advanced Clean Fleets, Ocean-Going Vessels, and Commercial Harbor Craft regulations. The GHG emissions reductions that will be achieved by 2030 under these and other transportation-related regulations will play an important role in meeting the 2030 target.

• The investments that the State is making in zero-emission vehicles and related infrastructure (a combined $10 billion between last year's Budget and this year's proposed Budget) will accelerate development and adoption of zero-emission transportation.

• Other recent policies will drive emissions reductions beyond the transportation sector. For example, the Short-Lived Climate Pollutant Reduction Strategy maps out strategies to achieve specific reductions in methane, hydrofluorocarbons, and anthropogenic black carbon.

The impact of many of these policies, regulations, and investments are not yet reflected in the AB 32 emissions inventory because they have only recently come into effect or are still in development, but their effects will begin to materialize in the inventory in the coming years. As acknowledged in the Scoping Plan, there remain uncertainties that it will be important to track as the state implements the strategy to achieve the 2030 target. Success also requires key actions outside the jurisdiction of State government, such as local siting and permitting decisions. The annual GHG emissions inventory[24] along with the new climate dashboard on energy and clean technology deployment will play a role in tracking GHG emissions reduction progress. All of these recent actions and broader economic conditions affect the role the Cap-and-Trade Program will play in meeting the 2030 target. Importantly, as provided in the modeling for the uncertainty analysis, delays in clean technology and energy deployment will impact the state's ability to meet the 2030 SB 32 target.

Master Response 6: Refining for Export and Associated Emissions

Some commenters expressed concern about GHG and co-pollutant increases associated with refining of liquid fuels for export (both petroleum fuels and renewable diesel and diesel biofuel) in communities near California refineries, that demand reduction measures absent direct refinery measures have the potential to increase cross-border GHG emissions more than they would decrease in-state emissions, and that there will be emissions impacts from the growth of diesel biofuel that fails to replace petroleum distillate fuel.

Implementation of the Scoping Plan Scenario would not result in increased petroleum extraction or petroleum refining, and it would not increase overall volumes of finished fuel exports. The 2022 Scoping Plan does not direct any increased refining of petroleum products for purposes of exporting those finished fuels out of California as in-State demand declines, and therefore does not call for a net increase in liquid fuels. In fact, the successful implementation of actions called for in the Scoping Plan Scenario would result in a decline in liquid petroleum fuel consumption of 94 percent from 2022 to 2045, as well as a reduction in

[24] CARB. Current California GHG Emission Inventory Data. https://ww2.arb.ca.gov/ghg-inventory-data

total liquid fuel consumption (e.g., petroleum, renewable diesel, sustainable aviation fuel) of 85 percent from 2022 to 2045.[25]

With respect to upstream fuel production activities, the 2022 Scoping Plan would result in a substantial phase-down of oil and gas extraction, which comprises over half of California's industrial GHG emissions, in line with demand for finished fossil fuels (gasoline, diesel, and jet fuel) in 2045. Remaining residual demand is primarily for transportation, including sectors that are directly regulated by the State and some that are subject to federal jurisdiction. With successful deployment of zero carbon fuels and non-combustion technology to phase down petroleum demand, GHG emissions from oil and gas extraction could be reduced by about 89 percent from 2022 to 2045 if extraction decreases with in-State finished fuel demand.

As described in the 2022 Scoping Plan, CEC data shows that total oil extracted in California peaked at 402 million barrels in 1986; since then, California crude oil production has decreased an average of 6 million barrels per year to about 200 million barrels in 2020. This decreasing crude production in California is expected to continue as State oil fields are depleted.[26] Furthermore, a report from U.C. Santa Barbara estimates that California oil field production would decrease to 97 million barrels in 2045 under business-as-usual conditions, which assumed no additional regulations limiting oil extraction in California.[27]

In the Scoping Plan Scenario, a phasedown of refining activity was modeled in line with petroleum demand. Meeting petroleum demand means sufficient availability of finished fuel. Crude is processed at in-State refineries to produce finished fuel. The Scoping Plan Scenario results in California petroleum refining emissions of 4.5 $MMTCO_2e$ in 2045 – a reduction of about 85 percent relative to 2022 levels, which is in line with the decline in in-State finished fuel demand. In addition, reduced demand for transportation fossil fuels corresponds to reduced supply of fossil gas and other gaseous fossil fuels for refineries to produce these fuels. Fossil gas (natural gas and refinery/process gas) in the Scoping Plan Scenario is reduced by 78 percent from 2022 to 2045.

The actions and outcomes in the 2022 Scoping Plan will reduce petroleum consumption and demand by transitioning to zero emissions technologies and clean fuels. Overall finished fuel production rates are limited by refinery equipment capacity and local air district permit conditions. As in-State demand declines, the ratio of petroleum exported versus consumed in-State may adjust, but overall production is inherently limited by existing capacity and permitting constraints, and the purpose and effect of the 2022 Scoping Plan would be to reduce petroleum consumption and demand. As the 2022 Scoping Plan does not call for a

[25] See AB 32 GHG Inventory Sectors Modeling Data Spreadsheet for energy demand categories and electric sector combusted fuels, https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-PATHWAYS-data-E3.xlsx

[26] https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/oil-supply-sources-california-refineries

[27] University of California, Santa Barbara. 2021. Enhancing Equity While Eliminating Emissions in California's Supply of Transportation Fuels.

net increase in liquid fuels, net beneficial impacts are expected and there is no additional GHG emissions impact associated with finished fuel exports.

Similar net air quality benefits from reduced petroleum consumption will be realized. Regarding associated air pollutant emissions, the EA in Section 3.b discusses the reasonably foreseeable longer-term operational impacts to air quality from implementation of the 2022 Scoping Plan. That section of the EA points to the air quality and public health analysis conducted for the AB 32 GHG Inventory Sectors. That analysis used an integrated modeling approach to characterize and quantify the ambient air quality and public health impacts of the Scoping Plan Scenario relative to the Reference Scenario to provide insight into the co-benefits that could be achieved from implementation of the 2022 Scoping Plan. The baseline pollutant emissions represent a highly detailed inventory that includes emissions by sector and source, which are grown and controlled to 2045 using output from the PATHWAYS model for technologies, fuels, and energy demand by AB 32 GHG Inventory Sectors. Existing sources/facilities (such as refineries) were included, though no major functional changes to existing sources were assumed given uncertainty associated with the siting and activity of novel emission sources. This means that refineries that convert from producing liquid petroleum fuels to producing renewable diesel and/or sustainable aviation fuels (SAF) were assumed to have air pollutant emission factors equivalent to prior petroleum fuel production, and renewable diesel and SAF combustion in stationary and/or mobile sources was treated the same as petroleum diesel combustion. Regardless, as explained in the 2022 Scoping Plan, carbon neutrality will be achieved through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy which also has criteria pollutant and precursor benefits alongside reducing the exposure of sensitive receptors to toxic air contaminant emissions.

As shown in the EA's air quality section, the air quality analysis modeling results show the overall reduction in fossil fuels would produce significant reductions in NOx, PM2.5, and ROG translating into ambient air quality improvement and corresponding health benefits associated with the compliance responses for the AB 32 GHG Inventory Sectors. Emissions reductions associated with reduced vehicular emissions occur throughout the state with particular prominence in urban areas due to large presence and activity of emissions sources (vehicles). Furthermore, the associated health benefits from the Scoping Plan Scenario are significant and will also accrue within socially and economically disadvantaged communities as identified by CalEnviroScreen. As described in Chapter 3 of the 2022 Scoping Plan, about 30 percent of health benefits representing the economic value of the avoided incidence of health effects in the Scoping Plan Scenario are associated with census tracts identified as disadvantaged communities. These benefits reach $22 billion in 2035 and $61 billion in 2045 (compared to statewide totals of $78 billion in 2035 and $199 billion in 2045). As also discussed in the EA, mitigation measures required to avoid and/or minimize impacts on air quality at the individual facility project level typically fall under local agency jurisdiction. These mitigation measures routinely encompass: requirements that proponents of new or modified facilities coordinate with State or local land use agencies to seek entitlements for development including completion of necessary environmental review requirements (e.g.,

CEQA) and implementation of all feasible mitigation to reduce or substantially lessen potentially significant air quality impacts of a project; compliance with all appropriate air quality permits; and compliance with applicable provisions of the federal Clean Air Act and the California Clean Air Act (e.g., New Source Review and Best Available Control Technology criteria).

In order to realize the decline in liquid petroleum fuel consumption in the Scoping Plan Scenario, the 2022 Scoping Plan acknowledges that California is currently a net exporter of gasoline, diesel, and jet fuel. Therefore, in managing the phasedown of oil and gas extraction and petroleum refining in California going forward, exports of finished fuels must be considered. As stated in the 2022 Scoping Plan, the authorities and considerations related to supply and demand of petroleum fuels span federal, state, and local agencies, so a multi-agency discussion is needed to evaluate and plan for the transition and support the decline of the supply of fossil fuels along with demand.

B. Individual Comments and Responses on the First Draft Environmental Analysis

Comment Letter 2

5/11/2022 Thomas Becker, T. Becker Power Systems

2-1: The commenter states, "This is the first of 2 comment letters I will be submitting on the Draft 2022 Climate Change Scoping Plan.

I request CARB staff reply to the following itemized comments, as required by CEQA and all applicable state and federal statutes, rules and regulations pertaining to response to public comments.

1A1) Any motor vehicle emission and/or fuel mileage standard proposed by the state under the state's U.S EPA emission waiver must be demonstrated by the state to be 'needed' by the state to meet federal air quality standards.

2A2) the state does not 'need' to reduce motor vehicle emissions beyond the standards set during the Trump Administration to meet federal air quality standards.

3A3) The state must demonstrate that it has exhausted all other emission reduction options available to the state before the state can impose motor vehicle emission standards stricter that U.S EPA standards.

4A4) The state can meet federal air quality standards by reducing VMT in the state by 50% from a 2014 baseline by 2040. This VMT reduction eliminates the 'need' for the motor vehicle emission standards proposed in both this Plan and the Clean Car II regulation.

5A5) It would be a violation of federal law if the state implemented motor vehicle emission standards that are stricter than federal standards if the state failed to implement a 50% VMT reducing strategy in lieu of stricter motor vehicle emission standards.

6A6) AS part of the proposed Draft 2022 Climate Change Plan, the State should implement a 50% VMT reduction from a 2014 baseline by 2040, instead of the proposed 22% reduction from a 2019 baseline.

Response: The commenter requests a response to their comments. In regards to requirements for responses to CEQA comments, CARB's CRP regulations state:

> *California Code of Regulations, title 17, Section 60004.2(b)(3). Response to Public Comment*
>
> > *CARB shall evaluate comments on environmental issues received during the noticed comment period and shall respond as follows:*
> >
> > > *(A) Comments received during the noticed public comment period regarding environmental impacts that may result from the proposed project shall be considered, and a written response shall be prepared where required by section 15088 of title 14 of the California Code of Regulations.*
> > >
> > > *(B) CARB may, but is not required to, respond to late comments made outside the noticed comment period.*
> > >
> > > *(C) When responding to a comment raising significant environmental impacts from a public agency, a written proposed response shall be provided to that agency at least 10 days prior to certifying an Environmental Impact Analysis.*
> > >
> > > *(D) The response to comment may be prepared in the form of (1) a revision to the draft Environmental Impact Analysis, (2) a separate section in or attachment to the Final Environmental Impact Analysis, or (3) a separate response to comments document.*
> > >
> > > *(E) The response to comment shall include the following:*
> > >
> > > > *1. Comments and recommendations concerning significant environmental issues received during the noticed public review period on the draft Environmental Impact Analysis, either verbatim or in summary;*
> > > >
> > > > *2. A list of persons, organizations, and public agencies commenting on the draft Environmental Impact Analysis during the noticed public review period; and*
> > > >
> > > > *3. The responses to significant environmental issues raised during the noticed public review period.*

The comment raises policy recommendations for modifying the Scoping Plan's goals. CARB staff have taken the commenter's policy recommendations into consideration. The comment does not otherwise raise significant environmental issues related to the 2022 Scoping Plan or any issues related to the adequacy, accuracy, or completeness of the First Draft EA, therefore no further response is required.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 18

5/23/2022 Dawn Durfee

18-1: The commenter states, "- Electric Cars still negatively affect the environment. I think people in the city believe that electricity is delivered nightly to their homes via the electricity fairy. Energy consumption for electric cars is not passive!! We have an entire state that depends upon hydroelectric power and plants that dam waterways that negatively affect our wildlife in Northern CA. Our poor fish and birds struggle to migrate. Converting the entire state will only increase this damage and our massive human footprint in our forests. Also, what about electric car parts and the lack of ability to recycle??"

Response: The comment notes that energy consumption for electric vehicles has environmental consequences, including impacts on wildlife. Impacts to biological resources related to renewable energy project is discussed in Section 4.B.4.a, "Increase in Renewable Energy and Decrease in Oil and Gas Use Actions." Impacts to biological resources related to expanded electrical infrastructure is addresses in Section 4.B.4.c, "Expansion of Electrical Infrastructure Actions." The comment does not raise specific issues related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 24

5/24/2022 Rhoads Stephenson

24-1: The commenter states, "c. Which actions require a CEQA EIR to move forward? What is the schedule for starting and finishing each required EIR?"

Response: Please refer to Master Response 1. Actions that may require a CEQA document to move forward would consist of projects (see CEQA Guidelines §15378) where a lead agency has discretionary authority to approve a project (see CEQA Guidelines §15357), and the project has the potential to result in a physical change in the environment. It would be speculative to predict decisions by other entities regarding the specific location and design of new or modified facilities that may be undertaken to implement measures in the 2022 Scoping Plan. Given the lack of specificity of the measures, the influence of other business and market considerations, and the numerous locations where facilities might be built, it is impossible to predict location-specific effects with precision at this stage. Specific development projects undertaken to implement recommended measures in the 2022 Scoping Plan would undergo required project-level environmental review and compliance processes when they are proposed. The schedule for any CEQA documents depends upon the specified timing of any regulations and/or implementation measures and is further subject to each lead agency's CEQA processes, which may be dictated by a number of factors. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

24-2: The commenter states, "d. Have you identified a lead State agency for each of the actions?"

Response: The lead agency for specific follow-up regulatory actions that CARB or other agencies may decide to pursue to reduce GHG emissions or any environmental reviews carried out for reasonably foreseeable, specific projects by various entities to comply with regulations or policies in the plan, may vary depending upon the action. Given the lack of specificity of the measures, the influence of other business and market considerations, and the numerous locations where facilities might be built, it is impossible to predict location-specific effects with precision at this stage. Specific development projects undertaken to implement recommended measures in the 2022 Scoping Plan would undergo required project-level environmental review and compliance processes when they are proposed. Public Resources Code § 21067 states that "Lead agency" means the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment. The lead agency could be CARB, another state agency, local agencies, special districts, or any other public agency that has discretionary authority over the implementation of a project. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 26

5/25/2022 Catherine Turman

26-1: The commenter states, "I am opposed to electric cars with batteries that are toxic to the environment if burned in an accident or expended."

Response: The commenter provides an opinion in opposition to electric cars and suggests that electric cars with batteries are toxic to the environment if burned in an accident or expended. No specific environmental issues are raised as to the adequacy of the environmental impact analysis. No changes to the First Draft EA are required in response to this comment.

26-2: The commenter states, "Wind power is the same. These machines use a lot of oil to run. This oil must be replaced often. The blades must be buried as toxic material.

Response: The commenter provides an opinion in opposition to wind power and suggests that wind machines use a lot of oil to run, which must be replaced often, as well as generating toxic material from the blades that must be buried. No specific environmental issues are raised as to the adequacy of the environmental impact analysis. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 27

5/23/2022 Gary Latshaw, Securethefuture2100

27-1: The commenter states, "The GHG emission factors used do not account for the serious leakage of natural gas associated with natural gas combustion. The emission factors used in the CAP appear to be based on the simple assumption that each molecule of methane (the primary component of natural gas) combusts and forms one molecule of carbon dioxide and two molecules of water. umber based on the simple assumptions.

Unfortunately, there is substantial leakage associated with the use of natural gas and that leakage has not been accounted for in the emission factor used in the Draft CAP."

Response: The comment addresses a Draft CAP, and does not appear to be related to the project. The proposed project would not increase the combustion of natural gas, and indeed is designed to result in large reductions in fossil natural gas use. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 50

6/7/2022 Thomas Becker, T. Becker Power Systems

50-1: The commenter states, "AAA) I am submitting the following alternative to the Advanced Clean Car II regulation portion of the Draft Scoping Plan.

- establish a "closed loop" renewable liquid fuel standard in the state of 25% content "closed loop" renewable fuel by 2030 and 50% content "closed loop" renewable fuel by 2040.
- Reduce statewide VMT from a 2014 baseline by 25% by 2030 and 50% by 2040.
-Reduce Port of Los Angeles/Long Beach activity (tonnage) by 75% from a 2019 baseline.
The above alternative provides far greater environmental protection than the Advanced Clean Car II regulation. The above alternative should be analyzed for the following reductions in emissions and compared to reductions achieved by the ACC II regulation:
- Reduced emissions from mobile sources directly achieved inside the state.
- Reduced GHG emissions achieved by reduced shipping operations.
-Reduced GHG emissions by transferring manufacturing from China to the United States.
Points to the above alternative:
- The Ports of Los Angeles/ Long Beach are owned by the respective cities. Those cities have every right and power to limit activity at their ports.
- GHG emissions from manufacturing any given item in the U.S are far less than GHG emissions from manufacturing the same item in China.
- The above alternative to the ACC II regulation will have a far less impact to other states than the ACC II regulation. This is because the ACC II regulation will impact the design, price, safety and utility of motor vehicles sold throughout the U.S., to the detriment of consumers in other states that do not want their motor vehicle designs, prices, safety or utility influenced by the ACC II regulation.

CARB is required by CEQA to prepare an analysis of the above environmentally superior alternative. It is also unlawful for CARB to implement any motor vehicle emission standard that is more stringent than federal standards without first exhausting all emission reduction options available to the state, such as the emission reduction strategies proposed in the above alternative."

Response: As required by Section 60004.2 of CARB's Certified Regulatory Program, the Environmental Impact Analysis is consistent with Section 15126.6 (c) of the CEQA Guidelines and addresses the selection of a range of reasonable alternatives. Section 15126.6 (c) states:

> The range of potential alternatives to a proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or

> substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

CARB followed these guidelines in preparing Chapter 7 of the First Draft EA. While the comment contains a suggested alternative related to a component of the 2022 Scoping Plan (i.e., the Advanced Clean Cars II regulation), it does not indicate how significant environmental effects would be reduced or eliminated through its implementation. The First Draft EA contains a range of reasonable alternatives sufficient to inform the Board's decision on the 2022 Scoping Plan. It need not evaluate every variation of individual components of the plan. Evaluating a modification of one piece of the 2022 Scoping Plan can also be misleading, because it does not involve an alternative to the whole of the project description. Thus, it is not necessary nor warranted to evaluate the alternative feature raised in the comment.

Chapter 7 of the First Draft EA contains a table that shows how each alternative analyzed would affect implementation of the actions in the 2022 Scoping Plan (see Table 7-1 in the First Draft EA). As noted in the text above Table 7-1, the fundamental "actions associated with the 2022 Scoping Plan and plan alternatives would be the same. Differences among the alternatives would be related to the degree to which individual actions are implemented." For each alternative examined, an analysis of the environmental impacts is provided to compare the relative extent to which environmental impacts would occur. While the commenter is correct that the State CEQA Guidelines contain a requirement to identify the environmentally superior alternative (CEQA Guidelines Section 15126.6), this requirement is not included in CARB's certified regulatory program and is therefore not necessary to address within the First Draft EA for the 2022 Scoping Plan. It is also worth noting that the fundamental purpose of the 2022 Scoping Plan is to benefit the environment; the "environmentally superior alternative" concept is therefore of limited relevance to a statewide plan to address a major environmental issue (climate change).

The commenter also does not substantiate their claims about the alternatives suggested, and does not explain what some of their components entail. For example, it is not clear what a "closed loop" renewable liquid fuel standard is. It is not clear how the commenter believes CARB could reduce port activity by 75%; it is unlikely such a measure is feasible. The commenter also does not provide evidence to support the claimed benefits of the suggested alternative.

Regarding the VMT-related component of the commenter's suggested alternative, CARB notes that the 2022 Scoping Plan has been revised to reflect deeper targets for VMT reductions; see Recirculated Draft EA at Table 2-1.

The suggested alternative would also raise various legal and policy concerns. For example, AB 32 requires that policies in the 2022 Scoping Plan are cost-effective with flexible compliance options and directs CARB to facilitate sub-national and national collaboration. It is unclear how the suggested alternative would meet this cost-effectiveness criterion.

Finally, CARB notes that the commenter's suggested alternative would not meet most of the basic project objectives (see CEQA Guidelines Section 15126.6 (c).) For example, it does not appear that the alternative would increase renewable energy generation (Objective 3), or achieve the energy savings goals (Objective 4), vehicle electrification goals (Objective 5), carbon removal goals (Objectives 8, 9), or otherwise achieve the maximum technologically feasible and cost-effective GHG reductions as required by law (Objectives 1, 13). CARB must consider both the predicted environmental outcomes and feasibility factors of the alternatives to determine which to approve to achieve the 2022 Scoping Plan objectives.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 56

6/10/2022 Dean Wallraff, Advocates for the Environment

56-1: The commenter states, "I agree that local action is important. As a CEQA attorney who frequently litigates GHG-emissions issues, I often see Environmental Impact Reports (EIRs) and Mitigated Negative Declarations (MNDs) that do not take greenhouse-gas (GHG) reduction efforts seriously. Project proponents create analyses showing their projects' GHG emissions are not significant, so they don't need to be mitigation. Often, such analyses state, in essence, that the State of California's climate regulations are expected to be so effective that changes in the project are not needed in order for the State to meet its climate goals. Local governments usually do not push back against such claims, allowing projects with significant GHG emissions to go forward with little or no mitigation."

Response: CARB appreciates the commenter's input regarding GHG impact analysis under CEQA, and agrees that practitioners could use more guidance on this topic. Appendix D to the 2022 Scoping Plan provides some guidance to help agencies consider the GHG effects of proposed projects, and to undertake local GHG reduction efforts that complement the goals of the 2022 Scoping Plan. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA itself, and no further response is required. No changes to the First Draft EA are required in response to this comment.

56-2: The commenter states, "Appendix D, in a section titled "Net Zero May be Appropriate for Some Projects" (p. 12), touts Newhall Ranch and Tejon Ranch's Centennial project as prime examples of net-zero GHG reduction. CEQA litigation achieved both of these results. In both cases, courts found substantial legal deficiencies in the EIRs' GHG analyses: EIRs in both cases declared that the respective projects' GHG emissions were insignificant under CEQA. This finding made no sense for two of the largest mixed-use development projects in

California, both including approximately 20,000 homes. After courts invalidated the EIRs based on these analyses, the project developers settled with the environmental community, and the settlements resulted in the projects becoming net-zero.

I have litigated several other CEQA cases that resulted in substantial improvements in the GHG mitigation required. CEQA is a very important tool in California's fight against global heating."

Response: CARB agrees with the commenter's statement that CEQA is an important tool in the fight against global warming, as also noted in Scoping Plan Appendix D. CARB also agrees that the Newhall and Tejon Ranch GHG reduction strategies were the result of hard-fought litigation, and that those projects did not initially propose to mitigate their actual GHG impacts. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA for the 2022 Scoping Plan and no further response is required. No changes to the First Draft EA are required in response to this comment.

56-3: The commenter states, "My legal practice focuses on CEQA analysis of GHG impacts. I review dozens of MNDs and EIRs every year, and 90% of them do not comply with CEQA. They contrive to wrongly find that the project's GHG emissions are not significant, or, where they admit that impacts are significant, they require much less mitigation than the fair share that CEQA requires. Most of these CEQA documents are prepared by consultants working for developers, and developers want to save money by minimizing GHG mitigation. But these documents are approved by the local agencies (cities and counties) and supposedly reflect the independent judgment of those agencies.

Appendix D should suggest that cities and counties should be more vigilant in requiring GHG analysis that meets CEQA's requirements, and that local governments should push for more GHG mitigation where they have the legal authority to do so. This could result in significant GHG emissions reductions statewide.

Appendix D discusses Climate Action Plans (CAPs) prepared by local governments on pages 3-5. These CAPs can have either positive or negative effects. If they are too lenient, they can make it easy for local development projects to evade CEQA's requirements for reducing GHG emissions because EIRs can use consistency with the local CAP as the single threshold of significance under CEQA. It happens fairly frequently that MNDs and EIRs use compliance with a CAP checklist as the basis for a determination that a Project does not have significant GHG emissions. This is fine if the checklist is sufficiently rigorous, but many times it gives a pass to projects whose emissions are really significant.

I therefore request that Appendix D be modified to recommend that CAPs have stringent requirements not only for the local agencies adopting them, but also for projects that are approved based on their requirements."

Response: CARB thanks the commenter for their perspectives regarding the role of CAPs in CEQA analysis and mitigation. The comment does not raise an issue related to the adequacy,

accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

56-4: The commenter states, "According to the recent IPCC Working Group III Report,1 buildings account for 21% of global GHG emissions. (p. 9-4.) Title 24 building standards are the State's primary vehicle for improving GHG efficiency of buildings; local requirements provide the other main vehicle, and CEQA is the law that pushes developers and local governments to reduce their climate impacts.

As Appendix D admits, only about 3% of land-use entitlements are litigated under CEQA. Opponents of CEQA frequently argue that it is a major impediment to the production of new housing in California. Appendix D contains a lot of anti-CEQA rhetoric, which is inappropriate in a document focused on reducing GHG emissions.

Appendix D complains that CEQA is an impediment, used to "slow or stop projects without advancing legitimate environmental goals." (p. 6.) The CEQA process may be abused sometimes but, as discussed above, CEQA litigation frequently results in GHG reductions for local development projects. Appendix D states that two-thirds of CEQA lawsuits involve GHG or VMT-related claims. One reason for this is that attorneys usually include all colorable CEQA claims in their lawsuits because it increases their chances of winning. Even cases where the main issues are biological (e.g. harm to an endangered species) are likely to include a GHG claim, if such a claim is viable. And VMT claims are not GHG claims; deficiencies in a CEQA VMT analysis may or may not be the basis for a claim that GHG analysis is inadequate. So, even if two-thirds of CEQA lawsuits contain GHG and VMT claims, a much smaller subset of them is won based on GHG claims. Such wins serve an important purpose: to remind local governments and developers of their responsibility for reducing GHG emissions as much as possible.

Appendix D is supposed to be focused on reducing GHG emissions, not on how to produce more housing in California. After all, producing more housing increases GHG emissions; slow growth is generally beneficial for the environment, and the population of the state is declining, so perhaps it doesn't need as much housing as it has planned for. CARB should not be advocating the reduction of CEQA oversight for housing, and the language bashing CEQA for its role in making it more difficult to produce housing should be removed. The language about displacement and gentrification on pages 8 and 9 is also out of place in this report. There is too much discussion of housing and too little discussion of other types of GHG-intensive projects in this document."

Response: CARB thanks the commenter for their comments regarding CEQA litigation and housing-related considerations. Regarding the commenter's statement that more housing would increase GHG emissions, CARB notes that this depends heavily on the way housing development is planned. Part of the goal of Appendix D is to suggest one potential way to develop housing without increasing GHG emissions. The 2022 Scoping Plan does not cause nor prevent housing development; rather, it provides guidance on ways to help address the state's housing crisis while avoiding significant climate impacts.

The remainder of the comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

56-5: The commenter states, "The section on Project Attributes that Reduce GHGs, on pages 10-12, does identify attributes that reduce GHG emissions from housing projects. I take exception with the statement that projects with these attributes would not present significant GHG impacts under CEQA. There may be project-specific circumstances where projects with these attributes have significant climate impacts. For example, the third bullet point would allow redevelopment of previously developed, underutilized land presently served by existing utilities and essential public services, but that requirement would not preclude a sprawl project that would greatly increase VMT. And most infill projects with these characteristics are already exempt from CEQA under Guidelines § 15332."

Response: CARB notes that the project attribute-based approach to which the commenter refers involves consistency with a list of attributes, not just a single one (for example, the third one referenced by the commenter), and Appendix D also states that its recommendations "are recommendations...and are not requirements…[and] do not supplant lead agencies' discretion to develop their own evidence-based approaches for determining whether a project would have a potentially significant impact on GHG emissions." CARB disagrees that this attribute-based approach has the potential to streamline so-called "sprawl" housing development, since such development would likely fail to be consistent with at least one of the suggested attributes. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

56-6: The commenter states, "I have reviewed many MNDs and EIRs that have used Air District-Adopted Threshold of Significance for GHG emissions, but there is usually a significant flaw: the air districts typically adopt CEQA significance thresholds for their own use when they are the lead agency on projects. When they adopt a single, numeric threshold, such as 3,000 MTCO2e/year, the basis for that figure is often that it will result in EIRs for projects causing 90% of the GHG emissions, i.e. the bigger projects. This is an example of the so-called 80/20 rule, where 20% of the projects are responsible for 80% of the emissions. The problem is that the types of projects for which air district are lead agency—their own rulemaking, or permits awarded by the air district—are very different from the mix of projects subject to approval by local governments. Air districts could use the same approach to develop CEQA GHG thresholds to be used for development projects in their districts, for which they would not be the lead agency, but they would need to examine the mix of projects and the spectrum of GHG emissions levels to develop a numeric threshold that would capture a certain percentage of the projects, requiring an EIR, and excuse the remainder of the projects as being below their numeric threshold. The Air District-Adopted Threshold of Significance section of Appendix D should be updated to propose this methodology, and to deprecate the use of inappropriate air-district standards in non air-district EIRs and MNDs."

Response: CARB thanks the commenter for their comments regarding air district-adopted thresholds of significance for GHG emissions. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 137

6/14/2022 Kenneth Johnson

137-1: The commenter states, "The following questions pertain to CARB's implementation of Sections 38566 and 38562(b)(1) of the Health and Safety Code through its existing and proposed regulations including those proposed in the Draft 2022 Scoping Plan and the Draft Environmental Analysis.

Section 38566 provides that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by this division, the state board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030." (This provision is paraphrased in the first Project Objective stated in the Draft Environmental Analysis.)

Question 1: According to CARB's interpretation of HSC-38566, does the qualifier "maximum" apply to statewide greenhouse gas reductions, and does the qualifier have actionable meaning?

Question 2: Does CARB recognize any statutory requirement to attain GHG emissions reductions significantly more than 40 percent below the HSC-38566 statewide limit by 2030, to the extent that such further reductions are technologically feasible and cost-effective?

Question 3: Has CARB made any determination of whether GHG emissions reductions significantly more than 40 percent below the HSC-38566 statewide limit by 2030 could potentially be feasible and cost-effective, and if so, what was the result of such determination?

Question 4: Has CARB enacted or proposed any specific regulatory measures to incentivize feasible and cost-effective emissions reductions significantly more than 40 percent below the HSC-38566 statewide limit by 2030? "

Response: While the commenter mentions the First Draft EA and points to one of the Project Objectives included in the EA, the rest of the comment does not specifically pertain to the EA or raise significant environmental issues with the proposed project. The comment does

not address the adequacy, accuracy, or completeness of the First Draft EA and no changes to the First Draft EA are required to respond to the comment.

137-2: The commenter states, "Section 38562(b)(1) provides that the state board shall "Design the regulations, including distribution of emissions allowances where appropriate, in a manner that is equitable, seeks to minimize costs and maximize the total benefits to California, and encourages early action to reduce greenhouse gas emissions." (This provision is not expressly reflected in the stated Project Objectives of the Draft Environmental Analysis.)"

Response: CARB thanks the commenter for their comment. CARB's Scoping Plans are developed to achieve a wide array of objectives, including statutory ones, though not all of them are expressly reflected in the project objectives section of CARB's environmental analyses. CEQA does not require every possible objective of a project to be included in the list of project objectives in a CEQA document. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 166

6/17/2022 Ann Alexander, Natural Resources Defense Council

166-1: The commenter states, "We are concerned first, that the Draft Plan reflects unjustified optimism in the ability of carbon capture and sequestration (CCS) to address emissions from petroleum refineries. A more genuinely sustainable approach would be to plan in more concrete terms for the phaseout of refining capacity."

Response: Please refer to Master Response 3.

166-2: The commenter states, "Second, and similarly, the Draft Plan puts undue reliance in the ability of CCS-equipped hydrogen (or "blue hydrogen") production to reduce the greenhouse gas (GHG) emissions. In fact, research demonstrates that blue hydrogen production can, as a result of methane leakage, be more carbon intense than coal."

Response: This comment speaks to upstream methane emissions from natural gas as a feedstock for "blue hydrogen" production. The scope of the AB 32 GHG Inventory encompasses emissions sources within the state's borders, as well as imported electricity consumed in the state. This construct for the inventory is consistent with IPCC practices to allow for comparison of statewide GHG emissions with those at the national level and with other international GHG inventories. While life-cycle emissions can provide a more

comprehensive picture of the emissions associated with the goods we consume and ongoing demand, life-cycle inventories are inconsistent with IPCC standards, as they would result in double counting of emissions across jurisdictions.

CARB disagrees with the commenter's assertion that reliance on hydrogen would result in higher GHG emissions. The 2022 Scoping Plan relies on increased low-carbon hydrogen production and use by 2045, which includes hydrogen produced from renewable energy, biomethane, and biomass-based feedstocks. In addition, the 2022 Scoping Plan projects an overall *decrease* in natural gas use in California by 2045. Furthermore, methane emissions that result from the pipeline injection of biomethane gas serving as the feedstock for hydrogen production are included under California's AB 32 inventory and are also targeted for fugitive emission reductions as part of the 2022 Scoping Plan through leak abatement.

Please also refer to response to comment 296-5 and response to comment 369-1.

The comment does not address the adequacy, accuracy, or completeness of the First Draft EA and no changes to the EA are required to respond to the comment.

166-3: The commenter states, "And third, the Draft Plan needs to address more completely and precisely the impact of different types of bioenergy, in particular their potential to cause leakage as defined by AB 32 by increasing GHG emissions outside of California."

Response: Please refer to response to comment 566-15 regarding state policy support of bioenergy as an alternative to fossil fuel. With respect to bioenergy impacts, the First Draft EA analyzes elements in the 2022 Scoping Plan and contains the reasonably foreseeable compliance responses for the recommended actions. These reasonably foreseeable compliance responses are compared to existing conditions, which meets CEQA requirements. In terms of the level of detail in addressing GHG emissions from new bioenergy facilities in the First Draft EA, it is important to note that those facilities, as reasonably foreseeable aspects of implementation of the 2022 Scoping Plan (e.g., SB 100, SB 1383), are just one aspect of actions considered cumulatively in the GHG section of the First Draft EA, which correctly concludes at this programmatic level that GHG emissions will decrease from implementation of the 2022 Scoping Plan. There is no requirement, nor is it feasible in this level of programmatic EA, to provide more detailed quantitative analyses of each potential new bioenergy facility that could occur, either in-state or out-of-state, for each action. The 2022 Scoping Plan is intended to identify the next steps to continue GHG emissions reductions to achieve the 2030 target and carbon neutrality by 2045. The level of detail in the First Draft EA reflects that the project is a broad statewide planning document that represents an initial planning step; post-2022 Scoping Plan implementation involves reviewing and updating programs, or developing new programs to align with outcomes identified in the plan, including regulations subject to their own public process. The First Draft EA for this initial planning document cannot provide the level of detail that will be provided in subsequent environmental documents prepared for specific regulatory actions that CARB or other agencies pursue to reduce GHG emissions or for permits approved for individual new facilities.

Chapter 1 of the 2022 Scoping Plan speaks to development of an accounting framework that reflects the effects of California's policies outside the state:

> "In addition to the state's existing GHG inventory, CARB will develop an accounting framework that reflects benefits of our policies accruing outside of the state. This accounting framework will be important to better understand the true impact of the state's policies on what is emitted into the atmosphere. For example, the [Low Carbon Fuel Standard] incentivizes GHG reductions along the entire supply chain for the production and delivery of transportation fuel imported for use in the state. However, our inventory only captures the change in emissions from the tailpipe of when that fuel is used in California and does not capture any GHG reductions that occur in the production process if produced out of state. It also will be important to avoid any double counting (including claims to those reductions by other jurisdictions) and to transparently indicate whether any extra-jurisdictional emissions reductions might be included in another region's inventory. CARB is collaborating with other jurisdictions to ensure GHG accounting rules are consistent with international best practices, as robust accounting rules instill confidence in the reductions claimed and maintain support for joint action across jurisdictions. The policy goals of consistency and transparency are critical as we work together with other jurisdictions on our parallel paths to achieve our GHG targets with real benefits to the atmosphere."

No changes to the First Draft EA are required in response to this comment.

166-4: The commenter states, "The Draft Plan repeatedly references CCS as a means of reducing GHG emissions from petroleum refining, presenting a figure purporting to show that a scenario in which refineries are equipped with CCS would cut refinery sector emissions by more than half (Figure 2-9). It asserts that newer CCS technologies "can be deployed ..in space constrained and multiple point source facilities such as refineries," and the associated modeling assumes that deployment of CCS at refineries will commence essentially immediately. Draft Plan at 68. But the Draft Plan concedes that implementation in this assumed timeframe is "unlikely," and hence that the modeling for the final Plan will be updated to reflect more realistic assumptions. Id.

Simply moving the implementation timeframe for refinery CCS back a few years, however, will not cure the overall analytical flaws in CARB's consideration of refinery CCS in the Draft Plan. Neither sound policy goals nor available evidence supports considering CCS at refineries at all as a means of reducing their GHG emissions. The Draft Plan should define a proactive and comprehensive strategy for the phaseout of combustion fuel refining, rather than merely assuming – contrary to current trends - a correlative decline in refining resulting from declining demand, and looking to mitigate the remaining emissions impacts with CCS. In any case, there is no available evidence that CCS will ever be a viable GHG emissions reduction strategy at refineries, and should hence not be considered in the modeling.

The Draft Plan makes the somewhat simplistic assumption that since a measure of continued combustion fuel use will be necessary through 2045, some amount of continued refining will be necessary in that timeframe because the alternative is importation of refined products and

attendant emissions leakage. Draft Plan at 68, 79, 81-85. However, the discussion fails to acknowledge that while demand for refined products has fallen modestly in the past decade, refinery output of such products has actually increased over the same time period, as refiners increasingly turn to export markets. See Table 1. Underlying this situation is the fact that California refining capacity is overbuilt.[1] Hence the refining industry, seeking to protect its otherwise stranded refining assets, has increasingly turned to exports. California refiners exported fully 20% to 33% of statewide refinery production to other states and nations from 2013–2017.[2] West Coast data further demonstrate the strong effect of changes in domestic demand on foreign exports from this over-built refining center.[3] See Table 1.4

Table 1. West Coast (PADD 5) Finished Petroleum Products: Decadal Changes in Domestic Demand and Foreign Exports, 1990–2019.

Total volumes reported for ten-year periods

	Volume (billions of gallons)		Decadal Change (%)	
Period	Demand	Exports	Demand	Exports
1 Jan 1990 to 31 Dec 1999	406	44.2	—	—
1 Jan 2000 to 31 Dec 2009	457	35.1	+13%	-21%
1 Jan 2010 to 31 Dec 2019	442	50.9	-3.3%	+45%

Data from USEIA, West Coast (PADD 5) Supply and Disposition; www.eia.gov/dnav/pet/pet_sum_snd_d_r50_mbbl_m_cur.htm

These factors belie the broad assumption underpinning the Draft Plan that reductions in California demand will lead to a linearly correlated decrease in California refining; and that market forces will ensure that refining levels diminish efficiently. In fact, present data suggest that a decrease in California demand is likely merely to result in continued or even increased refining for the export market. Additionally, refineries that might otherwise close due to excess refining capacity may continue to operate as biofuel producers – as already occurred at the Marathon Martinez refinery[5] – incentivized by subsidies provided via the Low Carbon Fuel Standard (LCFS) (also leading potentially to emissions leakage outside of California as described in Section III below).

The Draft Plan needed to consider all of these real-world market factors in assessing the future of refining in California; and should have used that information to develop a plan to phase out unneeded refining capacity as quickly as possible. The Draft Plan looks to CCS to mitigate refinery GHG emissions through 2045, but fails to actually consider how those emissions could be minimized by developing a proactive plan to wind down combustion fuel refining in the state in an orderly and efficient fashion.

Moreover, while we concur with CARB's recognition that CCS is not presently capable of deployment at refineries, we find no basis to support an assumption that CCS technology will

ever be sufficiently developed to serve as a feasible solution in the refinery context. Currently, not a single California refinery is retrofitted with CCS; and it is not used comprehensively at any refinery in the world. The 90 percent capture rate assumed in CARB's modeling has no basis in current technological experience at refineries.[6] Deploying CCS at refinery facilities is extraordinarily difficult given the dispersed nature of GHG sources at refining complexes, which include hundreds of combustion stacks from boilers and heaters as well as additional GHG emissions from piping and storage tanks. While the Draft Plan makes passing and uncited reference to "new technologies" that can be deployed in modular configurations and space-constrained environments, it offers no basis to conclude that such purported innovations will be either technologically or economically feasible at refineries any time in the foreseeable future.7 The Plan's unsupported optimistic assumptions about refinery CCS are particularly problematic given recent studies and other available information indicating that the potential for cost-effectively deployment of CCS at refineries is inherently limited by their configuration, and further hampered by the "parasitic load" of energy required to operate CCS.8

An assumption of any use of CCS at California refineries would be credible only in the context of much more complete analysis than what CARB has thus far provided. The analysis should include first, modeling of the number and size of refineries that will remain operational through 2045 – i.e., analysis of whether production will be consolidated in a few refineries as consumption winds down as opposed to operation at reduced capacity at many refineries; since deployment of CCS at a refinery operating significantly below capacity may pose additional economic challenges. This analysis of refinery capacity and potential consolidation should take into account the likelihood of continuing or increased refined product exports. Second, the modeling should make conservative assumptions regarding the cost of CCS retrofits, in light of existing studies of such costs, and determine the extent to which retrofits are realistic and likely. Third, the analysis should consider California-specific constraints on deployment of CCS, including, e.g., geological constraints on sequestration, the need to construct CO_2 pipelines through potentially populated areas, and the need to ensure that the captured carbon is not used in enhanced oil recovery (the only current large-scale commercial use for captured CO_2), which would have the effect of creating additional GHG emissions. Finally, and most importantly, the analysis should not assume levels of GHG emissions reductions at refineries achieved via CCS that are greater than levels currently achieved absent clear research indicating a likelihood of more complete emissions capture on a defined timeframe.

Based on currently available data, there is a high likelihood that such analysis would reveal CCS deployment at refineries to be economically and technically infeasible for all intents and purposes. In such case, CARB should re-focus on defining a path toward decommissioning refineries entirely. To the extent that CCS plays any role in the analysis of refinery emissions at all, the start date for any assumption of CCS-related emissions reductions should be pushed at least a decade into the future in light of significant limitations of the current technology.

[1] Karras, 2020. Decommissioning California Refineries, available at https://www.energy-resource.com/decomm.
[2] Id.
[3] USEIA, West Coast (PADD 5) Supply and Disposition; www.eia.gov/dnav/pet/pet_sum_snd_d_r50_mbbl_m_cur.htm
[4] Table 1 developed by Greg Karras, Community Energy reSource.
[5] The Marathon Martinez refinery announced its permanent closure in early 2020, for reasons expressly associated with "consolidation" of its capacity in the Los Angeles area. 2019 Marathon Petroleum Corporation Annual Report. See "From the Chairman and CEO" at p. 1. The decision to instead convert the refinery to renewable diesel production was made some months after that announcement.
[6] The Quest CCS project in Alberta, after initially claiming a 90% capture rate, is now only expected to capture on 40% from the refinery as a whole. https://www.shell.ca/en_ca/media/news-and-media-releases/news-releases-2021/shell-proposes-large-scale-ccs-facility-in-alberta.html
7 Comment submitted by Wara, Michael et al, https://www.arb.ca.gov/lists/com-attach/65-sp22-modelresults-ws-BWQFcVMwUFxWI1Az.pdf.
8 Id. "

Response: Please refer to Master Responses 3 and 6.

166-5: The commenter states, "The Draft Plan asserts that "[i]f steam methane reformation is paired with CCS, the hydrogen produced could potentially be zero carbon." Draft Plan at 69. This statement is misleading at best. Unless "potentially" is interpreted to mean purely hypothetically and without basis in practical reality – not a useful framing for climate planning – it contravenes studies and information indicating that SMR outfitted with CCS, or "blue hydrogen," can be highly emitting on a lifecycle basis at high methane leakage rates.

In the first instance, current CCS technology has not been demonstrated in any context beyond 90 to 95 percent, preventing blue hydrogen from being categorized as "zero carbon." The larger problem, however, is that of methane leakage associated with the production and transportation of methane gas serving as the feedstock for SMR.[9] A recent study[10] concluded that at high methane leakage rates, blue hydrogen is more carbon intense as an energy source than coal, as illustrated in this figure from the study:

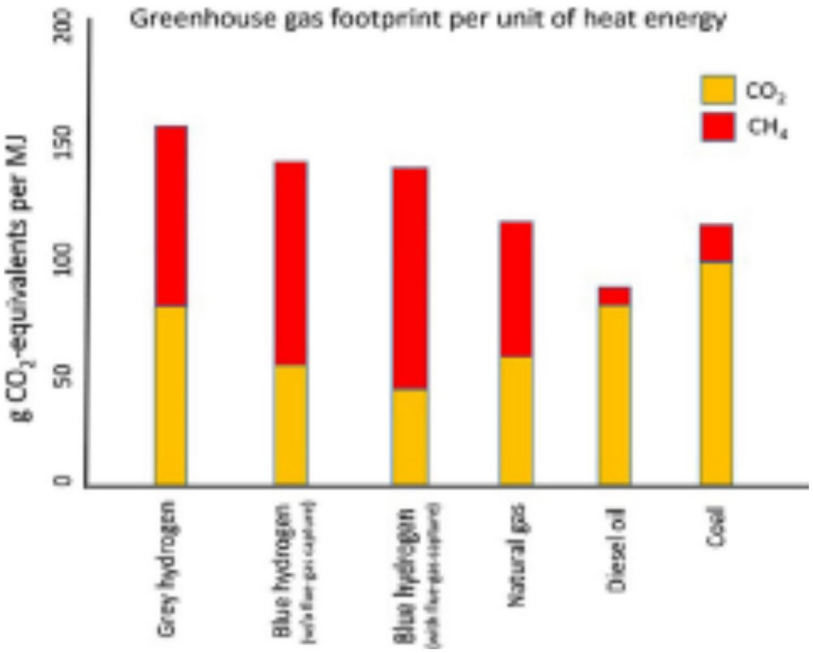


FIGURE 1 Comparison of carbon dioxide equivalent emissions from gray hydrogen, blue hydrogen with carbon dioxide capture from the SMR process but not from the exhaust flue gases created from burning natural gas to run the SMR equipment, blue hydrogen with carbon dioxide capture from both the SMR process and from the exhaust flue gases, natural gas burned for heat generation, diesel oil burned for heat, and coal burned for heat. Carbon dioxide emissions, including emissions from developing, processing, and transporting the fuels, are shown in orange. Carbon dioxide equivalent emissions of fugitive, unburned methane are shown in red. The methane leakage rate is 3.5%. See text for detailed assumptions.[11]

Thus, there is no basis to conclude that blue hydrogen can plausibly be considered a zero-carbon form of production. Nor can it be considered a low carbon source until and unless CARB demonstrates that the methane leakage problem will be resolved.

[9] Dennis Y.C. Leunga, Giorgio Caramannab M. Mercedes, Maroto-Valerb, An overview of current status of carbon dioxide capture and storage technologies, November 2014, Science Direct, https://www.sciencedirect.com/science/article/pii/S1364032114005450

[10] Robert W. Howarth and Mark Z. Jacobson, How green is blue hydrogen? Energy Sci Eng. 2021:00:1-12, https://www.actu-environnement.com/media/pdf/news-38015-etude-energy-science-engineering-hydrogene-bleu.pdf (Howarth and Jacobson 2021)

[11] Id."

Response: Please refer to response to comments 296-5 and 166-2.

The comment does not address the adequacy, accuracy, or completeness of the First Draft EA and no changes to the EA are required to respond to the comment.

166-6: The commenter states, "The Draft Plan references the LCFS as the primary mechanism for displacement of fossil fuels through subsidies for renewable diesel, sustainable aviation fuel, and other non-petroleum sources of liquid combustion fuel. Draft Plan at 153. The Draft Plan modeling makes a number of assumptions concerning the role of these fuels generally in decarbonization – e.g., that sustainable aviation fuel will meet a large percentage of demand by 2045, and that "liquid biofuel" will increasingly replace liquid petroleum fuel. Draft Plan at 58, 153.

This limited set of assumptions does not address, however, the significant potential of certain types of non-petroleum fuels, generated with particular types of lipid feedstocks in the food system, to increase global GHG emissions through indirect land use change (ILUC) when deployed at very large scale, as is already poised to occur. Additionally, the Draft Plan does not consider available evidence demonstrating that ramp-up of non-petroleum combustion fuels is currently not replacing petroleum based fuels, but rather resulting in increased exports of such fuels, thus causing leakage as defined by AB 32 ("a reduction in emissions in greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside the state").

With respect to ILUC, it is likely that the majority of renewable diesel and sustainable aviation fuel produced in the state will come from food crop and food system oils, predominantly soybean oil. One indicator for the likely predominant role of SBO and other food crop oils for future liquid fuel production is the current breakdown of feedstock demand for biodiesel production.[12] From 2018 to 2020, 59% of biodiesel in the United States was produced from soybean oil as feedstock, compared to 11% from yellow grease, 14% from distiller's corn oil, and only 3% from tallow, or rendered beef fat.[13] Another indicator is the limited domestic supply of alternative feedstock sources. Tallow and other waste oil volumes have come nowhere near meeting current biodiesel feedstock demand, with little prospect of expanding soon.[14]

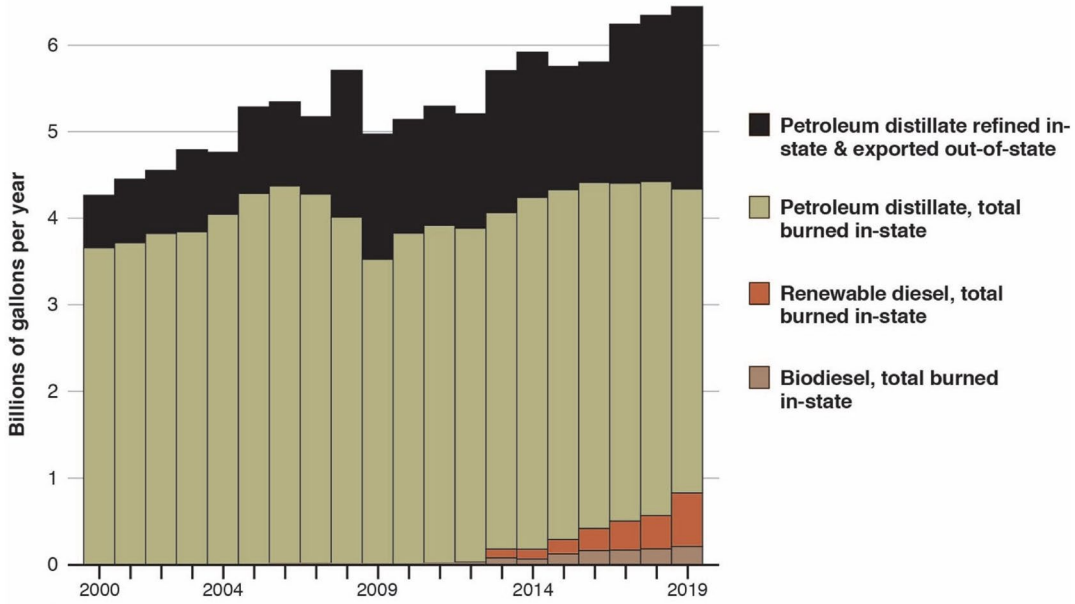
There is now broad consensus in the scientific literature that increased demand for food crop oil biofuel feedstock has induced ILUC, with significant negative climate and other environmental consequences.[15] The European Union is poised to respond with curbs on such feedstocks. After a decade of studies, soybean oil will likely be designated a high-ILUC risk biofuel that will be phased out of European Union renewable energy targets by 2030. [16] Belgium has already banned soybean oil-based biofuels as of 2022.[17] The ILUC is substantially a result of displacement and substitution of commodities, leading to the conversion of land use for crops other than that of the feedstock demanded. Since oil crops are to a great degree fungible—they are, essentially, interchangeable lipid, triacylglycerol (TAG) or fatty acid inputs to products[18] -- their prices are significantly if not wholly linked: when the price of one crop increases, another cheaper crop will be produced in greater volumes to fill the gap as consumers substitute their use of the more expensive crop. A chief substitute for soybean oil is palm oil, whose production has been linked to significant deforestation and associated carbon sink loss.

While the LCFS of course considered ILUC in assigning carbon intensity (CI) scores to renewable fuels produced with various feedstocks, CI is by nature a measure of incremental

per unit impact, not designed to assess the displacement impact that occurs when a very large share of food crop oils becomes dedicated to energy production, hence incentivizing cultivation of additional palm oil to take the place of these food crop oils. The GHG impact of a large-scale movement toward bioenergy has thus not been fully evaluated; but in light of highly problematic current trends, Europe is nonetheless taking the lead in curbing that impact through prohibitions on the feedstock most clearly driving ILUC-related GHG impacts. CARB, rather than making generalized and unsupportable assumptions regarding the role of bioenergy in decarbonization, should evaluate the possibility of doing the same.

With respect to leakage, available data shows that petroleum distillate fuels refining for export continued to expand in California in the last two decades even as biofuel production ramped up in recent years. It is clear from this data that renewable diesel production during those decades -- originally expected to replace fossil fuels – actually merely added a new source of carbon to the liquid combustion fuel chain. Total distillate volumes, including diesel biofuels burned in-state, petroleum distillates burned in-state, and petroleum distillates refined in-state and exported to other states and nations, increased from approximately 4.3 billion gallons per year to approximately 6.4 billion gallons per year between 2000 and 2019.[19] [20]

Specifically, crude refining for export – shown in black in the figure below[21] – expanded after in-state burning of petroleum distillate (shown in olive) peaked in 2006, and the exports expanded again from 2012 to 2019 with more in-state use of diesel biofuels (shown in dark red and brown). From 2000 to 2012 petroleum-related factors alone drove an increase in total distillates production and use associated with all activities in California of nearly one billion gallons per year. Then total distillates production and use associated with activities in California increased again, by more than a billion gallons per year from 2012 to 2019, with biofuels accounting for more than half that increment. These state data show that diesel biofuels did not, in fact, replace petroleum distillates refined in California during the eight years before the Project was proposed. Instead, producing and burning more renewable diesel along with the petroleum fuel it was supposed to replace emitted more carbon.



Distillate fuel shares associated with all activities in California, 2000-2019.
Growth in total distillates excluding fuel and kerosene from State data.
Data from CEC Fuel Watch and CARB GHG Inventory Fuel Activity Data, 2019 update.

Clearly, more analysis is needed before CARB can plausibly treat non-petroleum combustion fuel categorically as a viable strategy to reduce GHG emissions in the transportation sector. Drawing valid conclusions in this regard would require modeling the impact of various renewable feedstocks deployed at varying scales, accounting for the ILUC impacts of such feedstocks in all scenarios associated with fungibility and displacement. It would also require accounting for the AB 32 leakage of emissions through refined petroleum products export, which has thus far resulted in an overall increase in worldwide combustion fuel use and associated GHG emissions.

Through and as a result of such analysis, CARB should commit to reviewing and revising the LCFS to address the potential unintended consequences of deployment of particular types of bioenergy production at very large scales – as is already being proposed at two Bay Area refineries. In particular, CARB should commit to considering caps on LCFS subsidies for particular feedstocks such as soybean oil that have been shown to be particularly problematic as a driver of deforestation.

[12] See Zhou, Y; Baldino, C; Searle, S. Potential biomass-based diesel production in the United States by 2032. Working Paper 2020-04. International Council on Clean Transportation, Feb. 2020, https://theicct.org/sites/default/files/publications/Potential_Biomass-Based_Diesel_US_02282020.pdf (accessed Dec 8, 2021).

[13] Uses data from EIA Biodiesel Production Report, Table 3. Feedstock breakdown by fat and oil source based on all data from Jan. 2018–Dec. 2020 from this table. U.S. Energy Information Administration (EIA), Monthly Biodiesel Production Report Table 3, Feb. 26,

2021, https://www.eia.gov/biofuels/biodiesel/production/table3.pdf (accessed Dec. 14, 2021). Data were converted from mass to volume based on a specific gravity relative to water of 0.914 (canola oil), 0.916 (soybean oil), 0.916 (corn oil), 0.90 (tallow), 0.96 (white grease), 0.84 (poultry fat), and 0.91 (used cooking oil). See also Zhou, Baldino, and Searle, 2020-04.

[14] See Baldino, C; Searle, S; Zhou, Y, Alternative uses and substitutes for wastes, residues, and byproducts used in fuel production in the United States, Working Paper 2020-25, International Council on Clean Transportation, Oct. 2020, https://theicct.org/sites/default/files/publications/Alternative-wastes-biofuels-oct2020.pdf (accessed Dec 8, 2021).

[15] See Portner et al., 2021; C. Malins and C. Sandford, Animal, vegetable or mineral (oil)? Exploring the potential impacts of new renewable diesel capacity on oil and fat markets in the United States. Cerulogy, ed. International Council on Clean Transportation, Jan. 2022. https://theicct.org/wp-content/uploads/2022/01/impact-renewable-diesel-us-jan22.pdf. See also Searchinger, T. et al., Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land Use Change. Science, 2008, 319, 1238, https://science.sciencemag.org/content/319/5867/1238 (accessed Dec 8, 2021) (This landmark article notes one of the earliest indications that certain biofuel feedstocks are counterproductive as climate measures.)

[16] Malins, C. Risk Management: Identifying high and low ILUC-risk biofuels under the recast Renewable Energy Directive; Cerulogy, 2019; 4, 14. http://www.cerulogy.com/wp-content/uploads/2019/01/Cerulogy_Risk-Management_Jan2019.pdf (accessed Dec 8, 2021).

[17] Belgium to ban palm- and soy-based biofuels from 2022. Argus Media, Apr. 14, 2021. https://www.argusmedia.com/en/news/2205046-belgium-to-ban-palm-and-soybased-biofuels-from-2022 (accessed Dec 8, 2021).

[18] The Environmental Impact Report (EIR) for the Rodeo Renewed biofuel conversion project expressly recognized this fungibility: "The different uses of the commodity and whether or not there are substitutes for those commodities also affect the renewable feedstocks market. For example, soy and corn can both be used for livestock feed or human food production. If one commodity increases in price, farmers may be able to switch to the other commodity to feed their livestock for a cheaper cost (CME Group). This is particularly important for renewable feedstocks given the different uses for oilseeds, including food production and animal feedstocks, and the different vegetable oils that may be used as substitutes (e.g., canola oil may be a substitute for soybean oil)." Rodeo Renewed Final EIR 3.8.3.2.

[19] CARB GHG Inventory Fuel Activity data, 2019 update.

[20] CEC Fuel Watch. Weekly Refinery Production. California Energy Commission: Sacramento, CA. https://ww2.energy.ca.gov/almanac/petroleum_data/fuels_watch/output.php

[21] Figure produced by Greg Karras, Community Energy reSource."

Response: The First Draft EA identifies construction and operation of new or expanded facilities, land use changes, and changes to fuel-associated shipment patterns among the reasonably foreseeable compliance responses associated with low carbon fuels actions. In the

2022 Scoping Plan modeling for biofuel production rates, the biomass-energy supply estimates available to produce biofuels represent the share of available feedstock that could be economically and beneficially used to displace fossil fuels, rather than gross resource potentials. As described in Appendix H of the 2022 Scoping Plan, projections for the total volume of fats, oils, and greases (FOGs) that could be used for energy in California (to produce renewable diesel and sustainable aviation fuel) were constrained to reflect only the announced capacity and potential capacity expansions for renewable diesel facilities that are planned to be operational in California. "Current announcements suggest that 1.1 billion gallons of renewable diesel will be produced within California by 2025, with anticipated expansions potentially adding another 1.1 billion gallons of capacity. Taken together, this analysis assumes total available supply of renewable diesel from FOGs for use in California to be 2.2 billion gallons. This value was held constant through 2045." Facility refining capacity, along with any permitting limits, restricts the volume of feedstocks that refineries can process in a given day. Any significant modifications at the facility level are expected to be subject to CEQA review and local air district permitting requirements. As discussed in the First Draft EA in Chapter 4, Section 8.a, the 2022 Scoping Plan includes actions designed to decrease GHG emissions and implementation is expected to result in substantial long-term GHG emissions reductions in California as discussed in Chapters 2 and 3 of the 2022 Scoping Plan. Table 4-12 of the First Draft EA shows the reductions across all AB 32 GHG Inventory Sectors in 2045 compared to the Reference Scenario.

As stated in Chapter 4 of the 2022 Scoping Plan, a dramatic increase in alternative fuel production must not come at the expense of global deforestation, unsustainable land conversion, or adverse food supply impacts, and CARB staff will continue to monitor scientific findings on these topics to ensure policies such as the LCFS send the appropriate market signals to avoid unintended consequences. Post-Scoping Plan adoption actions include initiation of a public process focused on options to increase the stringency and scope of the LCFS regulation. That process is one of the key forums where issues raised by the commenter will be further explored, discussed, and evaluated. In addition, discussion at the September 1, 2022, joint meeting of the Board and the AB 32 Environmental Justice Advisory Committee related to reducing petroleum supply in line with aggressive demand reductions modeled in the 2022 Scoping Plan, resulted in the CARB Chair's direction to CARB staff to include language in the 2022 Scoping Plan recommending that the Governor convene an interagency working group to discuss key issues around oil transition, including oil extraction and refineries. The remainder of the comment does not raise significant environmental issues related to the First Draft EA. No changes to the EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 177

6/17/2022 Wendy Ring, Climate 911

177-1: The commenter states, "This disappointing and frightening document is scientifically inaccurate, deaf to the voices of environmental justice advocates, and inadequate to meet its own greenhouse gas reduction targets. Its conclusions run counter to its own declarations on centering equity and maximizing health benefits. Actions speak louder than words. This draft update sells the people of California short by trading proven low cost methods of real emissions reduction which improve public health, climate resilience, and equity in favor of unproven technologies which increase air pollution and whose real world efficacy and cost effectiveness are still in question."

Response: Please refer to Master Response 3.

177-2: The commenter states, "The only way to fix this problem is to go back and do it right. The cost of failure to do so will be high: slowing of global climate action as California abandons its position of climate leadership, increased climate impacts due to higher cumulative emissions, and lost opportunities to maximize the public benefit of climate investment."

Response:

As described in Chapter 5 of the First Draft EA, the short-term construction related GHG emission impacts associated with the reasonably foreseeable compliance responses for the actions in the 2022 Scoping Plan would be less than significant when considering the overall GHG emissions reductions associated with implementation of the measures identified in 2022 Scoping Plan. The long-term operational related impacts on GHG emissions from the recommended actions would be beneficial, consistent with the objectives of the 2022 Scoping Plan to reduce emissions to achieve the 2030 and 2045 targets. Therefore, considered cumulatively, the GHG section of the First Draft EA correctly concludes at the programmatic level of the 2022 Scoping Plan that GHG emissions will decrease from implementation of measures identified in the 2022 Scoping Plan and would not result in a considerable contribution to a cumulative GHG emissions impact. No changes to the First Draft EA are required in response to this comment.

177-3: The commenter states, "While Appendix G does an excellent job describing the health and equity impacts of urban heat islands and air pollution, the extent to which differing amounts of urban tree could mitigate these impacts was not analysed before the scenarios were created, or modeled afterwards, leaving no basis to determine the "right size" for this strategy."

Response: The commenter notes that the urban forest analysis did not include urban heat island impacts and air pollution impacts of changes in urban tree cover. This comment raises urban forest specific environmental issues related to the First Draft EA. Urban tree cover serves to reduce urban heat island impacts and reduce air pollution in communities, both of

which are discussed in the 2022 Scoping Plan and in Appendix G as noted by the commenter. However, while the First Draft EA discusses potential adverse impacts of urban forestry expansion to Resource Areas in Chapter 4, it does not disclose these beneficial impacts of urban forestry expansion. Therefore, the following language has been added to the Final EA as part of Impact 3.b: Long-Term Operational-Related Effects on Air Quality (see page 85 of the Final EA):

> Additionally, i<u>mplementing urban forestry expansion would potentially result in beneficial impacts to air quality by reducing urban heat islands effects on communities, which include reduced mortality, increase in life expectancy, and reduced risk of asthma outcomes, heat exposure, adverse birth outcomes, and depression. It would also potentially result in beneficial impacts by reducing air pollution in and around communities which would lead to reduced adverse health outcomes such as asthma (see Appendix G of this EA for more information).</u>

CARB staff would like to note that a quantitative analysis of the beneficial urban heat island reduction impacts and air pollution reduction impacts resulting from changes in urban tree cover is highly site-specific and dependent on numerous factors, such as tree species, tree and building locations, and weather patterns. This site specific analysis is beyond the scope of the 2022 Scoping Plan Natural and Working Land (NWL) analysis. Additionally, staff are not aware of a model that is capable of modeling and quantifying these impacts across all urban areas in the entire state under climate change. CARB NWL analysis instead focused on the carbon stock impacts of urban forest investment. These carbon stock impacts are generally correlated with decreased urban heat island impacts and air pollution. While quantification of these impacts was not part of the analysis, the 2022 Scoping Plan notes that these are expected co-benefits of increased urban forest cover.

The commenter also notes that no analysis of impacts was done before determining alternative scenarios. While CARB quantitatively evaluated some of the NWL benefits and impacts, the 2022 Scoping Plan notes that the NWLs provide many co-benefits that are not able to be quantified given current scientific understanding and resources. In determining the alternative scenarios to assess, CARB determined four different NWL scenarios of differing scales of land management that represent alternative visions for how NWL are managed across California. This strategy was purposefully selected by CARB in order to provide a balance in land management action that also provides multiple co-benefits, given it would be infeasible to quantitatively evaluate every landscape and management action in every scenario for every possible NWL co-benefit or impact.

177-4: The commenter states, "CCS, Direct Air Capture, and BECCS[28] come with energy and emissions penalties, have not yet proven to be scalable and economical, and are the most expensive of mitigation measures. There is great uncertainty as to when these technologies will be available on the scale assumed in the draft scoping update, what they will cost, and how effective they will actually be. The scoping update must provide a risk analysis with projected social costs of uncaptured or unremoved carbon emissions in the event of delayed

[28] Note to the reader: BECCS is an acronym for "bioenergy with carbon capture and storage".

rollout and less than projected efficacy, and contingency scenarios with compensatory measures.

Health impact analysis that is too little and too late

A major failure of this plan is the exlusion of full quantifiable health impacts from modeling. The modeling for clean air benefits only included "reduced short-term exposure to PM2.5 and ozone for only two months in 2045." The much larger benefits from reduced chronic exposure were not counted, nor were the health harms arising from emissions from new facilities or those from continuing to permit new fossil fuel extraction in the state for another one vs two decades (Shonkoff, 2021). It's not clear whether harm from increased criteria pollutant emissions from existing facilities retrofitted with CCS was counted as well."

Response: Please refer to Master Response 3 regarding energy-related emissions from CCS and DAC and to response to comment 566-15 regarding biomass power generation associated with BECCS. The 2022 Scoping Plan includes atmospheric chemistry and transport modeling of the Scoping Plan Scenario relative to the Reference Scenario for two full years, 2035 and 2045. While individual facility emissions, from new or existing facilities, are not explicitly represented, pollutant emissions including NOx, PM2.5, and ROG are reduced statewide. This analysis demonstrates that the combined actions in the Scoping Plan Scenario reduce harmful pollutant concentrations and associated health outcomes.

177-5: The commenter states, "**Zero carbon is not zero pollution**

All fuel combustion produces air pollution and carbon capture does not capture it. The additional energy required for CCS increases direct and indirect emissions of Nox and pm2.5 if it is provided by fuel combustion (EEA, 2011). Direct Air Carbon Capture is even more energy intense. The draft scoping plan includes new facilities burning gas and biomass for power and grey hydrogen production and facilities for CDR, but does not count the additional pollution in its health analysis. There are no provisions for locating these new facilities outside of EJ communities already burdened with high levels of pollution.

BECCS as a form of CDR and biomass energy for renewable electricity are particular concerns. The 2021 SB 100 Joint Agency Report excluded coal + CCS as an option due to incompatibility with public health priorities (CEC, 2021). Consistency should require exclusion of biomass as well. Major national public health organizations including the American Lung Association, the American Academy of Pediatrics, the National Environmental Health Association and the National Association of City and County Health Officers oppose biomass energy as a public health harm. EPA regulations allow new and existing biomass boilers to emit 3-27 times more pm2.5 than coal (EPA, 2017). Burning woody biomass without carbon capture is neither clean nor carbon neutral in the timeframe of the this scoping update, since even burning timber slash for energy (with no trees cut exclusively for fuel) creates a 50 year carbon debt (Law, 2018). Cultivation of faster growing biomass more appropriate for BECCS would have similar air quality consequences and also compete with food production for land and water, raising prices for those who can least afford them."

Response: Please refer to Master Response 3 regarding energy-related emissions from CCS and DAC and response to comment 566-15 regarding biomass power generation.

177-6: The commenter states, "**Where's the justice?**

No credit for equity can be given for soliciting EJAC opinions and then ignoring them. The scoping update's position on dairy digesters is just one excellent example. Despite strong statements from EJAC members and the public, the selected scenario supports the expansion of manure digesters to a much greater extent than alternative manure management which avoids the production of methane altogether. While the consolidation of dairy livestock from pasture to feedlots is not entirely due to the state's generous biodigester subsidies and valuation of RFS credits, these policies incentivize the expansion and proliferation of confined feeding operations which, according to the National Academy of Sciences, pose myriad health threats to surrounding communities (PNAS, 2021).

In California, in addition to air pollution, dairy CAFOs increase nitrate contamination of drinking water in low income communities of color (Harder, 2013; Smith, 2022). To compound the injustice, carbon credits purchased from dairy digesters allow urban industries to continue polluting their own neighborhoods, as does combustion of the biogas itself. Since the market for renewable CNG vehicle fuel is already saturated and expansion of the state's CNG fleet is not contemplated, increasing the supply of biogas will not decrease traffic pollution. Injecting dairy biogas into pipelines for residential use will only serve to lengthen our dependence on fossil gas while raising utility bills for low income people who can't afford to electrify. Burning dairy gas in power plants will continue pollution perpetuate environmental injustice. The fossil gas industry in California has been a major opponent of building electrification which cannot be trusted to refrain from political influence. To quote a physician friend of mine, "Biogas is not a bridge, it's a gangplank."

No support is given for the assumption in scenario 3 that dairy and livestock animal population will decrease 0.5% per year in contrast to the reference scenario, which holds the population constant from 2030 to 2050. This unfounded assumption that biodigesters lead to a shrinking dairy population makes this measure appear more effective at the same time dairy economists worry that biogas and the LCFS will drive herd expansion (Smith, 2022; McCully, 2021).

The best way to prevent methane from dairy manure is to make sure the manure is oxygenated so methane never forms, either by pastured grazing or by alternative manure management with composting. Both of these methods are more cost effective than digesters, and have the potential when done in conformance with regenerative agricultural principles, to be carbon negative, sequestering more carbon than the manure contains."

Response: The comment raises environmental issues associated with anaerobic digesters at dairy operations with limited relevance to the First Draft EA. The comment incorrectly asserts that the proposed scenario assumes that expansion of anaerobic digestion at dairy operations would result in shrinking dairy populations. In fact, CARB assumes that dairy population decreases are independent of whether not anaerobic digesters are deployed. The

First Draft EA discusses the potential environmental impacts of reasonably foreseeable compliance responses including enteric fermentation, anaerobic digestion, and alternative manure management strategies. With respect to water quality, the First Draft EA accurately notes that anaerobic digesters and alternative manure management practices are likely to result in water quality improvements due to improved or reduced wastewater management and improved nutrient management. The commenter does not identify any adverse impacts associated with anaerobic digesters that would be addressed by other practices such as the suggested pasture grazing or alternative manure management with composting. Similarly, the comments regarding cost-effectiveness of various practices do not address any environmental impacts from the proposed project. The remainder of this comment does not raise significant dairy and livestock specific environmental issues related to the First Draft EA, nor does it otherwise address the accuracy, adequacy, or completeness of the EA for this sector. Therefore, no dairy and livestock specific changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 252

6/20/2022 Daniel Chandler, Northcoast Environmental Groups

252-1: The commenter states, "**5. The draft contains a very serious modeling error.** CARB modeler's assumed that natural and working lands would be a large carbon sink. In fact, a different CARB team found these lands will emit emissions, so the draft plan ends up being out of balance by 23 million metric tons of CO_2 in 2045.[7]

[7] Cullenward. Op cit."

Response: The commenter notes that CARB modelers assumed that NWLs would be a large carbon sink while in fact these lands would be a net emitter. This comment raises GHG emissions specific environmental issues related to the First Draft EA. CARB's NWL analysis did not make an assumption as to whether NWLs would be a carbon source or sink. CARB relied on model projections to determine whether NWLs would be a carbon source or sink. Certain NWL types are projected to be carbon sources (forests, shrublands, annual croplands, wetlands, sparsely vegetated lands) while others are projected to be carbon sinks (grasslands, urban forests, perennial croplands). CARBs NWL analysis concludes that in total across all NWL types, they would be a GHG source under all alternatives. In fact, Chapter 2 states directly, "The expanded modeling conducted for this 2022 Scoping Plan shows that NWL are projected to be a net source of emissions through 2045 and indicates a probable decrease of carbon stocks into the future." These GHG emissions are disclosed in the First Draft EA Impact 8.a and in Table 4-13. For the Draft 2022 Scoping Plan, the PATHWAYS modeling of the AB 32 GHG Inventory Sectors was conducted prior to completion of the

NWL analysis and the NWL sector was assumed to sequester 15 MMT CO2e per year in the PATHWAYS modeling (see footnote 165 in Chapter 3 of the Draft 2022 Scoping Plan). Chapter 2 of the 2022 Scoping Plan discusses the role of NWL sector emissions in relation to the AB 32 GHG Inventory Sector emissions and the need for carbon dioxide removal for achieving carbon neutrality. The 2022 Scoping Plan is not "out of balance" as the commenter claims. No changes to the First Draft EA are required in response to this comment. Please see also 2022 Climate Change Scoping Plan FAQ regarding how the contributions from NWLs and carbon dioxide removal for the 2022 Scoping Plan were derived.[29]

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 273

6/20/2022 Nora Privitera, 350 Bay Area Action

273-1: The commenter states, "Furthermore, CARB's scoping plan envisions sourcing crude oil from the Amazon, the one area of the planet that has the most potential for sequestering carbon and preventing climate catastrophe. So on top of exacerbating the climate crisis, the current scoping plan depends on tactics that will make California complicit in the further destruction of the Amazon rai1 forest and in violations of indigenous rights in that region."

Response: The comment provides an opinion regarding the 2022 Scoping Plan's effects on climate and the Amazon rain forest; however, this is not a compliance response associated with the 2022 Scoping Plan. That is, the 2022 Scoping Plan does not direct where or how crude oil is produced and supplied to California. Implementation of the 2022 Scoping Plan would result in an overall reduction in the use of crude oil. Therefore, a reasonable compliance response would include a reduction in total crude oil consumption and imports commensurate with the decline in crude oil demand. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

[29] https://ww2.arb.ca.gov/sites/default/files/2022-06/2022_Scoping_Plan_FAQ_6.21.22.pdf

Comment Letter 296

6/20/2022 Monica Embrey, Sierra Club

296-1: The commenter states, "The communities that are forced to live along the fossil fuel supply chain suffer from poisoned air, water, soil and ecosystems."

Response: The comment provides a general statement regarding general impacts to communities that live along the fossil fuel supply chain from poisoned air, water, soil, and ecosystems without providing any factual details or substantiation of the statement. Impacts to air quality, water quality and supply, geology and soils, and biological resources are provided in Chapter 4 of the First Draft EA. No specific environmental issues are raised as to the adequacy, accuracy, or completeness of the environmental impact analysis included in the First Draft EA. No changes to the First Draft EA are required in response to this comment.

296-2: The commenter states, "The Draft Scoping Plan proposes to build 10 GW of new gas capacity,[iii] equivalent to at least 33 new large or 100 new peaker gas power plants.[iv] New gas-fired power plants are incompatible with our climate, public health and economic goals. Rather than building new fossil fuel infrastructure, the Scoping Plan should pursue additional demand response, renewable energy, and storage technologies.

In light of the climate emergency, the International Energy Agency ("IEA") called for no new fossil fuel infrastructure starting last year, in 2021.v Yet the Draft Scoping Plan pushes California in the opposite direction, proposing significant new gas build by 2045. In addition to harming the climate, gas plants emit many harmful pollutants that unjustly and disproportionately burden disadvantaged communities.vi This pollution could increase under the Draft Scoping Plan if California builds additional gas capacity. Furthermore, building new renewable energy capacity is cheaper than running existing gas plants and expanding gas infrastructure.[vii] CARB must exclude new gas-fired power capacity for the Scoping Plan."

Response: The 2022 Scoping Plan no longer includes new natural gas generation capacity. Please refer to the Recirculated Draft EA.

296-3: The commenter states, "The Draft Scoping Plan recommends that gas appliances in commercial and residential buildings are retired at the end of their useful life but does not allow for early retirements. From an economic perspective, this approach hampers the decommissioning of segments of the gas distribution system, as commercial and residential buildings will require gas until their appliances burn out. From a climate perspective, it entrenches methane leakage and gas combustion pollution, as gas appliances that were purchased before 2035 can operate for decades, potentially. From a justice perspective, this approach risks leaving the last customers on the gas system without heat if skyrocketing gas rates to retain the system are spread across fewer customers."

Response: Although the modeling in the Scoping Plan Scenario does rely on natural turnover of gas appliances in commercial and residential buildings to estimate GHG emission

reduction potential for buildings, the 2022 Scoping Plan does not disallow early retirement of appliances. Appendix F, Building Decarbonization, to the 2022 Scoping Plan outlines many actions to achieve a successful and equitable transition to building decarbonization. Specifically, there are key actions to support the phase-out of gas appliances and expansion of gas hookups. Appendix F suggests scaling back fossil gas infrastructure by eliminating incentives for extending gas mains and service lines to new buildings. Targeted, trimming back of existing gas infrastructure, also known as zonal electrification, is another critical action to reduce fossil gas system maintenance needs, costs, and emissions.

Please refer to response to comment 296-6 regarding reductions in fossil gas consumption (and corresponding combustion-related air pollutant emissions) that will occur relative to the Reference Scenario from implementation of the Scoping Plan Scenario through substitution with electricity, renewable natural gas (RNG), and hydrogen across the AB 32 GHG Inventory Sectors, including buildings.

No changes to the First Draft EA are required in response to this comment.

296-4: The commenter states, "CARB's current proposal relies on increasing dairy digester capacity in an attempt to capture dairy manure methane emissions. This proposal will only continue to exacerbate the air, water, soil quality, and health impacts borne by communities exposed to large herd sizes and factory farming practices. CARB must model and recommend the direct regulation of dairy methane emissions starting in 2024 and phase out incentives for dairy methane reduction via dairy digesters, which are hazardous and ineffective. In the interim, to further reduce enteric methane emissions, CARB should invest in transitioning large-scale farming systems to diversified, agroecological systems which have more sustainable herd sizes and rely less on emissions-generating practices while increasing natural carbon sequestration capacity."

Response: The comment states that the 2022 Scoping Plan relies on increasing anaerobic digestion capacity at dairies and asserts associated exacerbated air, water, soil quality, and health impacts to communities. Impacts related to digester operation proposed under the 2022 Scoping Plan is addressed throughout the First Draft EA. In regards to the topic areas included in the comment, impacts to air quality are addressed in Section 4.B.3, "Air Quality," impacts to water are addressed under Section 4.B.10, "Hydrology and Water Quality," impacts to soil are discussed in Section 4.B.7, "Geology and Soils," and impacts to heath are addressed in Section 4.B.9, "Hazards and Hazardous Materials." Because the comment does not indicate how these resource areas could be affected, no further response can be provided. No changes to the First Draft EA are required in response to this comment.

296-5: The commenter states, "CARB's Scoping Plan departs from the most common understanding of green hydrogen (i.e. hydrogen produced from electrolysis powered by renewable electricity) xvii by using it also to refer to hydrogen produced from steam methane reformation, gasification, or pyrolysis of biogas and biomass. These forms of hydrogen production are not zero-emission. Their production emits significant pollution, and there is no meaningful supply of sustainable bio-feedstocks to ensure they are low-carbon. CARB should align California's Scoping Plan with internationally accepted definitions of green hydrogen

and reject industry greenwashing. Specifically, green hydrogen should be limited to electrolytic hydrogen produced by splitting hydrogen from water using zero-emissions renewable solar and wind energy, which is the only established way to produce hydrogen without emitting climate or air pollution."

Response: As described in Appendix H of the 2022 Scoping Plan, biomass-energy supply estimates represent the share of available feedstock that could be economically and beneficially used to displace fossil fuels, rather than gross resource potentials. This includes estimating supply curves and the costs to utilize biomass resources for energy relative to other energy options. The social costs of criteria emissions damages affiliated with leaving forestry residues on-site, burning them on-site, or mobilizing them were used to better understand which residue-collection areas were likely to yield social benefits if mobilized. While some biomass resource is directed to hydrogen production, a significant amount of hydrogen in the 2022 Scoping Plan is assumed to be produced from electrolysis powered by solar energy to estimate the scenario cost and economic impacts.

With respect to air pollutant emissions from hydrogen production facilities, the potential short-term construction related air quality impacts associated with hydrogen gas generation projects are discussed in the First Draft EA in Section 4.3.a, including recognized mitigation practices that could enable impacts to be reduced to less than significant level. However, as project-level mitigation will be determined by jurisdictions with land use and/or permitting authority, the First Draft EA takes a conservative approach in its post-mitigation significance and discuses short-term construction-related air quality effects associated with hydrogen gas generation projects as potentially significant and unavoidable. In comparison, the First Draft EA in Section 4.3.b discusses the long-term operational impacts to air quality reasonably foreseeable from implementation of the 2022 Scoping Plan. That section of the First Draft EA points to the air quality and public health analysis conducted for the AB 32 GHG Inventory Sectors, which utilized output from the PATHWAYS model to develop spatially and temporally resolved characterizations of pollutant emissions for all sectors and existing sources in California including stationary, area, and mobile source emissions. As described in Appendix H of the 2022 Scoping Plan, the air quality analysis only included existing sources/facilities and no major functional changes to existing sources were assumed due to the uncertainty associated with siting and activity of novel emissions sources and the detailed spatiotemporal data required by the modeling that precluded assuming changes in them. Therefore, for purposes of the air quality analysis, air pollutant emissions estimates for renewable natural gas combustion in stationary sources was treated the same as natural gas combustion and new BECCS facilities to produce hydrogen through gasification/pyrolysis were not included. However, as described in the second paragraph on page 65 of the First Draft EA, the 2022 Scoping Plan would achieve carbon neutrality "through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy which also has criteria pollutant and precursor benefits alongside reducing the exposure of sensitive receptors to TAC emissions." As the air quality analysis shows, the 2022 Scoping Plan would result in benefits to ambient air quality, which would decrease corresponding health benefits associated with the compliance responses for the AB 32 GHG Inventory Sectors (pages 65-71

of the First Draft EA). Therefore, the First Draft EA concludes that the implementation of the actions associated with outcomes outlined in the 2022 Scoping Plan are expected to far outweigh any long-term operational related emissions increases and would result in high net positive overall health benefits over the life of those actions.

The remainder of the comment is directed toward the contents of the 2022 Scoping Plan related to the definition of green hydrogen and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless, as acknowledged in the Executive Summary, the 2022 Scoping Plan does not prescribe the energy source to produce hydrogen, and therefore, steam methane reformation paired with CCS could be considered in the near term to ensure a rapid transition to hydrogen and increase hydrogen availability until such time as electrolysis with renewables and biomass-based hydrogen can meet the ongoing need. The 2022 Scoping Plan includes steam methane reformation of biomethane and biomass gasification with CCS to produce hydrogen, along with electrolytic hydrogen produced using approximately 10 GW of off-grid solar-powered electrolysis in 2045 to estimate the scenario cost and economic impacts. Because this capacity build-out takes time and is additive to the growth in demand growth associated with electrification across the economy, the state needs to keep options open for other methods to produce zero carbon hydrogen at the scale needed to meet the projected demand. The reasonably foreseeable compliance responses associated with these options for hydrogen production are included in Chapter 4 of the Recirculated Draft EA. The 2022 Draft Scoping Plan had estimated that using electrolysis to produce all of the necessary hydrogen for the Scoping Plan Scenario would require about 40 GW of solar capacity.

Furthermore, SB 1075 requires CARB, by June 1, 2024, to prepare an evaluation that includes: policy recommendations regarding the use of hydrogen, and specifically the use of green hydrogen, in California; a description of strategies supporting hydrogen infrastructure, including identifying policies that promote the reduction of GHGs and short-lived climate pollutants; a description of other forms of hydrogen to achieve emission reductions; an analysis of curtailed electricity; an estimate of GHG and emission reductions that could be achieved through deploying green hydrogen through a variety of scenarios; an analysis of the potential for opportunities to integrate hydrogen production and application with drinking water supply treatment needs; policy recommendations for regulatory and permitting processes associated with transmitting and distributing hydrogen from production sites to end uses; an analysis of the life-cycle GHG emissions from various forms of hydrogen production; and, an analysis of air pollution and other environmental impacts from hydrogen distribution and end uses. This evaluation will help inform policy and strategies going forward on hydrogen as an alternative fuel in California's economy.

296-6: The commenter states, "CARB also alludes to a nonsensical role for CCS on power plants, despite the availability of zero-emission generation resources and peak-shaving measures. The process of capturing, compressing, transporting, and storing carbon is itself energy intensive, though the Scoping Plan does not model the incremental renewable energy needed to power it without additional emissions.[xxii] Furthermore, CCS would not resolve potent methane leakage and local pollution problems."

Response: CCS on facilities increases the energy needed at the facility, which would be supplied by the same source as the facility energy. For example, a refinery with CCS will use less onsite natural gas, electricity, and/or other fossil fuels as demand is reduced, and as renewables supply a greater portion of demand, existing fossil-based electricity generation will consume less natural gas and onsite electricity to operate; therefore, emissions will be reduced. However, the addition of CCS will require more of those energy sources than if the facility was not equipped with CCS. The PATHWAYS model calculates annual energy demand by fuel type and sector and accounts for the energy needed to support CCS at facilities. The air quality and public health analysis utilized output from the PATHWAYS model to develop spatially and temporally resolved characterizations of pollutant emissions for all sectors and sources in California including stationary, area, and mobile source emissions. The overall reductions in fossil fuel consumption in the Scoping Plan Scenario show it will achieve improvements in air quality throughout California, including reductions in the levels of ozone and PM2.5.

No changes to the First Draft EA are required in response to this comment.

296-7: The commenter states, "Further, the Draft Scoping Plan fails to analyze the energy demand necessary to power direct air capture, and therefore understates the complexity and cost of this technology."

Response: As described in the 2022 Scoping Plan (see Chapter 3 and Appendix H), the energy required for carbon dioxide removal (CDR) via direct air capture (DAC) was assumed to be provided by off-grid solar for consistency with the carbon neutrality target, and the economic analysis therefore associated the investment in DAC with the solar industry. The First Draft EA in Section 4.6.a discusses the reasonably foreseeable short-term construction related effects on energy resources and concludes while the compliance responses would require consumption of energy resources, it would be temporary and limited in magnitude such that a reasonable amount of energy would be expended. Likewise, the First Draft EA in Section 4.6.b discusses the reasonably foreseeable long-term operational related effects on energy resources that may be related to mechanical CDR, including increased electricity demand being potentially met with increased generation, both onsite and off-site – with onsite energy generation and storage and key mitigation strategies involving PV electricity generation, battery storage, and microgrid systems. Additional energy capacity in state would be achieved through improved energy efficiency, energy storage, demand response, and generation resources, with new generation capacity coming from renewable and zero-carbon resources. The use of any existing natural gas capacity during periods of intermittency and for grid reliability would allow the state to invest more heavily in renewable energy, and the 2022 Scoping Plan's actions to enhance renewable energy would be consistent with the goals of avoiding unnecessary use of energy on a statewide basis through decreasing overall per capita energy consumptions, decreasing reliance on fossil fuels such as natural gas, and increasing reliance on renewable energy sources.

Therefore, the project would not result in potentially significant environmental effects from the wasteful, inefficient, or unnecessary consumption of energy resources or conflict with a

state or local plan that promotes energy efficiency or renewable energy generation or use. No changes to the First Draft EA are required.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 321

6/20/2022 Cate Steane, 350 Bay Area

321-1: The commenter states, "I write in opposition to the draft 2022 Scoping Plan. Instead of evaluating path to achieve carbon neutrality by 2035, it recommends a path that delays achieving carbon neutrality until 2045. It requires little to no immediate action to reduce climate pollution and even worse, relies on expensive and unproven technology to meet its emission reduction targets. The path laid out in the Scoping Plan will perpetuate fossil fuel production and continue to harm California's communities and ecosystems."

Response: The comment provides an opinion regarding the 2022 Scoping Plan's perpetuation of fossil fuel production and impacts on communities and ecosystems without providing any factual details or substantiation of the statement. No specific environmental issues are raised as to the adequacy of the environmental impact analysis. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

321-2: The commenter states, "Continuing to rely on existing fossil fuel infrastructure makes mitigating the negative effects of climate change more and more difficult. Gas plants emit many dangerous pollutants, and the majority of California's gas-fired power plants are located in or adjacent to many of the state's most disadvantaged communities."

Response: The comment provides an opinion regarding pollutants from gas-fired power plants and the ability to mitigate effects of climate change without providing any factual details or substantiation of the statement.

While the Scoping Plan Scenario includes existing gas-power plants, along with other renewable and zero-carbon resources selected by the RESOLVE[30] model, to meet demand and reliability needs through 2045, no new gas-power plant capacity was implemented as a modeling constraint consistent with Governor Newsom's goals. In addition, the Scoping Plan Scenario would achieve a reduction in electricity sector fossil gas consumption of 47 percent

[30] See 2022 Scoping Plan Appendix H (AB 32 GHG Inventory Sector Modeling) for further description of RESOLVE and the electricity sector modeling methodology, https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-h-ab-32-ghg-inventory-sector-modeling.pdf

from 2022 to 2045, consistent with the Recirculated Draft EA's project description for further transition away from fossil fuel-based electricity generation. The integrated modeling for the AB 32 GHG Inventory Sectors shows a substantial reduction in pollutant emissions from the Scoping Plan Scenario relative to the Reference Scenario, including NOx,PM2.5, and ROG, with corresponding significant health benefits. Overall, the deployment of more renewable energy, would reduce fossil-fuel power plant electricity generation and therefore decrease associated air emissions. Any significant increase in the levels of pollutants or modifications to operations at existing power plants beyond those allowed in air permits would be regulated through the local air district permitting process.

No specific environmental issues are raised as to the adequacy of the environmental impact analysis. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 344

6/21/2022 Chris Paros

344-1: The commenter states, "The 2022 update does not adequately address the primary source of GHGe - transportation vehicle emissions."

Response: The Scoping Plan Scenario, which is summarized in Table 2-2 of the 2022 Scoping Plan, addresses the three general categories of transportation GHG emissions: technology (vehicles themselves, including fueling infrastructure), fuels (energy powering vehicles), and vehicles miles traveled (VMT) (product of development patterns and transportation options), with actions aimed primarily at transitioning away from fossil fuel combustion. Technology actions are included for light-duty vehicles, trucks, aviation, ocean-going vessels, port operations, and freight and passenger rail. Low carbon transportation fuels substitutes for petroleum include electricity, advanced biofuels, and hydrogen (see Figure 4-2 of the 2022 Scoping Plan illustrating changes in the transportation fuel mix in the Scoping Plan Scenario); and smart growth actions will target VMT per capita reductions. If successfully implemented, the Scoping Plan Scenario is estimated to reduce petroleum demand (gasoline and diesel used in transportation) by 91 percent. The Scoping Plan Scenario serves as the CEQA project for the First Draft EA. The reasonably foreseeable compliance responses associated with the actions in the Scoping Plan Scenario are described on pages 18-21 of the First Draft EA, and GHG emissions impacts are discussed on pages 122-126 of the First Draft EA.

No changes to the First Draft EA are required in response to this comment.

344-2: The commenter states, "Electric vehicles rely on a power grid that has been undermined by wildfires and drought"

Response: The comment provides a general statement regarding the reliance of electric vehicles on a power grid that has been undermined by wildfire and drought. No specific environmental issues are raised as to the adequacy, accuracy, or completeness of the environmental impact analysis included in the First Draft EA. No changes to the First Draft EA are required in response to this comment.

344-3: The commenter states, "Electric vehicles use batteries made from materials that are limited in supply and hazardous"

Response: The environmental impacts related to minerals mining to support increased production of batteries is described throughout the First Draft EA including in Section 4.B.12, "Mineral Resources," and Section 4.B.9, "Hazards and Hazardous Materials." No specific environmental issues are raised as to the adequacy, accuracy, or completeness of the environmental impact analysis included in the First Draft EA. No changes to the First Draft EA are required in response to this comment.

344-4: The commenter states, "Strategy does nothing to directly address the millions of polluting vehicles on the roads now."

Response: This comment does not identify any potential adverse environmental impacts from the proposed project; rather, it identifies existing environmental considerations resulting from vehicles currently operating in the state (i.e., in the environmental baseline). CARB provides the following response for informational purposes regarding the state's transition toward zero emission vehicles.

The Scoping Plan Scenario includes achievement of Executive Order N-79-20, eventually eliminating internal combustion engines in new vehicle sales and the majority of legacy vehicle fleets. The scenario will achieve 100 percent zero-emission vehicle (ZEV) sales for the light-duty class by 2035 and 100 percent ZEV sales for the medium- and heavy-duty classes by 2040 (see Table 2-2 of the 2022 Scoping Plan). Figure 4-1 of the 2022 Scoping Plan illustrates the transition of on-road vehicle sales to equipment stock and its turnover to ZEV technology in the Scoping Plan Scenario over time.

No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 346

6/21/2022 Rebecca Wright, Indigo

346-1: The commenter states, "**Approach to measuring GHG reductions and carbon dioxide removal from agricultural practices**
To quantify the GHG reductions from field-based practices, we propose a two-tiered method consisting of a biogeochemical model supported by field sampling to quantify the reductions in GHG emissions and carbon dioxide removal. Biogeochemical models are increasingly being used to calculate the methane, nitrous oxide (N_2O), and carbon sequestration from agronomic practices. A recent paper demonstrated that these models are capable of calculating seasonal and annual total N_2O emissions from a diverse array of crops and these calculations are more accurate "than the Intergovernmental Panel on Climate Change emission factor approach."[21] The state of California already uses biogeochemical models to calculate N_2O emissions from agricultural soil management in croplands.[22] These same models will be used in future versions of the State's NWL Inventory for the calculation of soil carbon fluxes.[23]"

Response: The commenter recommends use of a biogeochemical model along with field sampling to model GHG impacts from agronomic practices. This comment raises agriculture specific environmental issues related to the First Draft EA. A biogeochemical model was used by CARB staff in the analysis, as suggested by the commenter. Various models were considered for assessing agricultural lands. DayCent, a biogeochemical models that estimates both carbon and nitrogen cycles, was eventually chosen to simulate annual agricultural lands. DNDC was also considered, which is the current model used within CARB's N_2O emissions inventory. However, DNDC is not developed for future projection modeling that takes into account changes in climate smart agricultural practices and climate change over longer periods of time. The 2022 Scoping Plan's NWL analysis is discussed in detail in Appendix I. These GHG emissions are disclosed in the First Draft EA Section 4.8.a and in Table 4-13. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letterhave been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 356

6/21/2022 Jennifer Hernandez, The Two Hundred for Homeownership

356-1: The commenter states, "The Scoping Plan, and accompanying Environmental Assessment (Appendix B), AB 197 Analysis (Appendix C), and Sustainable Communities Analysis (Appendix E), neither acknowledge or analyze the racially disparate harms created by depriving middle (80-120%) income working households of continued access to reliable, low cost, increasingly lower emission cars and pickup trucks. Instead, Appendix C simply

concludes that both a fleet change to EV vehicles and a radical (and infeasible) 30% reduction in VMT are required to achieve California's equally-unlegislated 2045 climate target Executive Order. (App. C, p. 5)"

Response: The comment does not specify nor provide any evidence to substantiate the alleged "harms" that may occur from fleet changes and reduced VMT. Additionally, the comment relies on the commenter's misrepresentations about what the 2022 Scoping Plan would actually do, and does not specify or provide any evidence that the 2022 Scoping Plan itself would deprive any households of continued access to reliable, low cost, increasingly lower emission cars and pickup trucks. The comment appears to raise and assume without explanation social or environmental justice issues, which are not required to be analyzed pursuant to CEQA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required, although CARB disagrees firmly with the commenter's claims, including those regarding claimed racially-disparate harms. CARB also notes that the 2045 carbon neutrality target is now set in statute by 2022 legislation AB 1279 (Muratsuchi, Chapter 337, Statutes of 2022). No changes to the First Draft EA are required in response to this comment.

356-2: The commenter states, "CARB's failure to acknowledge the life-cycle carbon emissions from a radical vehicular fleet shift is another fatal flaw in the Scoping Plan and related appendices. DMV reports that California has more than 34 million registered vehicles (https://www.dmv.ca.gov/portal/news-and-media/dmv-statistics/), only 663,000 were EVs. Even when hybrids (which still include internal combustion engines) are also counted, only about a million cars in California's fleet are not exclusively powered by internal combustion engines as of February 2022.
https://www.greencarreports.com/news/1135176_california-one-million-plug-in-ev-sales-five-million-by-2030"

Response: Please refer to Response to Comment 356-4. In Chapter 1, the 2022 Scoping Plan discusses embedded carbon in products, also referred to as life-cycle emissions. Emissions considered in this type of assessment may be associated with sourced materials and production outside a jurisdiction's borders and can provide more complete insight into emissions associated with products we use. However, the 2022 Scoping Plan did not conduct a life-cycle emissions analysis, rather the 2022 Scoping Plan remained consistent with international GHG emissions accounting standards and concerns to reduce the likelihood of double counting of emissions across jurisdictions. It should be noted that CARB does have programs such as the Low Carbon Fuel Standard (LCFS) that are based on the principle that each fuel has "life cycle" GHG emissions and therefore examines the GHG emissions associated with the production, transportation, and use of a given fuel, as well as significant indirect effects on GHG emissions such as changes in land use for some biofuels. The commenter also appears to overlook that CARB's zero-emissions vehicle programs typically involve new vehicle sales requirements, and with limited exceptions, do not eliminate or ban existing internal-combustion-engine vehicles from the state. Even the limited programs that do involve fleet turnover requirements would do so over a period of time, and generally would allow for a minimum useful life.

While CARB did not commission a life-cycle emissions analysis for the 2022 Scoping Plan, no such analysis is necessary. Numerous studies have shown the lifecycle GHG reduction potential of the types of vehicles relevant to CARB's electrification programs, where lifecycle emissions include well-to-wheel operations but also vehicle manufacturing and disposal. The use of different parts, materials, and processes to build components unique to electric vehicles, especially the type and size of batteries, means that emissions from building an electric vehicle differ from those of building comparable gasoline vehicles. With gasoline cars, vehicle operation accounts for most of the lifetime emissions, while for battery-electric vehicles (BEV), emissions from manufacturing are a more significant contributor to the total lifecycle emissions. Despite marginally higher emissions from vehicle manufacturing, BEVs on average have much lower lifecycle GHG emissions than comparable gasoline vehicles, as manufacturing emissions are quickly offset by reduced emissions from operation.[31] As the carbon intensity of the California grid continues to decline per the 100 Percent Clean Energy Act of 2018,[32] BEV lifecycle GHG intensities will continue to fall. Similarly, the Department of Energy's cradle-to-grave lifecycle GHG emission analysis for small sport utility vehicles found that future BEVs and FCEVs would have lower lifecycle emissions than even the lowest carbon intensity drop-in renewable fuel, while current BEVs, FCEVs, and PHEVs have lower lifecycle emissions than any ICEV or hybrid gasoline vehicle.[33] Furthermore, the ZEV Transition Council found that for medium-size passenger cars registered in 2030, ZEVs and PHEVs have significantly better lifecycle GHG performance than a conventional vehicle (on both an estimated average global grid and one powered solely by renewable electricity).[34] These studies indicate that for light-duty vehicles lifecycle GHG emissions are lower than for similar class ICEVs.

Beyond their carbon emissions benefits, zero-emission vehicles also do not emit criteria and air toxics pollutants when operated and do not have upstream emissions of these pollutants from production and delivery of petroleum fuels – a substantial benefit to California's disadvantaged communities that are frequently located near freeways and other major vehicular transportation corridors. The lifecycle emissions of all pollutants are lower for zero-emission vehicles than vehicles powered by combustion.

No changes to the First Draft EA are required in response to this comment.

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[31] Nealer, Rachael, David Reichmuth, and Don Anair. 2015. Cleaner Cars from Cradle to Grave: How Electric Cars Beat Gasoline Cars on Lifetime Global Warming Emissions. Union of Concerned Scientists. November. Accessed July 8, 2022. https://www.ucsusa.org/sites/default/files/attach/2015/11/Cleaner-Cars-from-CradletoGrave-full-report.pdf.

[32] Senate Bill 100, Stats. 2018, ch. 312.

[33] Elgowainy, Amgad, Jarod Kelly, Michael Wang. 2020. "Life Cycle Greenhouse Gas Emissions for Small Sport Utility Vehicles." U.S. Department of Energy Record #21003. November 1. Accessed June 7, 2022. https://www.hydrogen.energy.gov/pdfs/21003-life-cycle-ghg-emissions-small-suvs.pdf.

[34] Searle, Stephanie, Georg Bieker, and Chelsea Baldino. 2021. Decarbonizing Road Transport By 2050: ZeroEmission Pathways for Passenger Vehicles. 1-14. July 20. Accessed July 8, 2022. https://theicct.org/wpcontent/uploads/2021/12/zevtc-decarbonizing-by-2050-Jul2021%E2%80%AF.pdf.

356-3: The commenter states, "The CARB Scoping Plan EA does not acknowledge the massive solid and hazardous wastes created by the planned elimination of internal combustion vehicles…."

Response: Chapter 2 of the First Draft EA describes reasonably foreseeable compliance responses associated with the expanded use of zero-emission mobile source technology including increased recycling or refurbishment of batteries and increased solid waste disposal or recycling from the scrapping of old equipment. Hazardous wastes from the Expanded Use of Zero-Emission Mobile Source Technology Actions, including management of batteries, are addressed under Section 4.9.b in the First Draft EA. As discussed on pages 131-132 of the First Draft EA, disposal of lithium-ion batteries and hydrogen fuel cells would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. Specific applicable laws and regulations that would apply include (but are not limited to) the Hazardous Waste Program specified under Subtitle C of the federal Resource Conservation and Recovery Act; federal Toxic Substances Control Act; Comprehensive Environmental Response, Compensation, and Liability Act; Hazardous Materials Transportation Act; and other applicable laws and regulations.

356-4: The commenter states, "The CARB Scoping Plan EA does not acknowledge… the massive global GHG emissions (ranging from mining to mineral processing to fabrication to manufacturing to shipping) of the batteries and other components required to produce a replacement all-electric fleet. CARB acknowledges job losses among car mechanics, but not the massive environmental impacts of a radical fleet turnover mandate."

Response: Contrary to the commenter's assertions, there is no "radical fleet turnover mandate" in the 2022 Scoping Plan. Rather, the 2022 Scoping Plan focuses on new vehicle sales requirements. Refer to response to comment 356-5.[35]

Regarding the commenter's claims about impacts from manufacturing new vehicles, numerous studies have shown the lifecycle GHG reduction potential of zero-emission vehicles included in the 2022 Scoping Plan, where lifecycle emissions include well-to-wheel operations but also vehicle manufacturing and disposal. The use of different parts, materials, and processes to build components unique to electric vehicles, especially the type and size of batteries, means that emissions from building an electric vehicle differ from those of building comparable gasoline vehicles. With gasoline cars, vehicle operation accounts for most of the lifecycle emissions, while for battery electric vehicles (BEVs), emissions from manufacturing are a more significant contributor to the total lifecycle emissions. Despite higher emissions from vehicle manufacturing, BEVs on average have much lower lifecycle GHG emissions than comparable gasoline vehicles, as manufacturing emissions are quickly offset by reduced

[35] For further discussion regarding how new vehicle sales goals and requirements work, and for information on other vehicle electrification-related considerations, see also the August 24, 2022 Final EA and the August 24, 2022 Response to Comments documents for the Advanced Clean Cars II Program rulemaking, available on CARB's rulemaking webpage at https://ww2.arb.ca.gov/rulemaking/2022/advanced-clean-cars-ii.

emissions from operation.[36] A Life Cycle Analysis Report from SwRI (Project No. 26587), shows that sedan, crossover, and pickup BEVs on a 2019 California grid (using EIA database GHG intensity data) have lower carbon lifecycle emissions than virtually any other fuel (including low-carbon fuel) and technology combination.[37] As the carbon intensity of the California grid continues to decline per the 100 Percent Clean Energy Act of 2018,[38] BEV lifecycle GHG intensities will continue to fall. Similarly, the Department of Energy's cradle-to-grave lifecycle GHG emission analysis for small sport utility vehicles found that future BEVs and FCEVs would have lower lifecycle emissions than even the lowest carbon intensity drop-in renewable fuel, while current BEVs, FCEVs, and PHEVs have lower lifecycle emissions than any ICEV or hybrid gasoline vehicle.[39] Furthermore, the ZEV Transition Council found that for medium-size passenger cars registered in 2030, ZEVs and PHEVs have significantly better lifecycle GHG performance than a conventional vehicle (on both an estimated average global grid and one powered solely by renewable electricity).[40] These studies indicate that for light-duty vehicles lifecycle GHG emissions are lower than for similar class ICEVs. Besides the carbon emissions, zero-emission vehicles also do not emit evaporative or exhaust criteria and toxic pollutants and do not have upstream emissions of these pollutants from production and delivery of petroleum fuels. The lifecycle emissions of all pollutants are lower for zero-emission vehicles than vehicles powered by combustion.

CARB recognizes that its rules and regulations aimed at decarbonizing the state through use of zero-emission technology may induce new demand for various metals including lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, and aluminum. Additionally, the production of hydrogen fuel cells commonly requires the use of platinum. Expert research has shown how a zero-emission vehicle future can be achieved, including through battery recycling practices, which are anticipated to scale up along with BEV prevalence.[41] Furthermore, CARB does not intend to limit the types of batteries that may be used to comply with zero-emission vehicle sales requirements called for by the 2022 Scoping Plan and recognizes that future zero-emission technologies may be developed that use other

[36] Nealer, Rachael, David Reichmuth, and Don Anair. 2015. Cleaner Cars from Cradle to Grave: How Electric Cars Beat Gasoline Cars on Lifetime Global Warming Emissions. Union of Concerned Scientists. November. Accessed July 8, 2022. https://www.ucsusa.org/sites/default/files/attach/2015/11/Cleaner-Cars-from-Cradleto-Grave-full-report.pdf.

[37] The SwRI report was submitted by Elizabeth Bourbon representing Valero to the Advanced Clean Cars docket (public comment letter OP-140), which can be found on the online Board Meeting Comments Log at: https://www.arb.ca.gov/lispub/comm/iframe_bccommlog.php?listname=accii2022&_ga=2.146673396.1346155275.1657904003-1805581018.1619638948.

[38] Senate Bill 100, Stats. 2018, ch. 312.

[39] Elgowainy, Amgad, Jarod Kelly, Michael Wang. 2020. "Life Cycle Greenhouse Gas Emissions for Small Sport Utility Vehicles." U.S. Department of Energy Record #21003. November 1. Accessed June 7, 2022. https://www.hydrogen.energy.gov/pdfs/21003-life-cycle-ghg-emissions-small-suvs.pdf.

[40] Searle, Stephanie, Bieker, Georg, and Baldino, Chelsea. 2021. Decarbonizing Road Transport By 2050: Zero-Emission Pathways for Passenger Vehicles. 1-14. July 20. Accessed July 8, 2022. https://theicct.org/wp-content/uploads/2021/12/zevtc-decarbonizing-by-2050-Jul2021%E2%80%AF.pdf.

[41] See, e.g., Slowik, Peter, Lutsey, Nic, and Hsu, Chih-Wei. 2020. How Technology, Recycling, and Policy Can Mitigate Supply Risks to the Long-Term Transition to Zero-Emission Vehicles. https://theicct.org/wp-content/uploads/2021/06/zev-supply-risks-dec2020.pdf

minerals, metals, or resources. CARB also recognizes that there are different sources of GHG emissions associated with different vehicle technologies. In the case of battery and electrified vehicle technology material requirements and manufacturing, the transportation of lithium, nickel, cobalt, and platinum domestically and worldwide would generate GHG emissions from vehicle and vessel movement that ship and distribute resources to global manufacturing facilities. Additionally, the mining of these resources would require the use of heavy equipment, which would likely be powered by diesel fuel, the combustion of which would produce GHG emissions. However, the emission benefits from the use of these materials in ZEVs would ultimately offset the emissions from combustion of gasoline, diesel, and other fossil fuels from the development and use of these battery materials resources. Additionally, the development and transport of materials and fuels for conventional vehicles would need to be considered with an evaluation of the net GHG emissions when a conventional vehicle is not manufactured and used.

CARB also recognizes that it is not solely responsible for an increase in demand for these metals. The federal government recently enacted legislation providing significant support for ZEVs. The Inflation Reduction Act of 2022[42] provides significant tax credits for new and used ZEVs[43] and electric vehicle charging infrastructure.[44] It provides an advanced manufacturing tax credit for production of critical minerals used in ZEV batteries[45] and appropriates $500 million for "enhanced use" under the Defense Production Act to incentivize critical mineral production.[46] It authorizes the Department of Energy to commit up to an additional $40 billion in loan guarantees (on top of an existing program of $24 billion) for innovative technologies, which includes projects that avoid GHGs and other air pollutants or that employ new or improved technologies.[47] Various international efforts are also underway to electrify the mobile-source sector pursuant to commitments made in the European Union,[48] United Nations (UN) Paris Accord, Kyoto Protocol, and by members of the Under2 Coalition, among others. It is also important to note that ICEVs require aluminum alloys, magnesium, iron, and steel, which are all metals that already require extensive mining with similar physical impacts to the environment that were identified in Chapter 4 of the First Draft EA, including loss of habitat, agricultural resources, and forests; water, air, and noise pollution; and erosion. As a result, while federal and international action are likely to independently cause environmental impacts related to critical minerals, including those impacts analyzed in the First Draft EA for the 2022 Scoping Plan, CARB has nonetheless conservatively analyzed the

[42] Pub.L. No: 117-169 (Aug. 16, 2022) 136 Stat. 1818.

[43] *Id.*, § 13401, amending 26 U.S.C. § 30D.

[44] *Id.*, § 13404, amending 26 U.S.C. § 30C.

[45] *Id.*, § 13502, adding 26 U.S.C. § 45X.

[46] *Id.*, § 30001.

[47] *Id.*, § 50141.

[48] Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) 2019/631 as regards strengthening the CO_2 emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition, COM/2021/556 final, May 11, 2022.

full range of reasonably foreseeable environmental effects that may result from the 2022 Scoping Plan.

In response to the industry's electrification commitments and potential obligations, the recycling of lithium-ion batteries is also increasing to ensure that minerals are recovered and reused instead of discarded.[49] Widespread battery recycling would keep hazardous materials from entering the waste stream, both at the end of a battery's useful life and during its production. Work is now under way to develop battery-recycling processes that minimize the lifecycle impacts of using batteries in vehicles. Batteries that power vehicles will be recycled at recycling facilities, where they will be transformed into valuable scrap commodities like cobalt, copper, nickel, and lithium carbonate, which can then be used to produce another battery more efficiently. Battery recycling can also reduce the demand for virgin materials used in the production of new batteries.[50] Policy recommendations aimed at ensuring that as close to 100 percent as possible of lithium-ion vehicle batteries in the state are reused or recycled at end-of-life in a safe and cost-effective manner have also been submitted to the California Legislature by the Lithium-Ion Car Battery Recycling Advisory Group.[51]

New sources of lithium, among other minerals, have been identified internationally and domestically, including new mining opportunities in California's Imperial Valley. The CEC's Lithium Valley Commission estimates that the Imperial Valley may have sufficient lithium supplies to meet 40 percent of the world's total lithium demand, which would be coupled with renewable energy and more sustainable extraction processes. The report notes that lithium recovery technologies proposed for use in Imperial County, direct lithium extraction from geothermal brine, result in a much lower environmental effect than hard rock mining and evaporation ponds. Direct lithium extraction technologies are designed to recover lithium and other minerals as the geothermal brine flows through pipelines and tanks and over a surface or substance that removes the lithium and other minerals before returning the brine deep underground (Paz et al. 2022).[52]

Industry is also rapidly moving to batteries with different chemistries or formats to address concerns with mineral supply chain issues or human rights concerns.[53] Moreover, the

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[49] Redwood Materials, Inc. 2022. *California Electric Vehicle & Hybrid Battery Recycling Program.* Accessed August 8, 2022. https://www.redwoodmaterials.com/california-recycling-program#.

[50] Dunn, Jessica, Margaret Slattery, Alissa Kendall, Hanjiro Ambrose, and Shuhan Shen. 2021. "Circularity of Lithium-Ion Battery Materials in Electric Vehicles." *Environ. Sci. Technol.* 2021, 55, 8, 5189–5198. https://pubs.acs.org/doi/abs/10.1021/acs.est.0c07030.

[51] California Environmental Protection Agency. 2022. Lithium-Ion Car Battery Recycling Advisory Group Final Report. March 16. Accessed June 16, 2022. https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022_AB-2832_LithiumIon-Car-Battery-Recycling-Advisory-Goup-Final-Report.pdf.

[52] Paz, Silvia (Chair); Kelley, Ryan E. (Vice Chair); Castaneda, Steve; Colwell, Rod; Dolega, Roderic; Flores, Miranda; Hanks, James C.; Lopez, Arthur; Olmedo, Luis; Reynolds, Alice; Ruiz, Frank; Scott, Manfred; Soto; Tom; Weisgall, Jonathan. 2022. Report of the Blue Ribbon Commission on Lithium Extraction in California. California Energy Commission. Publication Number: CEC-300-2022-009-D.

[53] Visnic, Bill. 2020. "GM's Ultium Battery System Future-Proofed." *SAE International*. May 22. Accessed March 11, 2022. https://www.sae.org/news/2020/05/gm-ultium-battery-update.

Advanced Clean Cars II program requires that ZEV batteries be labelled to facilitate second use and recycling processes, enabling conservation of semi-precious metals used in the manufacturing process of ZEV batteries. The Advanced Clean Cars II program also includes provisions that would result in longer-lasting ZEVs, such as minimum requirements for range and durability, that could help reduce disposal impacts from ZEVs when compared to ICEVs.

Nevertheless, the First Draft EA makes a good faith effort to disclose the potentially adverse environmental impacts related to the mining, manufacturing, and recycling of lithium-ion and even nickel-hydride batteries throughout its analysis, consistent with Section 15002(g) of the State CEQA Guidelines.[54] Potentially adverse impacts related to mining activities are identified in various portions of the First Draft EA including Sections 4.4.b, 4.6.b, 4.9.b, and 4.10.b, among other impacts. The First Draft EA analysis draws conclusions based on available facts and makes disclosures while avoiding mere speculation that is not allowed under CEQA.

The First Draft EA does not attempt to capture the potential effects of mining the full range of existing and potential battery materials because it would be speculative to attempt to predict the specific methods, locations, and extent of mining conducted to extract these global commodity minerals, metals, and resources in the future. Nevertheless, the EA makes a good-faith effort to disclose potentially adverse environmental effects of increased mining activity. Notably, of the aforementioned metals (i.e., lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, aluminum, and platinum), lithium is often mined using brine mining (i.e., pumping and processing of brine water), whereas the other metals are harvested using surface open pit or underground extraction of ores followed by a variety of processing techniques. Where appropriate, the environmental impacts associated with brine, open pit, and underground mining are disclosed, which is intended to reasonably describe the types of impacts associated with the increased mining of these metals.

As emphasized in the First Draft EA throughout Chapter 4, following the recommendation of resource-specific project-level mitigation measures, the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with the EA does not attempt to address project-specific details of mitigation; there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. The First Draft EA makes a good faith effort to disclose potentially significant impacts and proposes project-level mitigation measures that could be implemented to reduce impacts. Pursuant to Section 15002(g) of the CEQA Guidelines, the EA identifies a significant effect, and CARB, the legal entity approving the 2022 Scoping Plan, determines whether the adverse environmental effects can be substantially reduced and explains why they may not. In the context of the First Draft EA, and the potentially significant impacts identified that may occur outside of the state, CARB cannot, without speculating, precisely predict the locations of these impacts nor account for the regulatory environment that may be capable of reducing impacts to a less-than-significant level. For instance, mining activities

[54] California Code of Regulations, title 14.

that occur overseas in countries that may have fewer regulations in place to mitigate environmental impacts are beyond CARB's authority to mitigate or regulate. Nevertheless, these potential adverse impacts are identified and disclosed in the First Draft EA.

The First Draft EA also summarizes potential short-term construction-related and long-term operational-related effects to mineral resource impacts and discloses data pertaining to worldwide production and reserves for lithium, nickel, cobalt, platinum, and palladium. Implementation of the 2022 Scoping Plan and associated compliance responses would result in an increase in mining for critical minerals, but the impact would be generally small when viewed in the context of global mineral markets. There is no evidence to suggest that the incremental mineral demand relating to the 2022 Scoping Plan has any potential to result in the loss of availability of a known mineral resource of value to the state or to the residents of the state, or result in the loss of availability of a locally-important mineral resource recovery site identified in a local land use plan. (See CEQA Appendix G, Section XII, Mineral Resources.) Implementation of the 2022 Scoping Plan would not be anticipated to substantially affect the availability related to known mineral resources or supply. Also refer to responses to comments 356-4 and 566-10.

356-5: The commenter states, "These are not speculative impacts: impacts from trashing cars are well known, and waste volumes increase when engine parts can no longer be recovered and reused with the internal combustion phase-out. Cars are about 1500 tons each; trashing 35 million cars creates waste volumes of over 52 million tons. Where does this waste end up, and how does it get there? Many of these wastes are hazardous if not properly handled; the EA includes no analysis of the capacity of waste management facilities to cope with this massive influx of inert and partly hazardous waste."

Response: The First Draft EA addresses disposal of vehicles, and the potentially hazardous conditions related to disposal of vehicular components. The commenter fails to acknowledge that the vehicle electrification measures in the 2022 Scoping Plan are new vehicle sales goals, not used-vehicle turnover or scrappage requirements.[55] The commenter's claims about accelerating vehicle scrappage are therefore unsupported. While the 2022 Scoping Plan could increase the rate of deployment of zero-emission mobile technologies, it would not affect how existing vehicles are disposed. As discussed on page 217 of the First Draft EA, the 2022 Scoping Plan could "… result in reuse and/or disposal of vehicles outside of California. Lithium-ion batteries may be recycled." However, as disclosed further on that same page, "While deployment of the 2022 Scoping Plan may result in the increased production, use, and disposal of zero- and near zero-emission lead acid batteries, these increased levels would not generate notable strain on existing manufacturing, disposal, and recycling facilities such

[55] Even if the 2022 Scoping Plan included vehicle turnover requirements or the "ban" suggested by the commenter, which it does not, it is unclear why the commenter believes this would result in vehicle scrappage rather than other potential responses, such as selling the vehicle in another vehicle market. See also response to comment S-15-2-1 in the Responses to Comments for the Advanced Clean Cars II Program, available at https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/acciirtc1.pdf.

that additional adverse effects on utilities would occur. This impact would be less than significant."

The potential for impacts related to hazardous waste disposal is addressed in Section 4.9.b: Long-Term Operational-Related Effects on Hazards and Hazardous Materials. As described under b) Expanded Use of Zero-Emission Mobile Source Technology Action on pages 131-132 of the First Draft EA, "[T]he transport, use, and disposal of hazardous materials would be required to comply with all applicable federal, State, and local laws that would reduce the potential for accidents and require certain actions should a spill or release occur; however, the potential remains for the release of hazardous materials into the environment. As further addressed in the third paragraph on page 132, "…any increased rates of disposal of lithium-ion batteries and hydrogen fuel cells would need to comply with California law, including but not limited to California's Hazardous Waste Control Law and implementing regulations. Compliance with the appropriate federal and State laws governing the handling of potentially hazardous materials would be sufficient to minimize the risks from lithium-ion batteries and fuel cells because they ensure adequate handling and disposal safeguards to address these risks." Due to compliance with existing regulations, impacts related to hazards and hazardous waste associated with expanded use of zero-emission mobile source technologies would be less than significant (last paragraph on page 140 of the First Draft EA).

The commenter does not provide any specific information related to environmental impacts associated with disposal or reuse of vehicles for which further response can be provided.

356-6: The commenter states, "California Environmental Quality Act (CEQA) Guidelines also specify that CARB must consider a reasonable range of alternatives, which "shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects."[40]

[40] 2022 CEQA Statutes & Guidelines § 15126.6(c)."

Response: Chapter 7 of the First Draft EA, "Alternatives Analysis," describes the approach to the analysis, selection of a range of alternatives, and a robust evaluation of alternatives to the 2022 Scoping Plan. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 362

6/21/2022 Jorge De Cecco

362-1: The commenter states, "Thinning does not make forests less vulnerable to fire. Recent studies have shown that it often worsens fire risk."

Response: The comment provides an opinion that forest thinning worsens fire risk without providing any factual details or substantiation of the statement. This is a general statement in opposition to fuels reductions actions addressed in the First Draft EA. No specific environmental issues are raised as to the adequacy, accuracy, or completeness of the environmental impact analysis included in the First Draft EA. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 369

6/21/2022 Jean Tepperman, 1000 Grandmothers for Future Generations

369-1: The commenter states, "Biogas perpetuates the reliance on methane -- a potent greenhouse gas that always leaks."

Response: Biogas, generated from the degradation of organic materials in landfills, wastewater treatment plants, and other sectors, is a low carbon and sustainable source of fuel that can replace non-renewable fossil natural gas. Biomethane is produced by upgrading biogas (a process that removes CO_2 and other contaminants present in the biogas) to generate a pipeline-quality gas that is interchangeable with conventional fossil natural gas., The use of upgraded biogas as a fuel mitigates methane that could otherwise have escaped from landfills, dairies, or other sectors. Leaks of all types of gas associated with the gas system are expected to be reduced as infrastructure is reduced in line with decreases in fossil fuel demand as indicated in the Proposed Scenario. CARB's oil and gas methane regulation[56] requires leak detection and repair and ambient air monitoring for underground natural gas storage facilities that may also include biomethane. Additionally, the CPUC's SB 1371 (Leno, Chapter 525, Statues of 2014) Natural Gas Leak Abatement Program implements rules and procedures for commission-regulated pipeline facilities that are designed to mitigate leaks and corresponding methane emissions from the gas transmission and distribution system. Implementation of the 2022 Scoping Plan would expand leak reduction efforts, regardless of

[56] https://ww2.arb.ca.gov/resources/documents/oil-and-gas-regulation

whether the methane was sourced from fossil gas or biogas, so there would be an overall reduction in greenhouse gases from any methane infrastructure leaks in the future.

No changes to the First Draft EA are required in response to this comment.

369-2: The commenter states, "CCS increases pollution in local communities because it requires more energy use. Public money spent on CCS is often wasted becaus1 projects are abandoned as unfeasible and/or fail to remove as mucl CO2 as promised."

Response: CCS on facilities increases the energy needed at the facility, which would be supplied by the same source as the facility energy. For example, a refinery with CCS will use less onsite natural gas, electricity, and/or other fossil fuels as demand is reduced, and as renewables supply a greater portion of demand, existing fossil-based electricity generation will consume less natural gas and onsite electricity to operate; therefore, emissions will be reduced. However, the addition of CCS will require more of those energy sources than if the facility was not equipped with CCS. The PATHWAYS model calculates annual energy demand by fuel type and sector and accounts for the energy needed to support CCS at facilities. The air quality and public health analysis utilized output from the PATHWAYS model to develop spatially and temporally resolved characterizations of pollutant emissions for all sectors and sources in California including stationary, area, and mobile source emissions. The overall reductions in fossil fuel consumption in the Proposed Scenario show it will achieve improvements in air quality throughout California, including reductions in the levels of ozone and PM2.5. Please also refer to Master Response 3.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 372

6/21/2022 Robert Hambrect, Allotrope Partners

372-1: The commenter states, "CARB's modeling of forest biomass assumes only a maximum of 70% of gross residues from fire prevention can be collected and, due · its indifference assumption, even smaller amounts (two tons per acre on average) are actually removed from the forest, with the rest left in the woods. Such an assumption runs counter to many models/studies, such as the Lawrence Livermore Lab "Getting to Neutral'' report, that suggest that a much larger amou1 of material needs to be removed (in the range of 15 tons per acre in support of ecological forest mangagement that prevents forest fires and the negative impact of such emissions would have on climate change."

Response: The commenter notes that the forest biomass availability assumptions in the 2022 Scoping Plan NWL analysis is lower than suggested by existing models/studies. This comment raises forest biomass specific environmental issues related to the First Draft EA.

The First Draft EA discusses potential impacts of increased forest biomass supply on Resource Areas in Chapter 4. The 2022 Scoping Plan discussion of forest biomass supply has been revised to reflect improved assumptions and data sources. CARB staff would like to note that the forest biomass estimates in the "Getting to Neutral" report cited by the commenter are high relative to other independent estimates of available biomass and not well supported by other studies. Further, the description of methods on how the "Getting to Neutral" biomass availability numbers were calculated is not well documented (15 tons/acre is assumed based on personal communication) and therefore not replicable. The impacts disclosed in the First Draft EA are not expected to change with the revised forest biomass supply estimate. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 384

6/21/2022 Jane Sellen, Californians for Pesticide Reform

384-1: The commenter states, "We remain concerned that herbicide applications and chemical management were modeled in the forest, shrublands and grasslands sector s. CARB staff's recommendation to reduce pesticide use to achieve climate change and public health benefits in the agricultural sector should apply to other sectors as well. The dangers of chemical pesticide use to the environment, human health and the climate are significant for all land sectors. In the forestry sector, glyphosate is the most commonly used pesticide according to the UC Davis PUR data tool. Glyphosate has well-documented negative health and environmental consequences. Most notably Bayer - the manufacturer of glyphosate - has recently been ordered to pay three CA residents more than $100 million collectively in damages after they developed cancer after using glyphosate or RoundUp, and was previously ordered to pay Dewayne "Lee" Johnson - a California groundskeeper - $20.5 million. Thousands of similar cases are currently making their way through the US court system."

Response: The commenter notes the dangers of pesticide use and recommend reducing its use in the forest, shrubland, and grassland sector. This comment raises pesticide specific environmental issues related to the First Draft EA. The First Draft EA discusses potential impacts of pesticide use (in the form of targeted herbicide application) in this sector. Therefore no changes to the First Draft EA are required in response to this comment. In the forest, shrubland, and grassland sectors, only herbicides are mentioned, not pesticides. Herbicide use in wildlands is fundamentally different than herbicide use in agricultural lands in objective, application, intensity, exposure, and frequency. This makes using agriculturally based assumptions of health and ecological impacts from herbicide use not valid in wildland applications. Further, alternatives to herbicide use are not as prevalent or applicable to wildlands, and some form of vegetation and invasive species management is necessary for

wildfire mitigation, wildlife habitat restoration/preservation, and climate resilience. No changes to the 2022 Scoping Plan NWL management strategies are required in response to this comment.

384-2: The commenter states, "We appreciate the draft Scoping Plan's commitment to "conduct research on the intersection of pesticides, soil health, GHGs, and pest resiliency via a multiagency effort with DPR, CDFA, and CARB." We have long advocated for more research to be conducted on pesticides and their impacts, and this commitment is an important start to closing this research gap.

However, this research must also focus on the disparate impacts on communities of pesticide use. The health impacts of synthetic pesticide exposure continue to fall primarily on residents of color in California. At a minimum, CARB staff as part of the 2022 Scoping Plan must analyze health impacts of proposed strategies on residents in California as recommended by the Environmental Justice Advisory Committee, particularly on people of color that bear the brunt of many negative air and water quality impacts."

Response: Please refer to response to comment 566-34.

No changes to the First Draft EA are required in response to this comment.

384-3: The commenter states, "Herbicides such as 2,4-D, atrazine and paraquat enable farmers to manage weeds with less tillage ... And in the absence of tillage, farmers depend more heavily on herbicides to keep weeds at bay ... Cost aside, greater reliance on agrichemicals may adversely affect nontarget species or contaminate air, wat er and soil." While reducing tillage can have benefits, it must not result in an increase in reliance on synthetic pesticide use, which would have negative impacts on the climate, environment and public health. Ecological pest management, pesticide reduction, and organic farming must therefore be simultaneously incentivized and adopted to ensure increase in reliance does not occur."

Response: The commenter notes the potential for increased use of synthetic pesticides on croplands as a result of reducing tillage. This comment raises pesticide specific environmental issues related to the First Draft EA. The First Draft EA provides discussion of known potential impacts of pesticide use. Chapter 4 of the draft Scoping Plan discusses the significance of pesticide use reduction for ecological and human health. The 2022 Scoping Plan recognizes the benefits of reduced pesticide use and includes transitioning to organic farming (including reduced pesticide use), along with other health soils practices, as a management strategy. Additionally, the Department of Pesticide Regulation, CalEPA, and CDFA have convened a Sustainable Pest Management Workgroup that have developed and plan to soon release draft recommendations and goals to address sustainable pest management across the state. No changes to the First Draft EA are needed in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA;

therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 390

6/21/2022 Kelly Lyndon

390-1: The commenter states, "We oppose the use and expansion of methane gas hookups due to the adverse impacts of methane gas combustion on Greenhouse Gas (GHG) emissions, indoor health, and public safety."

Response: Appendix F, Building Decarbonization, to the 2022 Scoping Plan outlines a range of actions to achieve a successful and equitable transition to building decarbonization. Several key actions support the phase-out of gas appliances and expansion of gas hookups. Scaling back fossil gas infrastructure includes eliminating incentives for extending gas mains and service lines to new buildings. Targeted, trimming back of existing gas infrastructure, also known as zonal electrification, is another critical action to reduce fossil gas system maintenance needs, costs, and emissions.

Please refer to the response to comment 296-6 regarding reductions in fossil gas consumption (and corresponding combustion-related air pollutant emissions) that will occur relative to the Reference Scenario from implementation of the Scoping Plan Scenario through substitution with electricity, renewable natural gas (RNG), and hydrogen across the AB 32 GHG Inventory Sectors, including buildings. Please refer to the response to comment 390-3 regarding gas system hazards.

No changes to the First Draft EA are required in response to this comment.

390-2: The commenter states, "Unfortunately, the CARB 2022 Draft Scoping Plan has recommended Alternative 3, which is neither immediate, delaying net zero emissions until 2045, or practical, relying on expensive and unproven carbon capture, usage, and sequestration (CCUS). It also perpetuates California's reliance on fossil fuels and the danger this poses to our health and environment. Research for the CEC indicates that building electrification is likely to be the lowest cost and lowest risk option for decarbonizing California's building sector."

Response: Numerous studies indicate that building electrification in new and existing buildings provides the most technologically feasible path to reduce building-related emissions. As a result, eliminating fuel combustion by electrifying appliances and equipment in buildings is the focus of Appendix F, Building Decarbonization, to the 2022 Scoping Plan. Several key actions recommend taking action immediately and long before 2045. Specifically, one of the actions included in Appendix F, Building Decarbonization, to the 2022 Scoping Plan includes adoption of zero emission standards for space and water heating by 2030. The primary goal for advancing building electrification measures in California is to reduce GHG and criteria pollutant emissions and provide important public health benefits.

The Scoping Plan Scenario results in drastic reductions in fossil fuels resulting in at least 85 percent reduction in anthropogenic GHG emissions from 1990 levels by 2045, with carbon dioxide removal compensating for the remaining emissions in order to achieve net zero GHG emissions as required by AB 1279.

Please also refer to response to comment H185-1 regarding achievement of the SB 32 target requiring at least 40 percent reduction in GHG emissions by 2030.

No changes to the First Draft EA are required in response to this comment.

390-3: The commenter states, "We urge CARB to include explicit planning for the strategic decommissioning of the gas infrastructure system by 2045. Efforts to extend the use of methane by blending hydrogen into our gas pipes or relying on CCUS for decarbonization is not a climate solution. A deliberately planned transition away from the gas system, supported by mitigation strategies, is needed to reduce future gas system spending and manage gas rates and risks for customers. Continuing to maintain an aging fossil gas system that is destined to be shut down is costly and poses undue hazards for our communities."

Response: Please refer to the response to comment 296-6 regarding reductions in fossil gas consumption through substitution with electricity, renewable natural gas (RNG), and hydrogen in the 2022 Scoping Plan. Furthermore, the First Draft EA in Section 4.9.b addresses long-term operational related effects on hazards and hazardous materials and discloses potential reasonably foreseeable compliance responses associated with RNG from manure management; forest, shrubland, and grassland management; and organic waste diversion actions that may produce gaseous renewable fuels (see determination of significant impacts and possible mitigation at pages 135-143 of the First Draft EA. The comment does not otherwise raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 422

6/22/2022 Jennifer Hernandez

422-1: The commenter states, "**This letter seeks an extension of the public comment period for the Environmental Analysis for the 2022 Draft Scoping Plan until 45 days after CARB has complied with the numerous CPRA requests for writings and information that support the determinations, conclusions and findings by providing the requested public records pursuant to the submitted requests.**

The evidence supporting the Environmental Analysis' conclusions and determinations are not contained within any of the foregoing documents, therefore, Holland & Knight has submitted five separate CPRA requests between June 3, 2022 and June 16, 2022 to obtain writings that support the determinations, findings and conclusions presented by CARB. On June 13, 2022, CARB provided a response to the CPRA request submitted on June 3, 2022 ("CPRA Request No. 1") stating "[w]e will contact you within 30 days regarding this request by either providing records responsive to your request (subject to applicable low and exemptions); an estimated date when we expect to complete our search and review of responsive documents, or the reasons, if any, why records are being withheld from disclosure."[3]

As of June 21, 2022, Holland & Knight has not received a response as it relates to the remaining four CPRA requests and does not anticipate receiving any of the requested public records prior to the close of the public comment period on June 24, 2022. **We are extremely concerned that without the public disclosure of these public records, the Environmental Analysis in its current form is merely a compilation of conclusions, findings, and determinations that are not supported by "substantial evidence"[4] and therefore, do not satisfy CEQA's minimum requirements.**

We note that while CARB has opted to conduct an alternative form of analysis to satisfy CEQA through Public Resources Code § 21080.5, CARB's obligations under CEQA remain unchanged.[5] Even with a functionally equivalent document, as CARB has dubbed an "Environmental Analysis", CARB must still comply with all of CEQA's other requirements.[6] The requested public records must be disclosed in order for CARB to meet its obligations under CEQA to ensure that the conclusions, findings and determinations are supported by substantial evidence.

We strongly encourage CARB to comply with the CPRA and CEQA's requirements by timely disclosing the documentation necessary to support the findings, determinations and conclusions set forth in the 2022 Draft Scoping Plan, the Environmental Analysis and associated documents and extending the public comment period to allow the public to review this information. Please do not hesitate to contact Paloma Perez-McEvoy (paloma.perez-mcevoy@hklaw.com) should you have any questions. We look forward to your timely transmittal of all responsive documentation as well as a proper extension of the public comment period. Thank you.

3 Letter from Cesar Cuevas, Public Records Act Coordinator, CARB to Jennifer Hernandez, Holland & Knight LLP (June 13, 2022).

4 CEQA Guidelines § 15384 ("Substantial evidence" means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion); *see also Laurel Heights Improvement Association of San Francisco v. Regents of University of California* (1988) 47 Cal.3d 376, 404 (an EIR must contain facts and analysis, not just bare conclusions and options).

5 2 Kostka & Zischke, Practice Under the Cal. Environmental Quality Act (Cont.Ed.Bar 2022) § 21.11.

[6] *Friends, Artists & Neighbors of Elkhorn Slough v. California Coastal Com.* (2021) 72 Cal.App.5th 666, 694 (citing *Mountain Lion Foundation v. Fish and Game Com.* (1997) 16 Cal.4th 105, 114)."

Response: CARB disagrees with the commenter's stated concerns. Substantial evidence supporting the conclusions and determinations in the First Draft EA is provided within the documents posted in support of the 2022 Scoping Plan and in the associated EA. Please also refer to Master Response 1, regarding the programmatic nature of the 2022 Scoping Plan (and the associated EA). CARB declined to extend the 45-day CEQA public comment period for the 2022 Scoping Plan, which ended June 24, 2022. In June 2022, CARB received five letters from this commenter (which commenter attached to this comment letter 422, one of five timely comment letters they submitted) requesting public records related to the 2022 Scoping Plan. Those five letters, dated and received June 3, June 13, June 14, June 15, and June 16, 2022, together comprise over 100 pages of more than 1,000 specific requests for documents. CARB is responding to those requests through its Public Records Act (PRA) response process, which is a separate process from CARB's preparation of the EA for the 2022 Scoping Plan. Many of the commenter/requester's 1,000+ requests ask for information and documents supporting the 2022 Scoping Plan and First Draft EA that were included among the documents that CARB posted for public review on May 10, 2022

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 427

6/22/2022 Christopher Lish

427-1: The commenter states, "The path laid out in the Scoping Plan will perpetuate fossil fuel production and continue to harm California's most vulnerable communities and ecosystems."

Response: Please refer to the response to comment 560-2 and 560-3.

427-2: The commenter states, "Continuing to rely on existing fossi: fuel infrastructure makes mitigating the negative effects of climate change more and more difficult. Gas plants emit many dangerous pollutants, and the majority of California's gas-fired power plants are located in or adjacent to disadvantage1 communities."

Response: Please refer to response to comment 321-2.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA;

therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 451

6/22/2022 Thomas Moran

451-1: The commenter states, "Second: Greenhouse gas emission reductions modeling up to the year 2040 are needed;"

Response: The 2022 Scoping Plan includes greenhouse gas emissions reductions modeling through 2045.

This comment does not address the adequacy, accuracy, or completeness of the First Draft EA and no changes to the First Draft EA are required in response to this comment

451-2: The commenter states, "Fourth: Air pollution and air quality need to remain a factor and a priority. Disempowered communities are suffering from local plant pollution and this needs to be further regulated & reduced, not allowed to persist under cap and trade."

Response: Please refer to response to comment 321-2 regarding local plant pollution and comment 252-2 for context regarding the Cap-and-Trade Program with respect to the 2022 Scoping Plan.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 458

6/22/2022 Cheryl Weiden

458-1: The commenter states, "1. The amount of carbon that burns in a fire is greatly exaggerated in the Draft Scoping Plan, which assumes that forest carbon is burned in a fire rather than the 3% that burned."

Response: The commenter asserts that the carbon burned in a fire is greatly exaggerated in the 2022 Scoping Plan. This comment raises forest and shrubland specific environmental issues related to the First Draft EA. The GHG emissions disclosed in the First Draft EA Section 4.8.a and in Table 4-13 take into account the modeled wildfire emissions. The details of the NWL analysis, including wildfire consumption and emissions, are found in Appendix I. The biogeochemical model used in the analysis of forests, shrublands, and grasslands produced estimates of biomass, and therefore carbon, consumed from wildfires in each year of the simulation. The model was calibrated using flux towers, remote sensing products, relevant literature. These estimates of consumption are in line with historical data from

CARBs wildfire emissions inventory as well as existing literature that predicts climate change will increase wildfire activity. It is not true that this model assumes all carbon is burned in a fire. In fact, as the commenter points out, for many fires, only a small amount of biomass is burned. The estimates are based on biogeochemical, hydrologic, fire behavior, and fuel modeling. The validation of the modeling results in the 2022 Scoping Plan will take place in the future. No changes to the First Draft EA are required in response to this comment.

458-2: The commenter states, "2. Thinning does not make forests less vulnerable to fire. Much carbon is lost immediately when the trees are logged to a bioenergy plant. Recent fires have shown that it oi worsens fire risk."

Response: The comment provides an opinion that forest thinning worsens fire risk without providing any factual details or substantiation of the statement. This is a general statement in opposition to fuels reductions actions addressed in the First Draft EA. No specific environmental issues are raised as to the adequacy, accuracy, or completeness of the environmental impact analysis included in the First Draft EA. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 461

6/22/2022 Amy Vasquez

461-1: The commenter states, "In our rapidly deteriorating climate, CARB wants to keep using fossil fuels, which harms the lungs and health of my family and m1 overall community."

Response: Please refer to the response to comment 560-2 and 560-3. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 464

6/22/2022 John Hopkins, California Habitat Conservation Planning Coalition

464-1: The commenter states, "A. It states that current wildfire and other issues will make NWLs a net emitter of 8 million metric tons of carbon dioxide equivalent per year from 2025-2045 [Page 72]. But on page 71 it states that "the results of the modeling demonstrate that

regular NWL management over the next two decades can increase carbon stocks from the Reference Scenario trajectory, reduce GHG emissions from lands, and improve ecosystem and public health." Also, table 3-5 on page 112 states there will be average GHG emission reductions for forests / shrublands / grasslands. Items 2 and 3 contradict item 1 above. We need clarification and consistency."

Response: CARB staff would like to clarify that under all alternatives, including the Reference Scenario, forests, shrublands, and grasslands are predicted to lose carbon stocks and be a net source of GHGs. Under implementation of the 2022 Scoping Plan, the loss in carbon stocks and emission of GHGs is predicted to be less than the loss in carbon stocks and emissions of GHGs predicted in the Reference Scenario. Therefore, relative to the Reference Scenario, carbon stocks would increase under implementation of the 2022 Scoping Plan and GHG emissions would be reduced. However, in absolute values, forests, shrublands, and grasslands would still be a net emitter.

This comment does not raise specific environmental issues related to the First Draft EA, nor does it otherwise address the accuracy, adequacy, or completeness of the EA for this sector. Therefore no changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 466

6/22/2022 Matt Regan, Bay Area Council

466-1: The commenter states, "As those largely blue collar industries leave California so do their workers. Each year 40,000 Californians relocate to just one state, Texas, in search of a more affordable life. As soon as a California family pulls into the driveway of their new affordable home in the Houston suburbs, the per capita GHG of each person in that car jumps from 9 tons in California to 27 tons in Texas. That is 720,000 tons of carbon each year, from just one state, that we have created by our failure to accommodate our own citizens. Add the other 48 states and you have to ask if our carbon reduction policies are actually doing more harm than good?

The California Air Resources Board must concede that carbon leakage is very real and that every job and every Californian that leaves our state is a concern to all of us."

Response: In choosing the Scoping Plan Scenario, CARB evaluated the feasibility of the scenarios, considering technology readiness, costs for decarbonizing fuels and technology, and consumer adoption of new technologies or practices (see 2022 Scoping Plan evaluation of alternatives in Chapter 2). AB 32 also requires that the 2022 Scoping Plan minimize emissions leakage – where emissions and goods and energy production move out of state

(see First Draft EA project objective 12). The Scoping Plan Scenario is in line with statutory direction to minimize emissions leakage, providing California businesses and industries needed long-term certainty to invest in the energy and technologies to decarbonize their operations. For global pollutants such as GHGs, California benefits from reductions elsewhere. Therefore, the state's goal has been to develop scalable and exportable programs that other jurisdictions can implement and use to reduce emissions within their borders.

Please also refer to responses to comments 639-1 and H217-1. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 501

6/22/2022 Abby Young, Bay Area Air Quality Management District

501-1: The commenter states, "Environmental justice communities across the state have voiced concern over the cumulative impacts of multiple emissions sources, but the Plan misses an opportunity to address cumulative impacts, particularly in the planning and permitting processes. The Plan provides an opportunity to bring forward a statewide discussion on cumulative impacts, land use decision-making, and the impacts on EJ communities. The Plan should discuss the ways in which cumulative and synergistic impacts of multiple emissions sources should be addressed in the planning and permitting process to avoid inflicting additional harm on EJ communities. "

Response: The comment suggests that the 2022 Scoping Plan should address cumulative impacts of emission sources, including on EJ communities. Chapter 5 of the First Draft EA addresses cumulative and growth inducing impacts for each of the resource areas discussed in the First Draft EA. The comment does not appear to raise any cumulative impacts of the proposed project (the 2022 Scoping Plan), but rather sets forth a policy recommendation regarding addressing existing and future cumulative impacts that would occur under existing conditions (i.e., as part of the reference or baseline scenario). The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 558

6/24/2022 Rina Singh, Alternative Fuels & Chemicals Coalition

558-1: The commenter states, "**Carbon Neutrality from Forest Residuals**
Innovators strive to produce biofuels that are more carbon efficient for both ground and aviation biofuels. In the draft Scoping Plan, CARB announced their plan to increase the short – and long-term ability for the LCFS to achieve carbon neutrality by 2045, which will be a result from reducing reliance on fossil fuels. Carbon neutrality is an important long-term goal; however, it can only be enabled by accurate accounting of carbon from feedstocks. AFCC is concerned that CARB is not appropriately recognizing the carbon neutrality of forest residuals, and instead is inclined to rely on erroneous reports based on narrowly focused on modeling studies that fail to account for the carbon benefits of diverting forest residuals to use in products, chemicals, and fuels relative to open burning, decay, or other dispositions. We respectfully urge CARB to consider all reports carefully and eliminate considering those which are narrowly focused on predictive modeling and have limited scientific scope."

Response: The commenter claims that CARB is not appropriately recognizing the carbon neutrality of forest biomass utilization in the LCFS program. The LCFS Program is an existing CARB program discussed in the 2022 Scoping Plan as an important driver of renewable fuels and reductions in GHG emissions. However, the 2022 Scoping Plan does not discuss in detail the carbon intensity determination methods used under the LCFS Program or potential changes to the program. These technical details of the LCFS Program are beyond the scope of the 2022 Scoping Plan. Therefore, this comment does not raise specific environmental issues related to the First Draft EA, nor does it otherwise address the accuracy, adequacy, or completeness of the EA for this sector. No changes to the First Draft EA are required in response to this comment.

CARB staff would like to note that the 2022 Scoping Plan NWL analysis of forest biomass residue availability is detailed in Appendix I.

558-2: The commenter states, "Most recently and concerningly, the C-BREC Model as described in various reports (Minimizing emissions from forest residues – Schatz Energy Research Center (schatzcenter.org)), which was developed by Professor Kevin Fingerman at Humboldt State for CA's biopower program https://www.energy.ca.gov/publications/2021/california-biopower-impacts-project-climate-and-air-pollution-impacts-generating, has been recommended for adaptation for the LCFS program. Based on its embedded assumptions and inputs, this model shows forest residue as carbon-positive, even considering avoided wildfire and avoided burn piles. There are multiple concerns with reliance on this model, particularly given other models and well-established reports of the carbon neutrality of forest residuals as feedstocks. For example, the model takes the existence of forestry / thinning residues as a given, and then compares conventional management- which is left to decay in place, and some pile-burned versus biomass removal and bioenergy production yet does not provide transparency on the portions of these alternative fates nor on their relative carbon releases.

The model does not include a lot of intermediate results, so it is difficult to parse. There is an apparent attempt to account for residue decay times and integrating emissions impacts over time, but no half-life studies were reported. The scope is so narrowly focused, and therefore it does not address or quantify the potential benefits from more widespread fuel management in the first place. Furthermore, it is probably no surprise that the results are carbon-positive, since the model does not include any of the factors that could make such a system carbon-negative – reduced wildfire severity from the fuels reduction treatment itself, co-production of wood products, or carbon-negative bioenergy production. AFCC and its member companies recommend a wider, more relevant scope for any predictive modeling from feedstocks to end of life of the biofuel.

Biofuel Policies Treat Biomass as Carbon Neutral for Decades
AFCC and its member companies have been working very closely with USDA (Forest Service (FS)) and EPA (Office of Transportation and Air Quality (OTAQ)) regarding risk of wildfire. Based on this work and in keeping with good forest management for wildfire prevention, we recommend and support policies that forest residuals be removed from forest grounds quicky for use by biofuel producers, so that aging and decaying emissions do not become an undue and inaccurate factor in forest predictive modeling studies which are not setup to capture decaying emissions and counterfactual fates accurately. If inaccurate models are used, this will materially change the carbon intensity (CI) calculation for LCFS credits for AFCC producers, making them worth far less than what is supported by the best science and the experience of AFCC and its member companies. The vast majority of greenhouse gas (GHG) emissions accounting and biofuel policies treat forest residual feedstocks employed for biofuel as carbon neutral, as should CARB under the LCFS. Thereby, we ask CARB to consider adopting the definition for carbon neutrality in the most recently enacted (FY2022) Appropriations bill, in the omnibus House bill, H.R.2471, see page 919, referred to as the Carbon Neutrality language, which is shown below. The language is commonly referred to as "Promoting biomass as carbon neutral."

Response: As described in Appendix H of the 2022 Scoping Plan, biomass wastes and residues, including forestry residues, are allocated to the transportation sector as hydrogen via gasification with CCS. The PATHWAYS model accounts for GHG emissions associated with producing biofuels consistent with the AB 32 GHG Emissions Inventory. The low carbon fuels actions in the First Draft EA's project description address the reasonably foreseeable compliance responses associated with deployment of biofuels, and the EA concluded the implementation of the low carbon fuels actions could result in beneficial impacts to GHG emissions (construction and long-term operational). As stated in Chapter 4 of the 2022 Scoping Plan, post-Scoping Plan adoption actions include initiation of a public process focused on options to increase the stringency and scope of the LCFS regulation. That process is the forum where issues raised by the commenter specific to fuel pathway carbon intensity and fuel pathway-based crediting will be discussed and evaluated. The remainder of the comment does not raise significant environmental issues related to the EA. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 560

6/24/2022 Faraz Rizvi, Asian Pacific Environmental Network

560-1: The commenter states, "We are concerned that the Draft Scoping Plan fails to meet, let al one accelerate, our 2030 or 2045 climate targets or increase the pace of California's actions beyond existing commitments. In fact, California is severely off-track to cut emissions 40% in that time: based on CARB's most recently available statewide emissions estimates, we will need to triple or quadruple our rate of reductions immediately and maintain that pace going forward in order to comply with the law."

Response: The Scoping Plan Scenario results in at least 85 percent reduction in anthropogenic GHG emissions from 1990 levels by 2045, with carbon dioxide removal compensating for the remaining emissions in order to achieve net zero GHG emissions as required by AB 1279.

Please also refer to response to comment H185-1 regarding achievement of the SB 32 2030 GHG emissions reduction target.

No changes to the First Draft EA are required in response to this comment.

560-2: The commenter states, "We strongly believe California should lead by example and set the pace for the rest of the nation. Environmental Justice communities, from Richmond to Riverside, have been historically exposed to elevated levels of pollution and left behind when it comes to action on climate change. Unfortunately, the current draft scoping plan continues to exacerbate this history."

Response: With respect to air pollution, the First Draft EA in Section 4.3.b discusses the longer-term operational impacts to air quality reasonably foreseeable from implementation of the 2022 Scoping Plan. That section of the EA points to the air quality and public health analysis conducted for the AB 32 GHG Inventory and Natural and Working Lands Sectors. The First Draft EA on page 65 explains that the 2022 Scoping Plan will achieve carbon neutrality "through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy which also has criteria pollutant and precursor benefits alongside reducing the exposure of sensitive receptors to TAC emissions. In addition, implementation of natural and working lands management strategies to mitigate and adapt to climate change will result in air quality and health benefits." The First Draft EA also includes a summary analysis of the ambient air quality improvement and corresponding health benefits associated with the compliance responses for the AB 32 GHG Inventory Sectors, as well as health benefits from

the higher level of natural and working lands level of management actions (e.g., reduces tree or shrub densities, protects large trees, reintroduces fire to the landscape, and diversifies species and structures in the Scoping Plan Scenario) resulting in decreased wildfire-related PM2.5 emissions (pages 65-71).

With respect to GHG emissions, the First Draft EA in Section 4.8.a discusses the short-term construction related and longer-term operational effects on GHG emissions reasonably foreseeable from implementation of measures identified in the 2022 Scoping Plan. As detailed in Chapter 2 of the First Draft EA, the primary purpose of the 2022 Scoping Plan is to achieve the maximum technologically feasible and cost-effective reductions in GHG emissions to reflect progress towards the 2030 target and to plan the longer-term trajectory to achieve at least 85 percent reduction in anthropogenic GHG emissions from 1990 levels and net zero GHG emissions by 2045 as required by AB 1279. That section of the First Draft EA states the construction and operation-related GHG emissions associated with implementation of actions in the Scoping Plan Scenario are considered in relation to the overall long-term operational GHG emissions reduction benefits associated with drastic reductions in fossil fuel use and improved natural and working lands health discussed in Chapters 2 and 3 of the 2022 Scoping Plan, they are not considered substantial (pages 122-126).

No changes to the First Draft EA are required in response to this comment.

560-3: The commenter states, "Communities that have been impacted by the dirty fossil fuel system are demanding that CARB prioritize direct emissions reductions instead of dead ends that continue to dirty the air we breathe."

Response: The comprehensive analysis conducted for the 2022 Scoping Plan shows the Scoping Plan Scenario achieves California's climate and clean air goals while balancing legislative direction on prioritizing direct emissions reductions and being technologically feasible and cost-effective. The Scoping Plan Scenario also protects public health and lays a foundation for continued economic growth. As shown in Table 2-2 of the 2022 Scoping Plan, the actions in the Scoping Plan Scenario will achieve direct emissions reductions from sources in the AB 32 Inventory through: a drastic reduction in fossil fuel dependence, with some remaining in-state demand for fossil fuels for aviation, marine, and locomotion applications, and for gas for buildings and industry; ambitious deployment of efficient non-combustion technologies such as zero emission vehicles and heat pumps; rapid growth in the production and distribution of clean energy such as zero carbon electricity and hydrogen; progressive phasedown of fossil fuel production and distribution activities as part of the transition to clean energy. Furthermore, the AB 197 analysis in Chapter 3 of the 2022 Scoping Plan provides GHG and criteria pollutant emissions reductions relative to the Reference Scenario for the measures in the Scoping Plan Scenario in 2035 and 2045, which based on these estimates, are expected to provide air quality benefits (see Table 3-4).

No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 561

6/24/2022 Helena Murray

561-1: The commenter states:

"● The range of 3 to 6.2 BDT of biomass per acre in Table 32 of the Natural and Working Lands Appendix is a significant underestimate. My staff estimates an average of 10 to 25 bone-dry tons (BDT) of non-merchantable biomass are generated per acre of vegetation management activities on National Forest System lands in the Sierra Nevada, Klamath, and Northern Cascades eco-units as defined in the plan. We suggest validating and updating the estimates in this table."

Response: Please refer to response to comment 372-1.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 563

6/24/2022 Rahel Kemal, Physicians For Social Responsibility LA

563-1: The commenter states, "Unfortunately, the CARB 2022 Climate Change Scoping Plan (Draft Scoping Plan), despite legal mandate, has not incorporated a public health equity analysis in the process of evaluation, selection, and prioritization of strategies and policies to address climate change and requires little to no immediate action to reduce pollution, and even worse, relies on expensive and unproven technologies to meet its emission reduction targets. This is disastrous for climate and public health and leaves working class Californians and frontline communities behind."

Response: The commenter states that despite legal mandate, the 2022 Scoping Plan has not incorporated a public health equity analysis in the process of evaluation or prioritization of strategies, and that the 2022 Scoping Plan would be "disastrous for climate and public health and leaves working class Californians and frontline communities behind". CARB disagrees that the 2022 Scoping Plan has the potential to further contribute to climate change and public health effects, if that is what the commenter is stating; the purpose and effect of the 2022 Scoping Plan would be precisely the opposite, as described throughout the 2022

Scoping Plan and the First Draft EA. No further response is necessary, and no changes to the First Draft EA are needed.

563-2: The commenter states, "CARB must consider the air quality and public health impacts of electricity generation in assessing each policy's social equity costs"

Response: The First Draft EA in Section 4.3.b discusses the longer-term operational impacts to air quality reasonably foreseeable from implementation of the 2022 Scoping Plan. That section of the EA points to the air quality and public health analysis conducted for the AB 32 GHG Inventory Sectors. The First Draft EA on page 65 explains that the 2022 Scoping Plan will achieve carbon neutrality "through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy which also has criteria pollutant and precursor benefits alongside reducing the exposure of sensitive receptors to TAC emissions." The First Draft EA also includes a summary analysis of the improvement and corresponding health benefits associated with the compliance responses for the Scoping Plan Scenario (pages 65-71). Furthermore, the AB 197 analysis in Chapter 3 of the 2022 Scoping Plan provides criteria pollutant emissions reductions relative to the Reference Scenario for the "generate clean electricity" measure (see Table 3-4), along with corresponding health benefits of emissions reductions associated with each measure; and Table 3-8 presents the estimated social costs that result from the GHG emissions reductions of the clean electricity measure. No changes to the First Draft EA are required in response to this comment.

563-3: The commenter states, "Natural gas" (aka methane) is a potent greenhouse gas (GHG) and escapes into the atmosphere across its entire supply chain, from the extraction, processing, and distribution systems and from inactive and abandoned wells. CARB should plan to fully decommission the gas distribution system by 2045 to meet its climate goals. CARB must eliminate another climate policy dead end, hydrogen blending. Truly low-carbon hydrogen ("green" hydrogen) is not available on a commercial scale and should be reserved for use in hard-to-electrify industrial sectors. "Blue" hydrogen (derived from methane in addition to using CCS) is not in fact climate friendly. Blending hydrogen with methane will not significantly reduce GHGs at levels of blending that are feasible with today's infrastructure and does little-to-nothing to avert indoor air pollution from gas stoves. A blend of a fossil fuel still results in the use of the fossil fuel and investing in new fossil fuel infrastructure and continued use of fossil fuel as an energy source has no place in a climate resilient home."

Response: Please refer to responses to comments 166-2, 166-5 and 296-5.

563-4: The commenter states, "CCS, in fact, extends the life of oil refineries and creates public health hazards at every step of the way– capture, transport and storage. CARB has not performed life cycle analysis of CCS, which in fact, as currently practiced, is a net CO2 producer. At the CO2 capture site, CCS increases the levels of other deadly pollutants associated with poor birth outcomes, asthma, heart attack, and stroke in frontline communities, exacerbating stark health inequities in California. The liquid CO2 pipeline network required by CCS would extend severe health threats to additional communities. The

transported CO2 is proposed to be injected in underground vaults or chambers which have to remain leak-proof for hundreds of years; despite the fact that the injection process potentially could increase the occurrence of earthquakes (as it is observed with injection of fracking wastewater in underground disposal wells)."

Response: Please refer to Master Response 3 regarding emissions and potential health impacts of mechanical carbon dioxide removal and CCS projects.

Please also refer to Master Response 2 related to safety of CO_2 pipelines, capture chemicals, and geologic storage of CO_2. As part of EPA's requirements to thoroughly study potential geologic sequestration sites, project applicants are required to demonstrate, through a review of the seismic history of the site and information on seismic sources and seismic risk, that identified seismic sources will not endanger USDWs.11

563-5: The commenter states, "CARB Draft 2022 Climate Change Scoping Plan represents an alarming adherence to the status quo that in effect extends the life of fossil fuel extraction and perpetuates environmental racism. It is inconsistent with IPCC recommendations and the goals of AB 32 and AB 197, and does not protect public health."

Response: Please refer to response to Comment 560-3. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 566

6/24/2022 Sylvia Regan, Center for Biological Diversity

566-1: The commenter states, "However, the draft Scoping Plan proposal fails to achieve either the pace or the scale of emission reductions that climate science tells us are needed."

Response: Please refer to response to comment 560-1.

566-2: The commenter states, "The draft Scoping Plan also relies on a highly speculative volume of GHG reductions from a mix of measures—CCS, bioenergy, and direct air capture—with highly dubious climate benefits, many with substantial and known risks of negative impacts to human health and the environment."

Response: Please refer to Master response 3, regarding CCS and mechanical CDR (direct air capture).

566-3: The commenter states, "DERs can achieve several environmental and community benefits, such as local economic benefits including job creation, improvements to public

health including decreased air and groundwater pollution, resiliency, affordability, and as detailed above, avoided significant land use, biodiversity, and species impacts. For instance, growing local solar and storage would save California ratepayers $4 billion a year, adding up to $120 billion over the next 30 years.[32] This is important, as the draft Scoping Plan notes that even with the SB 100 directive, the difference between retail sales and total load, due in large part to "pumping loads and transmission, distribution, and storage losses" warrants new fossil fuel generation.[33] A high-DER future, however, will eliminate this difference. In order to allow for informed decision-making, CARB must make the appropriate revisions in the draft Scoping Plan and the accompanying Environmental Assessment."

Response: The comment suggests consideration of distributed energy resources. This comment is directed toward the contents of the 2022 Scoping Plan and does not address the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

CARB also notes that, as described in the Recirculated Draft EA, the 2022 Scoping Plan has been updated to exclude new natural gas generation from the modelling for meeting increased demand.

566-4: The commenter states, "Absent the full picture of social costs and non-energy benefits required by AB 197 and other climate policies, it is simply not possible for the Board to adequately weigh the cost-effectiveness of each alternative scenario and compare with the Proposed Scenario. Until CARB considers the additional costs to society of GHG reduction measures, CARB cannot meet its mandates under either AB 32 or the California Environmental Quality Act to allow for informed decision-making."

Response: Pursuant to CEQA Guidelines Section 15131, economic or social effects shall not be treated as significant effects on the environment unless they result in a physical change that may affect the environment. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

566-5: The commenter states, "In addition, the use of BenMap does not cure this error. BenMap only determines public health benefits of GHG reductions. It does not determine the public health impacts of GHG reduction methods. In other words, while BenMap may detect public health benefits associated with capturing GHGs, BenMap cannot detect the local air and water pollution associated with the process of capturing those GHGs."

Response: CARB uses the BenMAP tool to provide the best possible estimates of the air quality co-benefits of GHG reduction measures. BenMAP estimates public health benefits of reducing two pollutants, PM2.5 and ground level ozone. Reductions in these pollutants are often co-benefits of GHG reduction measures implemented at a state or regional level. While BenMAP quantifies benefits of reducing specific criteria pollutants, CARB uses the social cost of carbon to quantify the benefits of GHG reduction. Additional analysis of health benefits of GHG reduction measures will be conducted in the implementation process after the 2022 Scoping Plan is adopted.

The AB 197 analysis in Chapter 3 of the 2022 Scoping Plan provides GHG and criteria pollutant emissions reductions relative to the Reference Scenario for the measures in the Scoping Plan Scenario in 2035 and 2045, which based on these estimates, are expected to provide air quality benefits (see Table 3-5). Furthermore, the public health analysis used these criteria pollutant emissions estimates to understand the relative health benefits of the various actions in the 2022 Scoping Plan. Section 10 of Chapter 4 of the Recirculated Draft EA describes the impacts and benefits on hydrology and water quality from implementation of the reasonably foreseeable compliance responses in the 2022 Scoping Plan.

566-6: The commenter states, "For instance, by not analyzing the lifecycle impacts or local impacts of GHG reduction measures, the Board is blind to the following impacts:

- Increased groundwater contamination from the expansion of dairy herd sizes in the production of biofuels and associated water supply impacts.
- The significant local impacts, including potential hazards and air quality deterioration, of CCS.[38] It is also notable that "the [electricity generation sector target] does not include any additional load to implement CO2 removal through CCS [carbon capture and storage] or direct air capture."[39] CARB cannot proceed with this proposal without knowing the extent of the additional load which could jeopardize meeting our SB 100 target.
- The health and safety costs presented by hydrogen produced from steam methane reformation, gasification, or pyrolysis of biogas and biomass.[40]

[40] See e.g. American Medical Association, Resolution 438 Informing Physicians, Health Care Providers and the Public About the Dangers of Fossil-Fuel Derived Hydrogen (2022), https://www.ama-assn.org/system/files/a22-refcmte-d-report-annotated.pdf.

Response: The First Draft EA discusses the potential environmental impacts associated with installing of an anaerobic digester at a dairy. Digesters are commonly implemented within an existing manure management system with potentially resultant impacts assumed to be similar to or lessened compared the pre-installation impacts of the facility due to environmental protection measures installed in combination with or because of the digester system. These include solid liquid separation systems that facilitate better nutrient control, digester linings that protect water quality by improved wastewater containment, and biogas capture and cleanup equipment that reduces air pollutant emissions. Available information on established trends indicate that have been consolidating onto fewer, larger farms but the number of dairies and the total number of dairy animals has been in decline for decades prior to the development of biofuels. The remainder of this comment does not raise significant dairy and livestock specific environmental issues related to the First Draft EA, nor does it otherwise address the accuracy, adequacy, or completeness of the Frist Draft EA for this sector. Therefore, no dairy- and livestock-specific changes to the First Draft EA are required in response to this comment.

Please refer to Master Response 3 regarding CCS energy impacts and response to comment 296-5 regarding hydrogen production impacts.

566-7: The commenter states, "Finally, the fossil fuel electricity system is fundamentally damaging to wildlife. Fossil fuel production, transmission, generation, and waste disposal activities cause a wide array of harms to species and ecosystems, such as destroying and fragmenting wildlife habitat, reducing water supplies often in water-stressed areas, causing air, noise, and light pollution; contaminating surface and ground water; and facilitating the spread of ecologically disruptive invasive species,[41] with similar harms in the offshore marine environment.[42] For many species, harms from the fossil fuel-based energy system have led to mortality, changes in behavior, population declines, disruptions to community composition, and loss of ecosystem function.

[41] Butt, Nathalie et al., Biodiversity risks from fossil fuel extraction, 342 Science 425 (2013); Brittingham, Margaret C. et al., Ecological risks of shale oil and gas development to wildlife, aquatic resources and their habitats, 48 Enviro. Sci. and Tech. 11,034 (2014); Pickell, Paul D. et al., Monitoring forest change in landscapes under-going rapid energy development: challenges and new perspectives, 3 Land 617 (2014); Souther, Sara et al., Biotic impacts of energy development from shale: research priorities and knowledge gaps, 12 Frontiers in Ecol. and the Enviro. 330 (2014); Allred, Brady W. et al., Ecosystem services lost to oil and gas in North America, 348 Science 401 (2015); Harfoot, Michael B. et al., Present and future biodiversity risks from fossil fuel exploitation, 11 Conserv. Letters 12,448 (2018).

[42] Venegas-Li, Rubén et al., Global assessment of marine biodiversity potentially threatened by offshore hydrocarbon activities, 25 Global Change Bio. 2009 (2019)."

Response: The comment addresses adverse environmental effects related to the fossil fuel electricity system. The 2022 Scoping Plan seeks to substantially reduce the use of fossil fuels in California and reflects the direction from the Governor that state agencies plan for an energy transition that avoids the need for new natural gas power plants (see also Recirculated Draft EA). This comment does not address the adequacy, accuracy, or completeness of the First Draft EA and no further response is required.

566-8 The commenter states, "Pursuant to AB 32, AB 197, and CEQA, CARB must include an analysis of these additional costs to society in the Scoping Plan and the environmental review of the 2022 Scoping Plan."

Response: Pursuant to CEQA Guidelines Section 15131, economic or social effects shall not be treated as significant effects on the environment unless they result in a physical change that may affect the environment. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

566-9: The commenter states, "Warehouse and logistics development in particular is a well-documented source of greenhouse gas emissions and air quality degradation that can create serious, negative health outcomes for surrounding communities.[74] Particulate emissions from diesel vehicles contribute to "cardiovascular problems, cancer, asthma, decreased lung function and capacity, reproductive health problems, and premature death."[75] With the rapid increase in global trade, the Ports of LA and Long Beach have become a primary entryway for

goods, processing over 40 percent of all imports into the United States, and accounting for 20 percent of diesel particulate pollutants in southern California—more than from any other source.[76] These goods are 'transloaded' before leaving Southern California, meaning that they spend some time in warehouse storage facilities before they reach their final destination.[77] This has resulted in a massive, unchecked expansion of warehouse development throughout Southern California, creating a logistics hub so massive that it is now visible from space.[78] This growth continues unchecked and is now bleeding into open space areas in Coachella Valley and elsewhere, choking airways and driving habitat loss. The Proposed Scoping Plan makes little mention of the supply chain/logistics industry, which drives these impacts. CARB must coordinate with regional planning and transportation agencies to ensure that the logistics industry is planned with intention, away from existing residential communities, and that the attendant environmental impacts are limited to the extent feasible.

[74] Betancourt, S. & Vallianatos, M., Storing Harm: The Health and Community Impacts of Goods Movement Warehousing and Logistics. The Impact Project Policy Brief Series (2012), https://envhealthcenters.usc.edu/wp-content/uploads/2016/11/Storing-Harm.pdf.
[75] Betancourt 2012 at 5.
[76] Minkler, Meredith, et al., Community-Based Participatory Research: A Strategy for Building Healthy Communities and Promoting Health through Policy Change, PolicyLink (2012).
[77] Betancourt 2012.
[78] Pitzer College, Warehouses Visible from Space (2022) https://www.pitzer.edu/redfordconservancy/warehouses-visible-from-space/."

Response: The comment does not raise any significant environmental issues associated with the proposed 2022 Scoping Plan Update. However, CARB does proactively search out, review, and submit comments on proposed freight projects proposed to agencies around the state, such as warehouses and rail facilities, undergoing environmental review under the National Environmental Policy Act (NEPA) and CEQA.

566-10: The commenter states, "Metals mining is one of the world's dirtiest industries, responsible for at least 10% of greenhouse gas emissions. Mining is linked to environmental destruction, freshwater contamination and depletion, human rights abuses, forced displacement, loss of livelihood, violent conflict, unsafe working conditions, and illicit financial flows in many parts of the world. As California leads the way to a clean energy future, we can reduce the risk of harm from metals mining by requiring EV manufacturers to maximize recyclability, minimize toxicity, conduct mandatory due diligence on their supply chains, and where new mining is necessary, require that it be done following the best standards for environmental protection and respect for human rights via independent, third-party verification."

Response: The source and scope of the commenter's statement that metals mining is responsible for at least 10 percent of global GHG emissions is unclear. However, worldwide GHG emissions data staff reviewed from 2010 in the IPCC 5th Assessment Report suggests

mining may represent less than 10 percent of global emissions.[57] CARB recognizes that its rules and regulations aimed to decarbonize the state through use of zero-emission technology may induce new demand for various metals including lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, and aluminum. Additionally, the production of hydrogen fuel cells commonly requires the use of platinum. CARB does not intend to limit the types of batteries that may be used to comply with zero-emission vehicle requirements under the 2022 Scoping Plan and recognizes that future zero-emission technologies may be developed that use other minerals, metals, or resources. CARB also recognizes that it is not solely responsible for an increase in demand for these metals; rather, they are global commodities.

The federal government recently enacted legislation providing significant support for ZEVs. The Inflation Reduction Act of 2022[58] provides significant tax credits for new and used ZEVs[59] and electric vehicle charging infrastructure.[60] It provides an advanced manufacturing tax credit for production of critical minerals used in ZEV batteries[61] and appropriates $500 million for "enhanced use" under the Defense Production Act to incentivize critical mineral production.[62] It authorizes the Department of Energy to commit up to an additional $40 billion in loan guarantees (on top of an existing program of $24 billion) for innovative technologies, which includes projects that avoid GHGs and other air pollutants or that employ new or improved technologies.[63] Various international efforts are also underway to electrify the mobile-source sector pursuant to commitments made in the European Union,[64] United Nations (UN) Paris Accord, Kyoto Protocol, and by members of the Under2 Coalition, among others. It is also important to note that ICEVs require aluminum alloys, magnesium, iron, and steel, which are all metals that already require extensive mining with similar physical impacts to the environment that were identified in Chapter 4 of the First Draft EA, including loss of habitat, agricultural resources, and forests; water, air, and noise pollution; and erosion. As a result, while federal and international action are likely to independently cause environmental impacts related to critical minerals, including those impacts analyzed in the First Draft EA for the 2022 Scoping Plan, CARB has nonetheless conservatively analyzed the

[57] Energy consumption for mining and quarrying is reported to be 2.7 percent of industrial energy use and is included in "other industries" in Figure 10.4 and Table 10.3 (ipcc_wg3_ar5_chapter10.pdf). Emissions associated with ferrous and non-ferrous metals are about 4.5 percent of global GHG emissions (2010 global emissions summarized at: ipcc_wg3_ar5_summary-for-policymakers.pdf). Another source of data shows 7.5 percent of emissions from metals mining in 2016, https://ourworldindata.org/emissions-by-sector#direct-industrial-processes-5-2.

[58] Pub.L. No: 117-169 (Aug. 16, 2022) 136 Stat. 1818.

[59] *Id.*, § 13401, amending 26 U.S.C. § 30D.

[60] *Id.*, § 13404, amending 26 U.S.C. § 30C.

[61] *Id.*, § 13502, adding 26 U.S.C. § 45X.

[62] *Id.*, § 30001.

[63] *Id.*, § 50141.

[64] Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) 2019/631 as regards strengthening the CO_2 emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition, COM/2021/556 final, May 11, 2022.

full range of reasonably foreseeable environmental effects that may result from the 2022 Scoping Plan.

In response to the industry's electrification commitments and potential obligations, the recycling of lithium-ion batteries is also increasing to ensure that minerals are recovered and reused instead of discarded.[65] Widespread battery recycling would keep hazardous materials from entering the waste stream, both at the end of a battery's useful life and during its production. Work is now under way to develop battery-recycling processes that minimize the lifecycle impacts of using batteries in vehicles. Batteries that power vehicles will be recycled at recycling facilities, where they will be transformed into valuable scrap commodities like cobalt, copper, nickel, and lithium carbonate, which can then be used to produce another battery more efficiently. Battery recycling can also reduce the demand for virgin materials used in the production of new batteries.[66] Policy recommendations aimed at ensuring that as close to 100 percent as possible of lithium-ion vehicle batteries in the state are reused or recycled at end-of-life in a safe and cost-effective manner have also been submitted to the California Legislature by the Lithium-Ion Car Battery Recycling Advisory Group.[67]

New sources of lithium, among other minerals, have been identified internationally and domestically, including new mining opportunities in California's Imperial Valley. The CEC's Lithium Valley Commission estimates that the Imperial Valley may have sufficient lithium supplies to meet 40 percent of the world's total lithium demand, which would be coupled with renewable energy and more sustainable extraction processes (a final report is expected to be submitted to the State Legislature by October 2022). Industry is also rapidly moving to batteries with different chemistries or formats to address concerns with mineral supply chain issues or human rights concerns.[68] Moreover, as a component of the Advanced Clean Cars II program, CARB is proposing that ZEV batteries be labelled to enable second use and recycling processes to conserve semi-precious metals used in the manufacturing process of ZEV batteries. The Advanced Clean Cars II program also includes provisions that would result in longer-lasting ZEVs, such as minimum requirements for range and durability, that could help reduce disposal impacts from ZEVs when compared to ICEVs.

The First Draft EA makes a good faith effort to disclose the potentially adverse environmental impacts related to the mining, manufacturing, and recycling of lithium-ion and even nickel-hydride batteries throughout its analysis consistent with Section 15002(g) of the State CEQA

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[65] Redwood Materials, Inc. 2022. *California Electric Vehicle & Hybrid Battery Recycling Program.* Accessed August 8, 2022. https://www.redwoodmaterials.com/california-recycling-program#.

[66] Dunn, Jessica, Margaret Slattery, Alissa Kendall, Hanjiro Ambrose, and Shuhan Shen. 2021. "Circularity of Lithium-Ion Battery Materials in Electric Vehicles." *Environ. Sci. Technol.* 2021, 55, 8, 5189–5198. https://pubs.acs.org/doi/abs/10.1021/acs.est.0c07030.

[67] California Environmental Protection Agency. 2022. Lithium-Ion Car Battery Recycling Advisory Group Final Report. March 16. Accessed June 16, 2022. https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022_AB-2832_LithiumIon-Car-Battery-Recycling-Advisory-Goup-Final-Report.pdf.

[68] Visnic, Bill. 2020. "GM's Ultium Battery System Future-Proofed." *SAE International*. May 22. Accessed March 11, 2022. https://www.sae.org/news/2020/05/gm-ultium-battery-update.

Guidelines.[69] Potentially adverse impacts related to mining activities are identified in various portions of the First Draft EA including Sections 4.111, 4.2.1, 4.4.2, and 4.10.2 among other impacts. The First Draft EA analysis draws conclusions and makes disclosures while avoiding mere speculation that is not allowed under CEQA.

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

As emphasized in the First Draft EA throughout Chapter 4, following the recommendation of resource-specific project-level mitigation measures, the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with the First Draft EA does not attempt to address project-specific details of mitigation; there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. The First Draft EA makes a good faith effort to disclose potentially significant impacts and proposes project-level mitigation measures that could be implemented to reduce impacts. Pursuant to Section 15002(g) of the CEQA Guidelines, the First Draft EA identifies a significant effect, and CARB, the legal entity approving the 2022 Scoping Plan, determines whether the adverse environmental effects can be substantially reduced and explains why they may not. In the context of the First Draft EA, and the potentially significant impacts identified that may occur outside of the state, CARB cannot, without speculating, precisely predict the locations of these impacts nor account for the regulatory environment that may be capable of reducing impacts to a less-than-significant level. For instance, mining activities that occur overseas in countries that may have fewer regulations in place to mitigate environmental impacts are beyond CARB's authority to mitigate or regulate. Nevertheless, these potential adverse impacts are identified and disclosed in the First Draft EA.

The First Draft EA summarizes potential short-term construction-related and long-term operational-related effects to mineral resource impacts and discloses data pertaining to worldwide production and reserves for lithium, nickel, cobalt, platinum, and palladium. Implementation of the 2022 Scoping Plan and associated compliance responses could result in an increase in mining for critical minerals, but the impact would be generally small when

[69] California Code of Regulations, title 14.

viewed in the context of global mineral markets. Moreover, most importantly here, Appendix G of the CEQA Guidelines considers an impact on mineral resources to be the loss of availability of a known mineral resource that would be of value to a local entity, a region or the state. Local jurisdictions are responsible for identifying appropriate areas to protect and/or allow mining of mineral resources. Facilities developed in response to implementation of the 2022 Scoping Plan would be in areas within existing footprints or in areas with consistent zoning where local permitting and analysis considers these issues, and would help avoid precluding access to a known mineral resource. And there is no evidence to suggest that the incremental mineral demand relating to the 2022 Scoping Plan has any potential to result in the loss of availability of a known mineral resource of value to the state or to the residents of the state, or result in the loss of availability of a locally-important mineral resource recovery site identified in a local land use plan. (See CEQA Appendix G, Section XII, Mineral Resources.)

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

To the extent this comment address economic or other non-environmental impacts, such impacts are beyond the scope of the First Draft EA.

566-11: The commenter states, "First and foremost, we reject the premise that CCS is a necessary—or even appropriate—approach to addressing the climate crisis and pollution burdens borne by frontline and fenceline communities. After billions of dollars of investment and decades of development, deployment of CCS has consistently proven to be ineffective, uneconomic, and unnecessary. CCS projects around the world have failed to meet their GHG emission reduction promises and have harmed people and the environment. Moreover, the types of dirty energy CCS will enable and prolong, and the infrastructure and energy required for carbon capture utilization and storage (CCUS), will cause additional pollution in communities already suffering from unhealthy air and water quality."

Response: Please refer to Master Response 3.

566-12: The commenter states, "These real-world failures of CCS projects don't even take into account the lifecycle emissions of CCS projects. And as the Institute for Energy Economics and Financial Analysis ("IEEFA") notes, the energy required to capture, transport, and inject carbon underground "materially reduces its net benefit."[85] For example, coal-fired power plants with carbon capture have an energy penalty of 25% or more, with the efficiency penalty as high as 15%.[86] These "penalties" mean more fuel has to be burned to produce the

same amount of power, which means higher energy costs, greater emissions of non-CO2 air pollutants, and increased demand on the grid.[87] And any CO2 that is stored underground risks leakage back to the atmosphere, based on the long track record of fossil fuel industry leaks and spills.[88]

85 Butler, Clark, IEEFA, Carbon Capture and Storage Is About Reputation, Not Economics at 4 (2020), https://ieefa.org/wp-content/uploads/2020/07/CCS-Is-About-Reputation-Not-Economics_July-2020.pdf.
86 Climate Action Network Int'l, CAN Position: Carbon Capture, Storage, and Utilisation at 9 (2021), https://climatenetwork.org/resource/can-position-carbon-capture-storage-and-utilisation/ [hereinafter CAN Position].
87 Id.
88 The myth of permanent carbon sequestration is echoed in regulations that merely kick the climate problem down the road and onto future generations. Under EPA's regulations for Class VI injection wells for CO2, for example, a permit applicant need only show that they can store CO2 for 50 years in order to qualify for subsidies. 40 C.F.R. § 146.93. California's Low Carbon Fuel Standards doesn't fare much better, requiring only 100 years of storage. CARB, Accounting and Permanence Protocol for Carbon Capture and Geologic Sequestration under Low Carbon Fuel Standard (2018), https://ww2.arb.ca.gov/sites/default/files/2020-03/CCS_Protocol_Under_LCFS_8-13-18_ada.pdf ("'Permanent sequestration' or 'permanence' means the state where sequestered CO2 will remain within the sequestration zone for at least 100 years.").

Response: Please refer to Master Response 3 regarding emissions and potential health impacts of mechanical CDR and CCS projects.

Please also refer to Master Response 2 related to safety of CO_2 pipelines, capture chemicals, and geologic storage of CO_2.

As described in the Final Statement of Reasons for the 2018 Amendments to the Low Carbon Fuel Standard,[70] CARB chose 100 years[71] as the standard for permanent reduction of CO_2 from all sequestration projects following IPCC guidance.[72] In other words, carbon must be proven and verified to be sequestered for 100 years in order to be considered permanent emission avoidance, and thus equivalent to a non-reversible reduction in emissions (e.g., solar, increased efficiency, fuel switching).

566-13: The commenter states, "CCS projects also can harm people because of the emission of harmful air pollutants such as fine particulate matter, ammonia, and hazardous volatile organic compounds.[94] Further, toxic chemicals like lye and ammonia are used to "capture"

[70] California Air Resources Board. 2018. Amendments to the Low Carbon Fuel Standard Regulation and to the Regulation on Commercialization of Alternative Diesel Fuels. Available: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/fsorlcfs.pdf. Accessed: September 2022.

[71] CARB also successfully defended this standard in court.

[72] Land Use, Land-Use Change and Forestry. IPCC Webpage. Accessed: February 17, 2018. Available: http://www.ipcc.ch/ipccreports/sres/land_use/index.php?idp=74.

carbon.[95] Megatons of these dangerous chemicals must be produced, transported, and handled to operate carbon capture at scale, and will eventually be disposed of, putting communities at risk. And because CCS enables the underlying emissions-generating activity (such as fossil fuel power generation) to continue, upstream and downstream impacts from activities such as fossil fuel extraction, refining, transport, use, and disposal will continue to harm people's health, particularly in overburdened communities.[96]

A recent study confirmed that the lifecycle pollution and social harms from CCS fossil fuel-fired powerplants result in more harm than good. The researchers examined the net CO2 reduction and total lifecycle cost of carbon capture from a coal plus CCS power plant, and a plant that removes carbon directly from the air.[97] They "account[ed] for the electricity needed to run the carbon capture equipment, the combustion and upstream emissions resulting from that electricity, and, in the case of the coal plant, its upstream emissions," with the upstream component including leaks and combustion, mining, and fuel transportation, and found that CCS "reduces only a small fraction of carbon emissions, and it usually increases air pollution."[98] Because of the lifecycle pollution and the harms arising from that, the study authors recommended replacing fossil fuels with renewables such as wind or solar rather than encouraging and investing in CCUS.[99] Black, Brown, and Indigenous communities already overburdened by fossil fuel pollution and disproportionately harmed by the climate crisis are again being targeted for CCUS infrastructure. Companies in Louisiana, for example, are eyeing parts of that state for what would be among the largest CCUS projects in the world, despite those areas being heavily overburdened by decades of toxic pollution and ongoing industrial accidents.[100] California's Central Valley is also being targeted for CCUS projects, even though that area has the state's worst air quality.[101]

94 Kubota, Taylor, Stanford Study casts Doubt on Carbon Capture, Stanford News (Oct. 25, 2019), https://news.stanford.edu/2019/10/25/study-casts-doubt-carbon-capture/ ("Stanford Report Summary"), citing Jacobson, Mark Z., The health and climate impacts of carbon capture and direct air capture, 12 Energy Envt. Sci. 3567 (2019), https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee02709b/unauth#!divAbstract.

95 Cong. Research Serv., R44902, Carbon Capture and Sequestration (CCS) in the United States at 4-5 (2021), https://sgp.fas.org/crs/misc/R44902.pdf.

96 CIEL CCS Report at 7 (citing, for example, a Harvard study finding that fine particulate matter emitted with fossil fuel burning is responsible for millions of deaths worldwide).

97 Stanford Report Summary.

98 Id. (emphasis added).

99 Id. ("There is a lot of reliance on carbon capture in theoretical modeling, and by focusing on that as even a possibility, that diverts resources away from real solutions. It gives people hope that you can keep fossil fuel power plants alive. It delays action. In fact, carbon capture and direct air capture are always opportunity costs.").

100 See, e.g., Gulf Coast Sequestration, Gulf Coast Sequestration Makes Initial Filing to Obtain EPA Permit for CCS Project (Oct. 13, 2020), https://gcscarbon.com/media/gulf-coast-sequestration-makes-initial-filing-to-obtain-epa-permit-for-ccs-project/; see also Robinson, Andrea, Wednesday's explosion marks second in four months for Westlake Chemical, KPLC, Jan. 27, 2022, https://www.kplctv.com/2022/01/28/wednesdays-

explosion-westlake-chemical-marks-second-four-months/; Rogers, Heather, Erasing Mossville: How Pollution Killed a Louisiana Town, Intercept, Nov. 4, 2015, https://theintercept.com/2015/11/04/erasing-mossville-how-pollution-killed-a-louisiana-town/.

[101] See, e.g., American Lung Association, State of the Air: Most Polluted Cities, ,https://www.lung.org/research/sota/city-rankings/most-polluted-cities (last visited Apr. 12, 2022) (listing the nation's most polluted cities, where three of the top five are in California's Central Valley); see also Stanford Report Summary.

Response: Please refer to Master Response 3 regarding emissions and potential health impacts of mechanical CDR and CCS projects.

Please also refer to Master Response 2 related to safety of CO_2 pipelines and capture chemicals.

566-14: The commenter states, "Fourth, the Plan baselessly asserts that CCS is "equity-focused." By design, CCS enables an underlying emissions-generating activity (like fossil fuels or biomass) to continue by capturing some of the CO2 it would otherwise emit. CCS therefore locks in emissions and health harms of dirty industries for decades to come. With most of California's CCS projects planned for the Central Valley, where communities are overburdened by pollution already, CCS development will make these communities bear the brunt of industries that will further pollute the air and water. And because CO2 pipeline leaks can also be deadly, placing these pipelines and injection sites even within miles of homes, schools, and other populated areas means risking lives.[111] CARB's vague reference to EJAC concerns and the idea for a "multi-stakeholder process…to further understand and address" concerns is not enough, particularly when simultaneously advancing a Scenario that relies heavily on CCS.[112]

Similarly, a recent report by the Pipeline Safety Trust calls out CO2 pipelines as "dangerous and underregulated."[113] This analysis applies not only to federal pipeline regulations but also those within California. In the State, the Office of the State Fire Marshall regulates intrastate hazardous liquid pipelines, whereas the California Public Utilities Commission regulates intrastate gas pipelines.[114] But as the Pipeline Safety Trust points out, CO2 for CCS can be in liquid, gas, or supercritical form. CO2 in a supercritical state can be categorized as either a liquid or gas and is not currently codified under either statutory or regulatory scheme. This is a problem because, as the Pipeline Safety Trust explains:

> Carbon dioxide has different physical properties from products typically moved in hazardous hydrocarbon liquid or natural gas transmission pipelines. Those differences pose unique safety hazards and greatly increase the possible affected area or potential impact radius upon a pipeline release that would endanger the public. CO2 pipeline ruptures can impact areas measured in miles, not feet. The way regulations currently consider and mitigate for the risks posed by hydrocarbon pipelines in communities are neither appropriate nor sufficient for CO2 pipelines.[115]

And since all CCS projects require moving compressed CO2 through pipelines, this is an immediate and alarming concern that should halt any CCS development until it is addressed.

[111] Zegart 2021.
[112] Scoping Plan at 70; see also page 177.
[113] Pipeline Safety Trust, Carbon Dioxide Pipelines: Dangerous and Under-Regulated (Mar. 23, 2022), https://pstrust.org/wp-content/uploads/2022/03/CO2-Pipeline-Backgrounder-Final.pdf.
[114] Cal. Gov. Code § 51010; Cal. Pub. Util. Code § 955.
[115] Pipeline Safety Trust 2022."

Response: Please refer to Master Response 2 related to safety of CO_2 pipelines, capture chemicals, and geologic sequestration of CO_2.

566-15: The commenter states, "Evidence shows that like coal and oil, woody biomass is a carbon-burning form of energy production that emits carbon dioxide and contributes to the climate crisis. Biomass power plants are California's dirtiest electricity source—releasing more carbon at the smokestack than coal.[120] The average GHG emission rate for California's current electricity portfolio is about 485 pounds carbon dioxide equivalent (CO2e) per megawatt hour (MWh).[121] In 2018, woody biomass power plants in California emitted more than seven times that amount, averaging 3,500 pounds CO2e per net MWh for non-cogeneration facilities.[122]

Despite the substantial carbon pollution from biomass power, biomass proponents claim that cutting and incinerating forests is inherently "carbon neutral," i.e., that it does not cause net GHG emissions. The science simply does not support this claim. While biomass proponents try to discount the carbon released by biomass power plants by taking credit for the carbon absorbed by future tree growth, there is no requirement that forests cut down for biomass energy be allowed to regrow instead of being cut again and again, and or that forests won't be developed into other land uses. And even if trees are allowed to regrow, numerous studies show that it takes many decades to more than a century—if ever—for new trees to grow large enough to capture the carbon that was released.[123] One study concluded that the increase in atmospheric GHGs may be permanent.[124] Intact forests are a vital part of the climate solution because they pull carbon out of the air and provide long term, natural storage.[125] And studies show that thinning forests to control fire actually reduces forest carbon stocks and increases overall carbon emissions.[126]

In addition to not being a climate solution, research has concluded that BECCS can have negative impacts on the climate, food security, biodiversity, forest ecosystems, water use, and land use rights.[127]

[121] CARB, California Greenhouse Gas Emissions for 2000 to 2018, Trends of Emissions and Other Indicators (2020 Edition) at Figure 9 (GHG Intensity of Electricity Generation); see also CARB, 2000-2018 Emissions Trends Report Data (2020 Edition) at Figure 9, showing the overall GHG Intensity of Electricity Generation in 2018 of 0.22 tonnes CO2e per MWh, which is equal to 485 pounds per MWh. These calculations were based on the 2020

trends report, however the 2021 edition, California Greenhouse Gas Emissions for 2000 to 2019, Trends of Emissions and Other Indicators (July 28, 2021) (Figure 9) shows a similar number (0.21 tonnes CO2e per MWh), https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (data available for download at https://ww2.arb.ca.gov/ghg-inventory-data).

[122] Total CO2e emissions for each facility in 2018 come from California Air Resources Board Mandatory GHG Reporting Emissions data, available at CARB, Mandatory GHG Reporting – Reported Emissions, https://ww2.arb.ca.gov/mrr-data (last visited June 23, 2022). Data on net MWh produced by each facility in 2018 come from the Cal. Energy Comm'n, California Biomass and Waste-To-Energy Statistics and Data, https://ww2.energy.ca.gov/almanac/renewables_data/biomass/index_cms.php (last visited June 23, 2022). Total CO2e produced by the 9 electricity only, non-cogeneration active woody biomass facilities with available data totaled 2,127,693 metric tons, and net MWh in 2018 from these 9 facilities totaled 1,334,346 MWh, for an average of 1.59 metric tons CO2e per net MWh, equal to 3,515 pounds CO2e per net MWh. The average of 3,515 pounds CO2e per MWh includes electricity-only plants; cogeneration plants are excluded because some of their CO2 emissions are from heat-related fuel consumption. The high CO2e rate-per-MWh is similar for biomass facilities without cogeneration.

[123] See, e.g., Booth, Mary S., Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy, 13 Environmental Research Letters 035001 (2018); Sterman 2018.

[124] Holtsmark, Bjart, The outcome is in the assumptions: Analyzing the effects on atmospheric CO2 levels of increased use of bioenergy from forest biomass, 5 GCB Bioenergy 467 (2012).

[125] Moomaw, William R. et al, Intact forests in the United States: proforestation mitigates climate change and serves the greatest good, Frontiers in Forests and Global Change, doi: 10.3389/ffgc.2019.00027 (2019).

[126] Mitchell, S.R. et al., Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems, 19 Ecological Applications 643 (2009); Campbell, J.L. & A.A. Ager, Forest wildfire, fuel reduction treatment, and landscape carbon stocks: a sensitivity analysis, 121 Journal of Environmental Management 124 (2013); DellaSala, D.A. & M. Koopman, Thinning Combined with Biomass Energy Production Impacts Fire-Adapted Forests in Western United States and May Increase Greenhouse Gas Emissions, Reference Module in Earth Systems and Environmental Sciences (2016).

[127] Heck, Vera et al., Biomass-based negative emissions difficult to reconcile with planetary boundaries, 8 Nature Climate Change 151 (2018), https://doi.org/10.1038/s41558-017-0064-y."

Response: CARB disagrees with the comments because the 2022 Scoping Plan does not examine every technology or action in isolation to determine if each one is carbon neutral by itself. The 2022 Scoping Plan is a statewide modeling exercise, therefore the impact to forest carbon stocks of cutting and removing biomass is considered, along with the regrowth of the forest separately. The commenter is correct that thinning reduces carbon stocks in the short term—as discussed in the 2022 Scoping Plan, "By proactively managing forests and shrublands, the loss of carbon from wildfire can be lessened as the risk of high severity fire is

decreased, with the removed biomass going toward a more useful purpose such as harvested wood products, bioenergy, or engineered carbon removal."

State policy generally supports using waste biomass as an alternative to fossil fuels and using timber as an alternative to carbon-intensive building materials such as steel and concrete, but does not generally support cutting down trees expressly for bioenergy. Urban, agricultural, and forest wastes that would otherwise go to landfills or be burned without emission controls can, instead, be used to produce electricity, combined heat and power, or biofuels for use in hard-to-decarbonize sectors including transportation and heavy industry. Using biomass waste also complements other State mandates, such as organic waste diversion and fire-risk reduction. It should be noted that the application of bioenergy with carbon capture and sequestration (BECCS) is not limited to the use of solid organic waste biomass; CCS can be paired with other sources of biogenic carbon dioxide, such as the CO_2 generated by microbes during the process of fermentation and anaerobic digestion, including from landfill gas capture and similar processes that exist today.

Reported climate benefits aside from displacement of fossil fuels, the First Draft EA recognizes that biomass power generation does emit criteria pollutants and TACs (see First Draft EA pages 61-71) but notes that increases in the levels of these pollutants from stationary sources would be regulated through the local air district permitting process. No changes to the First Draft EA are required in response to this comment. The comments are noted and are being provided to the Board members for their consideration.

566-16: The commenter states, "BECCS comes with the risks and harms to the climate and communities of CCS, described in detail earlier in this comment. These include emission of co-pollutants and the very serious harms associated with CO2 pipeline leaks and ruptures.

Biomass power plants are a significant source of air pollutants, harming the vulnerable communities where biomass facilities are located and worsening environmental injustice. Biomass power plants emit toxic air pollutants, including particulate matter (PM), nitrogen oxides (NOx), carbon monoxide (CO), sulfur dioxide (SO2), lead, mercury, and other hazardous air pollutants that harm public health.[130] Biomass power plant pollution can exceed that of coal-fired power plants even when the best available control technology is used.[131] In California, biomass power plants are among the worst emitters of particulate matter and NOx.[132] Biomass power plants also emit hazardous air pollutants, including hydrochloric acid, dioxins, benzene, formaldehyde, arsenic, chromium, cadmium, lead, and mercury.[133]

[130] Partnership for Policy Integrity, Air pollution from biomass energy (updated April 2011), https://www.pfpi.net/wp-content/uploads/2011/04/PFPI-air-pollution-and-biomass-April-2011.pdf.

[131] Id.

[132] For example, Roseburg Forest Products ranked as the 21st biggest stationary source of fine particulate matter out of 591 sources state-wide in 2017, according to facility-level emissions data from the CARB, CARB Pollution Mapping Tool, https://ww3.arb.ca.gov/ei/tools/pollution_map/pollution_map.htm (last visited June 23, 2022).

[133] Partnership for Policy Integrity 2011."

Response: In response to public comment, the analysis has been expanded in the Recirculated Draft EA for carbon dioxide pipelines associated with potential atmospheric mechanical carbon dioxide removal projects and carbon capture and storage projects (pages 152-153 of the Recirculated Draft EA). Part of this comment is related to the characterization of criteria and toxic pollutant emissions from conventional woody biomass power plants in the 2022 Scoping Plan; refer to response to comment 566-15. The remainder of this comment does not specifically speak to the adequacy, accuracy, or completeness of the First Draft EA. No further response is required.

566-17: The commenter states, "Presenting a more immediate threat to health and safety is leakage of captured CO2. At present, CO2 pipelines are "dangerous and under-regulated," with no fix to that regulatory gap in sight.[135] This is alarming and concerning to communities that live in areas where CO2 pipelines would likely be placed—such as the Central Valley—because CO2 is an asphyxiant that can lead to suffocation and death, even when there is a leak into the ambient atmosphere.[136]

[135] Pipeline Safety Trust 2022.
[136] Zegart 2021."

Response: Please refer to Master Response 3 related to safety of CO_2 pipelines, capture chemicals, and geologic sequestration of CO_2.

566-18 In a comment regarding the Scoping Plan's discussion of aviation fuels, the commenter states, "The Plan ignores the emissions and environmental consequences associated with many of the alternative fuels being considered that would disqualify them from use."

Response: The low carbon fuels actions in the First Draft EA's project description encompass the reasonably foreseeable compliance responses associated with deployment of sustainable aviation fuels (or alternate jet fuels). Collectively, the First Draft EA concluded the implementation of the low carbon fuels actions could result in beneficial impacts to air quality (long-term operational) and GHG emissions (construction and long-term operational); less than significant impacts to energy demand, mineral resources, population and housing, public services, recreation, and wildfire; and potentially significant impacts to aesthetics, agriculture and forest resources, air quality (construction-related), biological resources, cultural resources, geology and soils, hydrology and water quality, land use, transportation, tribal cultural resources, and utilities. Please refer to the First Draft EA for further details. No changes to the First Draft EA are required in response to this comment.

566-19: The commenter states, "Food crop-based feedstocks yield GHG emissions comparable to fossil fuels, so they are not sustainable. Meanwhile, animal fats and animal manure are products of the polluting animal agriculture industry, and their use further incentivizes the industry's expansion and its environmental harms. Relying on wood biomass or forestry residues could promote forest logging, hence destroying a significant carbon sink.

Finally, energy crops and algae are far from commercial readiness and at present also pose an environmental burden."

Response: Please refer to response to comment 566-15 regarding logging and response to comment 566-18 regarding the short-term and long-term beneficial and adverse impacts for alternative fuels.

566-20: The commenter states, "The Scoping Plan's Proposed Scenario for Natural and Working Lands (NWL) is gravely inadequate to maintain and increase the existing carbon storage and sequestration on these lands. In particular, the Proposed Scenario's massive ramp-up of cutting and habitat clearance of forests and shrublands would be harmful to the climate, biodiversity, and communities, and must be rejected."

Response: The 2022 Scoping Plan NWL analysis, in agreement with published literature as discussed in Chapter 2 of the 2022 Scoping Plan, estimates that NWLs will continue to be a net source of emissions under all alternatives, including an alternative in which no forest, shrubland, and grassland management occurs. The 2022 Scoping Plan increases carbon storage and sequestration on these lands relative to the Reference Scenario. The 2022 Scoping Plan does not include "cutting and habitat clearance of forests and shrublands" as a management strategy and it is not an expected compliance response for assessment in the First Draft EA. The included management strategies are described in Chapter 2 of the 2022 Scoping Plan. The management strategies for forests and shrublands are aimed at increasing forest health and ecological resilience, not cutting or clearing habitat. The 2022 Scoping Plan is estimated to decrease the amount of carbon burned by wildfires by 10% compared to the Reference Scenario. This, along with harvested wood products and biomass utilization is estimated to result in greater carbon storage than the Reference Scenario, and the no management alternative (Alternative 1 in the 2022 Scoping Plan). When assessing the entire carbon budget of the California system carbon storage includes not only the ecosystem carbon but also all the carbon transformed to other pools and uses. The First Draft EA discusses the potential environmental impacts of the forest and shrubland management strategies included in the 2022 Scoping Plan. No changes to the First Draft EA are required in response to this comment.

566-21: The commenter states, "CARB's Proposed Scenario for forests and shrubland calls for a massive ramp up of logging, thinning, and habitat clearance that will reduce carbon stocks and sequestration, increase carbon emissions, fail to reduce wildfire intensity or keep communities safe, and undermine California's climate goals. CARB must reject this dangerous and counter-productive Proposed Scenario. CARB must instead rely on the best-available science, conduct robust modeling that corrects the fatal flaws in its current modeling for forests and shrublands, and evaluate alternatives that will actually maintain and increase carbon storage, while protecting California's climate, communities, and biodiversity, as science and justice require."

Response: "Logging" is a broad term that can include forest management strategies such as thinning, therefore it is unclear what the commenter is referring to when using the term "logging". "Habitat clearance" is not a forest management strategy included in 2022

Scoping Plan. The commenter does not provide any citations supporting their claims of the adverse impacts from thinning. The included management strategies are described in Chapter 2 of the 2022 Scoping Plan. The First Draft EA discusses the potential impacts of the forest and shrubland management strategies included in the 2022 Scoping Plan. The management strategies for forests and shrublands are aimed at increasing forest health and ecological resilience, not cutting or clearing habitat. The literature synthesis performed by CARB staff in Appendix I concludes that certain forest management actions, such as thinning, can reduce loss of live tree carbon after subsequent fire compared to untreated sites. This is also in line with expert feedback CARB received during the NWL analysis. Through the literature synthesis, CARB has relied on the best available science and conducted robust modeling that incorporated the latest science (see Appendix I for details). Indeed, the results of the NWL analysis agree with published literature as discussed in Chapter 2 of the 2022 Scoping Plan. The impacts discussed in the First Draft EA are also based on the best available science and include reasonably foreseeable impacts of the forest and shrubland management strategies included in the 2022 Scoping Plan. The commenter asserts there are "fatal flaws" in CARBs modeling, but no details are provided. No changes to the First Draft EA are required in response to this comment.

566-22: The commenter states, "Carbon offsets have repeatedly failed to reduce emissions, and have been criticized for failing to demonstrate additionality, provide permanence, and control for leakage and gaming.[172] Offsets can result in violations of the rights of Indigenous Peoples.[173]

[172] See e.g., Badgley 2022.
[173] Carbon Market Watch, The Clean Development Mechanism: Local Impacts of a Global System (October 2018)."

Response: The 2022 Scoping Plan does not amend the Cap-and-Trade Regulation, which is an existing regulatory program that is part of the baseline. See response to comment R19-19.

CARB also disagrees with the comment. All offsets utilized as part of the Cap-and-Trade Program are real, additional, permanent, verifiable, quantifiable, and enforceable, as required by AB 32 and defined by the Cap-and-Trade Regulation and the approved Protocols. CARB has developed rigorous offset quantification methods that incorporate the AB 32 criteria and ensure any offset issued and used in the Program meets these criteria. All information supporting development of the Cap-and-Trade Regulation and adopted compliance offset protocols is located in the Cap-and-Trade regulatory documents, which can be found here: https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/cap-and-trade-regulation. Importantly, CARB's method of implementing the statute with respect to offsets was upheld by the First District Court of Appeals in *Our Children's Earth Foundation v. ARB* (2015) 234 Cal. App. 4th 870. The commenter cites criticisms of the offsets program for which CARB has published additional clarification in the form of Frequently Asked Questions located here: https://ww2.arb.ca.gov/resources/documents/faq-cap-and-trade-program. CARB has also published an FAQ document on forest offsets and a Questions and Responses document for an April 29, 2021 story on ProPublica.org that is based on the study noted by the commenter, located here:

https://ww2.arb.ca.gov/sites/default/files/2021-10/nc-forest_offset_faq_20211027.pdf and https://ww2.arb.ca.gov/sites/default/files/2021-04/nc-carb-response-to-propublica-forest-questions.pdf. Recently, CARB held a public workshop on November 30, 2022 on the Compliance Offset Program that included content to address the criticisms noted in the comment and to clarify how the U.S. Forest Projects Compliance Offset Protocol achieves the requirements of AB 32. The presentations for this workshop can be found here: https://ww2.arb.ca.gov/resources/documents/us-forest-offset-workshop-presentations-november-2022. CARB will continue improving the offsets program based on the best available data and science to ensure the AB 32 criteria are met.

With regard to the commenter's statement about offsets potentially violating the rights of Indigenous Peoples, CARB notes that the tribes that have chosen to voluntarily participate in the Cap-and-Trade Regulation's compliance offset program have done so based on their own internal deliberations and governance structures, and CARB supports tribal self-determination and sovereignty.

The reference cited by the commenter regarding its allegations that "offsets can result in violations of the rights of Indigenous Peoples" does not discuss the CARB Compliance Offset Program. The reference discusses an international Clean Development Mechanism (CDM), which is different from CARB's Compliance Offset Program. The reference indicates that the "CDM has failed to adopt sufficiently stringent safeguards against harms to the environment or local people, especially indigenous communities" and cites to four cases located in Uganda, Chile, Guatemala, and India. As mentioned above, not only does the 2022 Scoping Plan not amend the Cap-and-Trade regulation, but neither the Cap-and-Trade regulation, nor the 2022 Scoping Plan are international standards. CARB notes that in 2018, it adopted a Tropical Forest Standard[73] for other subnational jurisdictions to use in assessing jurisdiction-scale programs that reduce emissions from tropical deforestation, which incorporates "*Guiding Principles for Collaboration and Partnership Between Subnational Governments, Indigenous Peoples, and Local Communities*"[74] to help ensure these programs do not result in harms to Indigenous Peoples.

CARB is cognizant of potential impacts to Native American and Indigenous Peoples that could occur relating to any regulatory program or action, even if geared toward environmental protection and appreciates the comment. CARB has engaged in government-to-government consultation with tribal partners on the 2022 Scoping Plan to ensure their perspectives are represented and all actions taken in response to the 2022 Scoping Plan considers potential impacts to tribes.

No changes to the First Draft EA are required in response to this comment.

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[73] CARB, California Tropical Forest Standard, https://ww2.arb.ca.gov/our-work/programs/california-tropical-forest-standard (last visited December 1, 2022).

[74] CARB, California Tropical Forest Standard, Att. 1 (2018), https://ww2.arb.ca.gov/sites/default/files/classic/cc/ghgsectors/tropicalforests/ca_tropical_forest_standard_english.pdf.

566-23: The commenter states, "Executive Order N-82-20 set the goal to conserve 30% of the State's NWLs and coastal waters by 2030. However, the Scoping Plan fails to include policy measures that increase protection of forests, shrublands, wetlands, and other ecosystems to achieve this goal. Increasing ecosystem protection is critical for addressing the interlinked climate and extinction crises, since these ecosystems act as enormous carbon storehouses that pull carbon dioxide out of the air, easing the climate crisis, in addition to providing many other benefits such as wildlife habitat, recreation, flood and erosion control, and clean air and water."

Response: The 2022 Scoping Plan does include avoided conversion of NWLs as a management strategy, and the First Draft EA provides discussion of the potential impacts of avoided conversion. The modeling of forests, shrublands, and grasslands do not include any conversion out of its current land use. However, while conservation is not an explicit action in wildlands, it is assumed in the modeling. Therefore, no changes to the First Draft EA are required in response to this comment.

CARB staff note that the 2022 Scoping Plan is policy agnostic in that it identifies actions that can be taken to reach statewide climate goals but does not prescribe the policy measures or programs that must be put in place to achieve those actions. The process of reviewing and updated policies and programs takes place after the 2022 Scoping Plan is adopted.

566-24: The commenter states, "Instead, the Proposed Scenario calls for a massive ramp-up in deforestation, forest degradation and habitat clearance of 2 to 2.5 million acres of forest, shrublands, and grasslands every year. The best-available science shows that this alternative will reduce forest and shrubland carbon storage and sequestration; increase overall carbon emissions; and fail to reduce wildfire intensity, keep communities safe, or protect public health—thereby undermining California's climate, biodiversity and public safety goals."

Response: The 2022 Scoping Plan does not include deforestation, forest degradation, or habitat clearance as management strategies, nor does it include an increase in these actions. Chapter 2 describes the management strategies included in the 2022 Scoping Plan, which are aimed at wildfire mitigation, increasing ecosystem health, and ecological resilience. These management strategies are supported by the literature synthesis found in Appendix I, as well as subject matter experts consulted for the NWL analysis, and are effective at reducing carbon stock loss, reducing emissions for NWLs, and decreasing wildfire risk. No references/citations are provided in support of the claims made by the commenter. The First Draft EA discusses the potential environmental impacts of the forest and shrubland management strategies that are included in the 2022 Scoping Plan. No changes to the First Draft EA are required in response to this comment.

566-25: The commenter states, "CARB's forest modeling relies on scientifically unsubstantiated assumptions that result in overestimates of wildfire carbon and PM 2.5 emissions under Alternative 1, and result in underestimates of wildfire emissions under the Proposed Scenario. This leads to inaccurate conclusions regarding the public health impacts of the alternatives, which biases CARB's findings against Alternative 1. This must be corrected."

Response: The commenter does not provide any supporting literature or technical details to support their claim that the NWL analysis used unsubstantiated assumptions that lead to inaccurate estimates of wildfire emissions. Appendix I provides the technical details of the NWL modeling. It provides the literature citations that substantiate modeling assumptions as well as the sources of data used in the NWL analysis. The literature synthesis discussed in Chapter 2 of the 2022 Scoping Plan and Appendix I support the results of the wildfire modeling for all alternatives. The public health impacts and GHG emissions disclosed in the First Draft EA Sections 4.3.b and 4.8.a take into account the modeled wildfire emissions. No changes to the First Draft EA are required in response to this comment.

566-26: The commenter states, "As an initial matter, Appendix I is a long, highly complex and often unclear 256-page document that serves as the technical support document for the NWL sector. CARB has not provided adequate time for the public to review this document. For the Forests, Shrublands, and Grasslands section, there are entire modeling analyses and results that were not included in the draft documents, for example, the modeling of "Biomass Residues and Potential Carbon Benefits" on pages 102-120 that is virtually incomprehensible. The modeling assumptions, limitations, inputs and outputs are often not provided, transparent, or understandable, constraining public review. Based on our experience with the notable limitations of the CALAND model, we have repeatedly urged CARB to provide the public with the documentation for the RHESys model, and the models used for other NWL types, early on in the Scoping Plan process, which CARB did not do."

Response: CARB staff have provided all information that was used in the NWL analysis in Appendix I, including the modeling assumptions, limitations, inputs, and outputs. The commenter has not identified specific items that were not provided or that need to be clarified in Appendix I. Documentation for all modeling are either provided or cited in the NWL Appendix I. This comment does not raise any specific environmental issues related to the First Draft EA, nor does it address the accuracy, adequacy, or completeness of the First Draft EA. No changes to the First Draft EA are required in response to this comment.

566-27: The commenter states, "CARB's forest modeling makes the unsubstantiated assumption that the heavier thinning and logging under Alternatives 2, 3, and 4 will decrease fire severity and therefore decrease wildfire emissions. Numerous studies, including a recent review of the science by forest carbon experts Beverly Law, William Moomaw, Tara Hudiburg, William Schlesinger, John Sterman, and George Woodwell concludes that thinning is not effective for reducing fire severity:

> As to the effectiveness and likelihood that thinning might have an impact on fire behavior, the area thinned at broad scales to reduce fuels has been found to have little relationship to area burned, which is mostly driven by wind, drought, and warming. A multi-year study of forest treatments such as thinning and prescribed fire across the western U.S. showed that about 1% of U.S. Forest Service treatments experience wildfire each year. The potential effectiveness of treatments lasts only 10–20 years, diminishing annually. Thus, the preemptive actions to reduce fire risk or severity across regions have been largely ineffective.[180]

Contrary to the assumptions in CARB's modeling, the researchers concluded that "[b]road-scale thinning to reduce fire severity results in more carbon emissions than would be released by fire, creating a multi-decade carbon deficit that conflicts with climate goals" and that "the amount of carbon removed by thinning is much larger than the amount that might be saved from being burned in a fire, and far more area is harvested than would actually burn."[181]

[180] Law, B.E. et al., Creating strategic reserves to protect forest carbon and reduce biodiversity losses in the United States, 11 Land 721 (2022), https://doi.org/10.3390/land11050721, at 7.
[181] Id. at 6; See also Bartowitz, K. et al., Forest carbon emission sources are not equal: putting fire, harvest, and fossil fuel emissions in context, 5 Frontiers in Forests and Global Change 867112 (2022)."

Response: CARB did not make unsubstantiated assumptions as the commenter asserts; CARB relied on the projections from a biogeochemical model driven by global climate models, that was calibrated using flux towers, remotely sensed, and field data, as detailed in Appendix I. No assumptions of the impact of forest management strategies were embedded within the model that might bias the projections. The efficacy of the forest and shrubland management strategies in the 2022 Scoping Plan (except for clearcutting) at reducing wildfire risk is supported and substantiated by the modeling conducted using RHESSys, the literature synthesis found in Appendix I, as well as subject matter experts consulted for the NWL analysis. The predicted impact of these management strategies on wildfire risk is in line with the best available science, as are the potential environmental impacts discussed in the First Draft EA for the forest and shrubland management strategies. The cited literature does not substantiate the commenter's assertions that strategic statewide fuels reduction strategies are ineffective at reducing wildfire risk, severity, or emissions. As a result, no changes to the First Draft EA are required in response to this comment.

CARB staff would like to clarify that the management strategies under Alternatives 2, 3, and 4 (included in the 2022 Scoping Plan) are the same; there are no changes to the intensity of these management strategies under each alternative as asserted by the commenter, there are only changes to the amount of acres of each management strategy. In regards to the citations provided by the commenter, the analyses conducted in Law et al. 2022 and Bartowitz et al. 2022 are more narrowly focused than the comprehensive CARB NWL analysis and include numerous questionable assumptions in their methodologies. The articles drew conclusions based on observed trends and past levels of forest management and wildfire but do not make any projections of forest carbon dynamics that accounts for climate change, dynamic wildfire, mortality, decay, and differing levels of management, as was done in the CARB NWL analysis.

566-28 The commenter states, "As detailed in prior comments, the RHESys model being used for forest and shrublands substantially over-estimates wildfire emissions by using unrealistic biomass combustion factors and under-representing the biomass stored in standing dead trees after fire.[182] Specifically, the LANDFIRE model used by RHESys classifies post-forest-fire vegetation categories as having less carbon than they actually do. First, the model does not account for the large stores of post-fire carbon persisting in killed trees and

other unburned fuels.[183] In practice, the model effectively assumes that when trees are killed, they are vaporized immediately and all the carbon goes into atmosphere, which is demonstrably incorrect. Second, the model makes broad assumptions about changes in vegetation categories based on LANDFIRE satellite imagery (which the Inventory acknowledges leads to substantial vegetation category classification inaccuracy[184]) and the mean carbon density in each vegetation category. Significant wildfire emissions overestimates can occur when a mature forest that has high-intensity fire is reclassified as shrubland but still has large amounts of carbon stores in the snags and downed logs that are not counted.

CARB can correct for these flawed estimates by using empirical field data of forest carbon consumption based on actual wildfires.[185] Empirical research by Harmon et al. (2022) in California's Rim Fire and Creek Fire areas found that less than 2% of living tree biomass combusted.[186] Even in severe fire patches, the larger-size trees showed low combustion rates of less than 5% with most combustion coming from needles and small branches less than 2 centimeters in diameter. This study provides combustion rates for aboveground woody parts at multiple levels of organization (twigs, branches, trees, stands, and landscapes) and accounts for tree species, size, and fire severity in Ponderosa pine and mixed conifer-dominated forests of the Sierra Nevada. The review of forest carbon science by Law et al. (2022) similarly concluded that "[w]hile moderate to high severity fire can kill trees, most of the carbon remains in the forest as dead wood that will take decades to centuries to decompose."[187]

[182] Stenzel, Jeffrey E. et al., Fixing a snag in carbon emissions estimates from wildfires, 25 Global Change Biology 3985 (2019), https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.14716.
[183] CARB, Technical Support Document for the Natural & Working Lands Inventory (Dec. 2018 Draft), https://ww3.arb.ca.gov/cc/inventory/pubs/nwl_inventory_technical.pdf, at 19 ("The fire-attributed stock changes account only for carbon contained in live and dead pools associated with the post-fire (e.g. 2012) vegetation type, and have no memory of the previous vegetation type, i.e. they do not account for potential post-fire carbon persisting in unburned fuels or in killed trees.")
[184] CARB, An Inventory of Ecosystem Carbon in California's Natural and Working Lands (2018 Edition), https://ww3.arb.ca.gov/cc/inventory/pubs/nwl_inventory.pdf, at 47-48.
[185] Campbell, J., et al., Pyrogenic carbon emission from a large wildfire in Oregon, United States, 112 Journal of Geophysical Research Biogeosciences G04014 (2007).
[186] Harmon, M.E. et al., Combustion of Aboveground Wood from Live Trees in Mega-fires, CA, USA, 13 Forests 391 (2022), https://doi.org/10.3390/f13030391.
[187] Law, B.E. (2022) et al. at 7. "

Response: This comment is conflating how the CARB NWL inventory has previously addressed carbon stock change after wildfire, with the completely different future wildfire modeling done for the 2022 Scoping Plan. The commenter provides no detail as to how they believe the RHESSys modeling is utilizing LANDFIRE data, and how this perceived utilization then results in "vaporized" trees. In addition, the article Stenzel et al. 2019 referenced by the

commenter[75] is not directly relevant to the methods used in the NWL analysis. The GHG emissions disclosed in the First Draft EA Section 4.8.a and in Table 4-13 take into account the modeled wildfire emissions. The details of the NWL analysis, including wildfire consumption and emissions, are found in Appendix I. The biogeochemical model used in the analysis of forests, shrublands, and grasslands produced estimates of biomass, and therefore carbon, consumed from wildfires in each year of the simulation. The model was calibrated using flux towers, remote sensing products, relevant literature. These estimates of consumption are in line with historical data from CARBs wildfire emissions Inventory as well as existing literature that predicts climate change will increase wildfire activity. It is not true that this model assumes all carbon is burned in a fire. In fact, for many fires, only a small amount of biomass is burned. The estimates are based on biogeochmical, hydrologic, fire behavior, and fuel modeling. The articles referenced by the commenter (Campbell et al. 2007,[76] Harmon et al. 2022,[77] and Law et al. 2022[78]) do not contradict any of the results of the NWL analysis. No changes to the First Draft EA are required in response to this comment.

566-29: The commenter states, "CARB's PM 2.5 estimates are based on the annual biomass consumption estimates from RHESSys modeling.188 However, the estimates of forest biomass consumed by wildfires is over-estimated for Alternative 1 as detailed above, making the associated PM 2.5 estimates for Alternative 1 inflated as well. As a result, CARB reports that Alternative 1 has the largest health costs based on its PM 2.5 emissions,189 but this is a faulty conclusion based on faulty modeling assumptions.

188 Appendix I at 95.
189 Id. at Figures 30, 31."

Response: As the comments relate to the purported overestimate of wildfire emissions as the primary drivers of the health cost estimates, refer to response to comment 566-28.

566-30: The commenter states, "CARB's modeling over-estimates the carbon storage in harvested wood products over time for the Proposed Scenario. CARB acknowledges that its model "assumes that HWP carbon that enters the system stays in the system at least until 2045" and that "[f]uture developments of this assessment should incorporate some decay factor that captures the gradual loss from this pool."[192] CARB must use estimates of the loss of carbon storage in wood products over time from published research that corrects false assumptions and provides robust estimates such as Harmon (2019).[193] This is important because the forest modeling results report total biomass stock which includes both forest biomass (above and below-ground) and biomass in harvested wood products. Correcting for

[75] Stenzel, Jeffrey E. et al., Fixing a snag in carbon emissions estimates from wildfires, 25 Global Change Biology 3985 (2019), https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.14716.

[76] Campbell, J., et al., Pyrogenic carbon emission from a large wildfire in Oregon, United States, 112 Journal of Geophysical Research Biogeosciences G04014 (2007).

[77] Harmon, M.E. et al., Combustion of Aboveground Wood from Live Trees in Mega-fires, CA, USA, 13 Forests 391 (2022), https://doi.org/10.3390/f13030391.

[78] Law, B.E. et al., Creating strategic reserves to protect forest carbon and reduce biodiversity losses in the United States, 11 Land 721 (2022), https://doi.org/10.3390/land11050721.

the over-estimations of carbon storage in harvested wood products would provide a more accurate, lower estimate of carbon storage over time for the Proposed Alternative and Alternatives 2, 3, and 4.

[192] Appendix I at 88.
[193] Harmon, Mark E., Have product substitution carbon benefits been overestimated? A sensitivity analysis of key assumptions, 14 Environmental Research Letters 065008 (2019), https://iopscience.iop.org/article/10.1088/1748-9326/ab1e95/pdf. "

Response: CARB acknowledges that a decay factor is needed and will work on improving the harvested wood products component of the modeling. The reference provided by the commenter provides a potential decay factor for CARBs consideration during future development of the carbon assessment. Though CARB will in the future work to include a decay factor, the inclusion of a decay factor into HWP storage calculations are unlikely to result in a large shift in the overall carbon stock estimates for each alternative due to the overwhelming contribution of forest biomass compared to HWP biomass

This comment does not raise specific environmental issues related to the First Draft EA, nor does it otherwise address the accuracy, adequacy, or completeness of the First Draft EA for this sector. Therefore no changes to the First Draft EA are required in response to this comment.

566-31: The commenter states, "CARB's modeling also assumes that forests have been acting as a carbon source from 2000-2014, contrary to published research, and thus CARB relies on an inaccurate baseline. Contrary to CARB's modeling assumptions, Hudiburg et al. (2019) developed a transparent and transferable accounting method of all forest-derived carbon for California, Oregon and Washington, and concluded that California forests are acting as net carbon sinks because net forest carbon uptake resulting from biological processes exceed losses due to logging/thinning, wood product use, and wildfire combustion.[194] The California Forest Carbon Plan also concludes that California's forests have been acting as a net sink and sequestering carbon based on FIA Program data from 2006-2015.[195] When asked at the workshop about this discrepancy, staff replied that forest lands are acting as a carbon source because they are being converted to shrub or grassland following high-severity fire and these ecotypes hold less carbon. However, empirical studies in California that have investigated this issue have found that high-severity fire is not resulting in type conversion to non-forest nor conversion from pine forest to white-fir, Doug fir, and incense cedar forest. Instead, studies have documented substantial natural conifer regeneration following high-severity fire in mixed-conifer and yellow pine forests.[196] In addition, CARB's conclusion that forest lands are acting as a carbon source appears to be based largely on the Inventory of Ecosystem Carbon in California's Natural and Working Lands.[197] As described above, the Inventory's use of LANDFIRE results in faulty classifications of vegetation type post-fire and underestimates of carbon in post-fire ecosystems.

[194] Hudiburg, Tara W. et al., Meeting GHG reduction targets requires accounting for all forest sector emissions, 14 Environmental Research Letters 095005 (2019), https://iopscience.iop.org/article/10.1088/1748-9326/ab28bb.

[195] CARB, California Forest Carbon Plan (2018), available at https://ww2.arb.ca.gov/resources/documents/forest-carbon-plan at 103-104.
[196] Baker, William L., Transitioning western U.S. dry forests to limited committed warming with bet-hedging and natural disturbances, 9 Ecosphere e02288 (2018), https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.2288; Hanson, Chad T., Landscape heterogeneity following high-severity fire in California's forests, 42 Wildlife Society Bulletin 264 (2018), https://wildlife.onlinelibrary.wiley.com/doi/10.1002/wsb.871; Hanson, Chad T. & Tonja Y. Chi, Impacts of postfire management are unjustified in spotted owl habitat, Frontiers in Ecology and Evolution (2021), https://doi.org/10.3389/fevo.2021.596282.
[197] CARB 2018, An Inventory of Ecosystem Carbon in California's Natural and Working Lands."

Response: In response to the commenter's claim, CARB staff would like to state that the NWL analysis did not assume that forests were a carbon source or sink. The 2022 Scoping Plan NWL analysis estimate indicates that ecosystem carbon stock was lost from 2001-2014 is consistent with CARB's NWL carbon inventory and the basis of which is also peer reviewed and can be found of CARB's NWL carbon inventory webpage. As stated in the comment, the response provided by CARB for this difference from the references cited by the commenter (Hudiberg et al 2019, California Forest Carbon Plan) is that forest land conversion to non-forest conditions is not accounted for in those references. The commenter cites additional references to refute this response by CARB; however, the comprehensive literature synthesis conducted by CARB found numerous published articles supporting CARBs assertion that disturbances such as high severity fires can result in type conversions to non-forest. These studies also predict a change in forest type under future climate change. These outcomes have also been supported by experts consulted during the NWL analysis. See Appendix I for details.

This comment does not raise specific environmental issues related to the First Draft EA, nor does it otherwise address the accuracy, adequacy, or completeness of the EA for this sector. Therefore no changes to the First Draft EA are required in response to this comment.

566-32: The commenter states, "The Scoping Plan must address pesticides' contribution to greenhouse gas emissions, pesticides' deleterious impact on soil's ability to sequester carbon, and analyze organic farming and pesticide reduction as a critical, nature-based climate solution."

Response: The First Draft EA provides discussion of known potential impacts of pesticide use. The commenter does not provide references to support their claims. In addition, CARB staff confirmed with subject matter experts that further research is needed to understand pesticide's contribution to GHG emissions and its impact on soil carbon sequestration, which is currently unknown and therefore not discussed in the First Draft EA. Chapter 4 of the 2022 Scoping Plan discusses the significance of pesticide use reduction for ecological and human health. The 2022 Scoping Plan recognizes the benefits of reduced pesticide use and includes transitioning to organic farming (including reduced pesticide use) as a management strategy. Additionally, the Department of Pesticide Regulation, CalEPA, and CDFA have convened a

Sustainable Pest Management Workgroup that will release draft recommendations and goals in 2022 to address sustainable pest management across the state. No changes to the First Draft EA are required in response to this comment.

566-33: The commenter states, "Reducing pesticides not only mitigates climate change, but also addresses serious environmental justice concerns affecting predominantly Latinx rural and farm-working communities throughout California.[198] Health impacts from pesticide exposure includes nausea, headaches, shortness of breath, and seizures, as well as the longer-term risks including chronic illness, cancer, and neurological disorder.[199] The mission of CARB is to promote and protect public health, welfare, and ecological resources through the effective and efficient reduction of air pollutants, and the regulation of pesticides is crucial to fulfill this mission.[200]

[198] Damalas, Christos & Spyridon Koutroubas, Farmers' Exposure to Pesticides: Toxicity Types and Ways of Prevention, 4 Toxics 1, 1 (2016) doi:10.3390/toxics4010001; Greenfield, Nicole, Latina Farmworkers Speak Out about the Hazards of Life in California's Fields, National Resource Defense Counsel (Oct. 4, 2021) https://www.nrdc.org/stories/latina-farmworkers-speak-out-about-hazards-life-californias-fields.

[199] Greenfield 2021.

[200] CARB, Enforcement Policy (Apr. 2020), https://ww2.arb.ca.gov/resources/documents/enforcement-policy#:~:text=CARB%20adopts%20regulations%20designed%20to,the%20requirements%20of%20each%20regulation."

Response: Please refer to response to comment 566-34.

566-34: The commenter states, "Pesticide use in California plays a significant, yet overlooked, factor for greenhouse gas emissions. CARB must address emissions associated with pesticides. Specifically, CARB should address the contribution of commonly used fumigants' to greenhouse gas nitrous oxide (N2O) emissions. Soil fumigants can cause increased emissions of N2O and represent roughly one-fifth of the pesticides used in California.[201] For example, application of the commonly used fumigant chloropicrin can significantly increase N2O production.[202] Similar classes of fumigants can yield similar increases in emissions.[203] Additionally, methyl isothiocyanate producing fumigants—metam sodium and dazomet—also increase nitrous oxide production significantly.[204] Tens of million pounds of these three fumigants are used every year in California fields.[205]

CARB must also address pesticides' contribution of volatile organic compounds (VOCs), an ozone precursor.[206] Tropospheric ozone (O3) is one of the most important greenhouse gases contributing to climate change.[207] VOC emissions related to pesticides include the fumigants methyl bromide, 1,3-dichloropropene, chloropicrin, metam sodium, metam potassium and dazomet.[208] In California's San Joaquin Valley, an ozone and VOC non-attainment area, 65% of VOC emissions are from high VOC formulations of non-fumigant pesticides including abamectin, chlorpyrifos, gibberellins and oxyfluorfen.[209] The contribution of these pesticides must also be measured.

CARB must also take steps to curb sulfuryl fluoride. Sulfuryl fluoride is a toxic air contaminant and an extremely potent short-lived climate pollutant.[210] It is a commonly used fumigant in California,[211] but CARB has not taken adequate steps to reduce its use despite recognizing it as a greenhouse gas of concern. To contextualize sulfuryl fluoride's climate impact, its use in California each year is equal to the carbon dioxide emitted from about one million vehicles.[212]

[201] Spokas K., Wang D., Stimulation of nitrous oxide production resulted from soil fumigation with chloropicrin, 37 Atmospheric Environment 3501 (2003), https://doi.org/10.1016/S1352-2310(03)00412-6.
[202] *Id*.
[203] *Id*.
[204] Spokas K., Wang D., Venterea. R., Greenhouse gas production and emission from a forest nursery soil following fumigation with chloropicrin and methyl isothiocyanate, 37 Soil Biology & Biochemistry 475 (2005), https://doi.org/10.1016/j.soilbio.2004.08.010.
[205] Pesticide Use Annual Summary Reports, available at Cal. Department of Pesticide Regulation, Pesticide Use Reporting (PUR), https://www.cdpr.ca.gov/docs/pur/purmain.htm (last visited June 23, 2022).
[206] Cal. Department of Pesticide Regulation, Volatile Organic Compound (VOC) Emissions from Pesticides, https://www.cdpr.ca.gov/docs/emon/vocs/vocproj/vocmenu.htm (last visited June 23, 2022).
[207] IPCC, Chapter 4: Atmospheric Chemistry and Greenhouse Gases, in TAR Climate Change 2001: The Scientific Basis (2001), https://www.ipcc.ch/site/assets/uploads/2018/03/TAR-04.pdf.
[208] Cal. Department of Pesticide Regulation, Reducing VOC Emissions from Field Fumigants, https://www.cdpr.ca.gov/docs/emon/vocs/vocproj/reg_fumigant.htm (last visited June 10, 2022).
[209] UC Agriculture and Natural Resources, Volatile Organic Compound (VOC) Emissions from Pesticides (Sept. 9, 2013), https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=11273.
[210] Gallagher, G. et al., High-global warming potential F-gas emissions in California: Comparison of ambient-based versus inventory-based emission estimates, and implications of refined estimates, 48 ENVIRONMENTAL SCIENCE & TECHNOLOGY 1084-1093 (2014).
[211] Pesticide Use Annual Summary Reports, available at Cal. Department of Pesticide Regulation, Pesticide Use Reporting (PUR), https://www.cdpr.ca.gov/docs/pur/purmain.htm (last visited June 23, 2022).
[212] University of California Irvine, Termite Insecticide Found to be Potent Greenhouse Gas, SCIENCEDAILY (Jan. 30, 2009), www.sciencedaily.com/releases/2009/01/090121144059.htm."

Response: Methods for the application of pesticides (field application or fumigation) are not established by the IPCC nor are they included as part of the AB 32 or AB 1383 statutes as GHGs to track as part of the inventory. However, in some cases, there are pesticides that act as GHGs, such as methyl bromide and sulfuryl fluoride. CARB has provided estimates of sulfuryl fluoride emissions as an informational item included in the Short-Lived Climate

Pollutant program and will continue to review the scientific literature on pesticides contributions to VOC and GHG emissions.[79]

With respect to criteria pollutants and their precursors (e.g., VOCs), the California Emissions Projection Analysis Model (CEPAM) supports State Implementation Plan (SIP) development, air quality modeling efforts, and the tracking of the progress of SIPs. CEPAM starts with a base year, which is pulled from the California Emissions Inventory Data Analysis and Reporting System (CEIDARS[80]) – a database system that tracks statewide criteria pollutant and air toxic emissions. The database includes estimates of VOCs from application of pesticides (see areawide sources[81]). The 2022 State Strategy for the State Implementation Plan includes a proposed pesticide measure being developed by the California Department of Pesticide Regulation (DPR) to address both cancer and acute risk from the use of the fumigant 1,3-Dichloropropene, which is considered a VOC. The regulation will be developed in consultation with the County Agricultural Commissioners, the local air districts, CARB, the California Office of Environmental Health Hazard Assessment (OEHHA), and the California Department of Food and Agriculture (CDFA).[82]

While pesticides are currently not included in the AB 32 GHG inventory, the impact of pesticide use on public health is acknowledged, and the 2022 Scoping Plan includes an organic farming target which avoids the use of pesticides and synthetic fertilizers. Additionally, the DPR, CalEPA, and CDFA have convened a Sustainable Pest Management Workgroup that will release draft recommendations and goals to address sustainable pest management across the state. CARB will continue exploring this important topic with other relevant state agencies to protect the health of Californians.

No changes to the First Draft EA are required in response to this comment.

566-35: The commenter states, "Public agencies may not approve or carry out any project that may have a significant effect on the environment without first complying with the California Environmental Quality Act (CEQA).[218] A "project" is any discretionary action that may cause a direct or a reasonably foreseeable indirect physical change in the environment.[219] As CARB correctly recognizes, the Proposed Scoping Plan is a "project" as defined by CEQA.[220] And as a functionally equivalent document, the EA must comply with the goals and requirements of CEQA that the document provide meaningful information on impacts, alternatives, and mitigation measures, and not approve a project as proposed if there are feasible alternatives or mitigation measures.[221]

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[79] https://ww2.arb.ca.gov/ghg-slcp-inventory

[80] Emission Inventory; CEIDARS Database Structure (ca.gov)

[81] Areawide Source Emissions | California Air Resources Board. Application of agricultural and structural pesticides is separated into four emission inventory categories: methyl bromide emissions from agricultural pesticides, non-methyl bromide emissions from agricultural pesticides, methyl bromide emissions from structural pesticides, and non-methyl bromide emissions from structural pesticides.

[82] CARB. 2022. 2022 State Strategy for the State Implementation Plan. Adopted September 22, 2022. https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf

Here, the draft EA fails to comply with CEQA, among other reasons, because it uses unreasonable assumptions to analyze and mitigate impacts, and it provides a confusing and incomplete analysis of alternatives.

[218] Pub. Res. Code §§ 21001, 21002.1, 21081.
[219] See Pub. Res. Code § 21065.
[220] Appendix B: Draft Environmental Analysis at 6.
[221] Pub. Res. Code § 21080.5(d); 17 Cal. Code Regs. §§ 60005(b); 60006.

Response: The comment summarizes the requirements of CEQA and provides an opinion that the First Draft EA fails to comply with CEQA due to unreasonable assumptions and incomplete alternatives analysis. The Alternatives Analysis in Section 7.0 of the First Draft EA provides a discussion of whether and how each alternative meets the project's objectives, and an analysis of each alternative's potentially significant environmental impacts. The purpose of the alternatives analysis is to determine whether different approaches to or variations of the project would reduce or eliminate significant project impacts, within the basic framework of the objectives, a principle that is consistent with CARB's certified regulatory program requirements. 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)).

The First Draft EA evaluates a reasonable range of alternatives to the 2022 Scoping Plan that could reduce or eliminate the project's significant effects on the environment while meeting most of the basic project objectives (Title 14 CCR Section 15126.6(a)). Pursuant to CARB's certified regulatory program, the First Draft EA 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.

Guidance for evaluation of alternatives is to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines 15126.6[d]). Table 7-1 of the First Draft EA provides a relative comparison of Scoping Plan Alternatives, and the analysis of alternatives in the First Draft EA provides a sufficient level of detail pursuant to CARB's certified regulatory program.

566-36: The commenter states, "An EIR must be prepared with a sufficient degree of analysis to provide decision-makers with the information needed to make an intelligent judgment concerning a project's environmental impacts.[222] Among many other defects, the flaws in modeling assumptions and analyses described above apply to the draft EA as well as to the draft Scoping Plan itself, and they are incorporated here by reference.

[222] CEQA Guidelines § 15151."

Response: Please refer to Master Response 1, regarding the level of specificity required for this EA. See also Master Response 5, regarding modeling assumptions.

Regarding the modeling of forest carbon stocks, the commenter's evaluation on page 41 (in Section V(D)(i)) of the letter selectively focuses on NWL modeling results for the years 2040-2049 (while ignoring other relevant results) to support their claim. As stated in Chapter 2 of the 2022 Scoping Plan, NWL actions operate on a long timeframe and therefore the results of the modeling analysis should be evaluated at long time scales, not 10 years as the commenter has done. When assessed over the longer period of 2025-2045 as done in the 2022 Scoping Plan, the Scoping Plan Scenario has the highest average carbon stocks compared to the Reference Scenario and Alternative 1, and achieves emissions reductions relative to the Reference Scenario (as shown in Table 3-6 of the 2022 Scoping Plan). See also responses to comments 566-24 and 566-27.

566-37: The commenter states, "As but one example, just as the Scoping Plan itself fails to incorporate cap-and-trade fully into the project and analysis—and does not even provide an accurate description of the amount of GHG reductions that will need to be achieved with the cap-and-trade program—so does the draft EA. Even though, as explained above (Section III.D.), cap-and-trade will account for a significant number of emissions reductions needed through the Scoping Plan, there is simply no discussion or analysis of its potential environmental impacts in the draft EA."

Response: The 2022 Scoping Plan does not include any changes to the Cap-and-Trade Regulation. The First Draft EA addresses the environmental impacts resulting from implementing the 2022 Scoping Plan, compared to a baseline consisting of the existing conditions. Thus, because the 2022 Scoping Plan does not include changes to the Cap-and-Trade Regulation, a discussion of its potential environmental impacts is not required. Also please refer to response to comment R19-19. No changes to the First Draft are necessary in response to this comment.

566-38 The commenter states, "One of the fundamental purposes of environmental review is to inform decisionmakers and the public about the potential, significant impacts of a project.[223] It is also intended to prevent such impacts "through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible."[224] Additionally, the environmental review document must "include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project."[225] The alternatives analysis provided in the draft EA violates CEQA as it is utterly confusing and devoid of critical information to allow a comparison to the proposed scenario in the draft Scoping Plan.

[223] Id. § 15002(a)(1).
[224] Id. § 15002(a)(3), (4).
[225] Id. § 15126.6(d) (emph. added). See also Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal. (1988) 47 Cal.3d 376, 406."

Response: Please refer to response to comment 566-35.

566-39: The commenter states, "Second, although the Scoping Plan itself and the EA both evaluate alternatives, the EA's alternatives do not align with the alternatives delineated in the draft Scoping Plan. In fact, CARB spent the previous year modeling the impacts of what essentially became the Scoping Plan alternatives. The EA, however, analyzes the impacts of an entirely new set of alternatives, which it then compares to the Scoping Plan's "Proposed Scenario" (chosen scenario/alternative). This unnecessary confusion makes it impossible for the public and policymakers to understand, compare, and evaluate the impacts of the alternatives in either the Scoping Plan or the EA.

if we did nothing at all beyond the existing policies that are required and already in place to achieve the 2030 target or expected with no new actions in the NWL sector."[226]

Meanwhile, the EA considered four different alternatives: a No Project Alternative and Alternatives A, B, and C. The EA provides a convoluted explanation of how these alternatives differ from those analyzed in the Scoping Plan:

Draft EA Alternative A is most similar to Alternative 1 for AB 32 GHG Inventory Sectors in the 2022 Scoping Plan with measures implemented as outlined in that scenario but with a 2045 carbon neutrality target. Draft EA Alternative B aligns with Alternative 4 for AB 32 GHG Inventory Sectors in the 2022 Scoping Plan. The natural and working lands actions in both Draft EA Alternatives A and B are the same as the Proposed Scenario in the 2022 Scoping Plan. Draft EA Alternative C is aligned with Alternative 2 for natural and working lands in the 2022 Scoping Plan and the AB 32 GHG Inventory Sectors actions in Draft EA Alternative C are the same as the Proposed Scenario in the 2022 Scoping Plan.[227]

Once a reader has parsed this out, potentially using a logic grid, it becomes clear that these differences are not minor. For instance, the Scoping Plan's Alternative 1 sets out a carbon neutrality target of 2035, whereas the EA's Alternative A's target is 2045—a decade of difference in terms of emissions and effects on climate change.

[226] Draft Scoping Plan at 39.
[227] Appendix B: Draft Environmental Analysis at 256."

Response: Please refer to responses to comments 566-40 and 670-5.

Please also refer to response to comment 566-35 regarding the requirements for an alternatives analysis under CEQA.

566-40: The commenter states, "Additionally, nowhere does the Draft EA describe many of the important assumptions and targets comprising the various alternatives. (For that matter, nowhere does the draft Scoping Plan describe all of the assumptions underlying its alternatives. For that, a reader must search CARB's website for the materials from previous modeling workshops that took place in 2021.) Again using Alternative A as an example, the description simply states that it "requires early retirement of vehicles, appliance, and industrial equipment to eliminate combustion, with aggressive deployment and adoption of non-combustion technologies…"[228] By when will this "early retirement" take place? Assuming

it is "most similar" to Alternative 1, a reader could guess that means, for instance, requiring 100% zero emission vehicle sales by 2030—but the EA does not actually provide that information. Additionally, the impacts analysis of the alternative comprises less than one page of conclusory statements, and it completely ignores impacts related to natural and working lands actions. The analyses of the other alternatives similarly fail to provide the necessary information for a meaningful comparison to the Proposed Scenario.

[228] Draft EA at 260."

Response: CARB disagrees that the alternatives analysis includes insufficient detail to satisfy CEQA's alternatives analysis requirements. The Scoping Plan is a high-level statewide planning action; similarly, the CEQA alternatives were designed to illustrate how differing statewide policy decisions compare with the proposed scenario, in terms of environmental impacts, feasibility, and ability to meet the project objectives.

The First Draft EA specifies that the alternatives do not alter the basic nature of the project but information is provided to sufficiently allow comparisons with the proposed project.

CEQA provides that an alternatives analysis must include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. To that end, a matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. CEQA also provides that if an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines 15126.6[d]). Table 7-1 of the First Draft EA provides a relative comparison of Scoping Plan Alternatives, and the analysis of alternatives in the First Draft EA provides a sufficient level of detail pursuant to CARB's certified regulatory program, and given the high-level nature of the Scoping Plan. See also Master Response 1, above.

The record also provides more information regarding the alternatives than stated by the commenter. Section 7 of the First Draft EA describes the connections between the CEQA alternatives and the 2022 Scoping Plan's scenarios for the AB 32 GHG Inventory Sectors, as well as the scenarios for Natural and Working Lands (NWL). The First Draft EA states that Alternative A is most similar to AB 32 GHG Inventory Sectors Alternative 1 in the 2022 Scoping Plan, with the clarification that measures are implemented as specified in that scenario but with the outlook of how those outcomes carry out through 2045 for comparison with the project's 2045 carbon neutrality deadline; additionally, the First Draft EA specifies that the NWL actions in Alternative A are unchanged from the NWL Proposed Scenario in the 2022 Scoping Plan (identified as NWL modeling scenario Alternative 3). Similarly, the First Draft EA states that Alternative B aligns with AB 32 GHG Inventory Sectors Alternative 4 in the 2022 Scoping Plan and that the NWL actions are unchanged from the Scoping Plan Scenario in the 2022 Scoping Plan (identified as NWL modeling scenario Alternative 3). Lastly, the First Draft EA states that Alternative C is unchanged from the AB 32 GHG Inventory Sectors Proposed Scenario in the 2022 Scoping Plan (identified as Alternative 3)

and aligns with NWL Alternative 2. Chapter 2 of the 2022 Scoping Plan contains descriptions of each of the alternative scenarios.

No changes to the First Draft EA are required in response to this comment.

566-41: The commenter states, "Thus, the convoluted, conclusory, cursory discussion of alternatives in the EA flouts the basic goal of CEQA and the role of environmental analysis to provide information to the public and decisionmakers to allow for informed decision making."

Response: Please refer to response to comment 566-35.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 572

6/24/2022 Ariana Matthews, California Chamber of Commerce

572-1: The commenter states, "The required build out of energy infrastructure to meet the demand also depends upon the State and local governments' ability to streamline the CEQA process and address permitting issues, which cause significant delays for critical projects."

Response: The comment provides a general statement that the energy infrastructure required to meet electrical demands depends on the ability to streamline the CEQA process. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

572-2: The commenter states, "CARB should consider the emissions created by California's import of oil to meet demand versus increased production in state."

Response: The 2022 Scoping Plan reflects the transition away from liquid fossil fuels in the transportation sector to zero-emission options or alternative fuels. As the demand for liquid fossil fuels declines, the emissions associated both with importing oil to meet demand and emissions associated with oil production in the state would decrease. To the extent the commenter implies that demand for out of state liquid fossil fuels would increase due the 2022 Scoping Plan, CARB disagrees, and notes that there is no evidentiary support for such an increase.

This comment does not address the adequacy, accuracy, or completeness of the First Draft EA and no changes to the EA are required in response to this comment.

572-3: The commenter states, "The absence of any mobility consideration for goods, services or people other than climate, equity and safety assures more congestion - more air emissions, longer duration trips, more fuel use - with unacknowledged adverse economic and health costs that cannot be balanced with assumptions regarding more biking and walking."

Response: Table 2-1 from the 2022 Scoping Plan indicates that the Scoping Plan Scenario assumes per capita VMT reductions of 25% below 1990 levels by 2030 and 30% below 1990 levels by 2045. While not a direct indicator of congestion, this VMT data can be used to infer how VMT projections associated with the 2022 Scoping Plan could influence congestion, and it can be inferred the VMT reductions associated with the 2022 Scoping Plan could result in overall decreased levels of congestion through reduced VMT via less trips and shorter trip lengths. Furthermore, it is worth noting that congestion is no longer the most appropriate metric for considering transportation-related impacts under CEQA; rather, pursuant to SB 743 (2013), the relevant metric is VMT. (See 14 CCR 15064.3.)

In addition, the comment indicates that mobility-related economic and health effects related to the 2022 Scoping Plan have not been adequately addressed, without specifying what those effects would be. The economic effects of the 2022 Scoping Plan, as they pertain to potential growth-inducing effects, are evaluated on pgs. 273 and 274 of the Recirculated Draft EA, which concludes that "effects on the California economy would be very minor...[and]...no substantial growth-inducing effects would occur as a result of implementing the 2022 Scoping Plan." Economic impacts alone are not impacts needing to be analyzed pursuant to CEQA, and thus no further response is necessary. The health effects of the 2022 Scoping Plan are evaluated on pgs. 78 through 85 of the Recirculated EA, which concludes that "implementation of the 2022 Scoping Plan is expected to considerably reduce emissions across the state...lead[ing] to substantial net improved health outcomes across the state." The commenter does not further explain or substantiate their claims regarding health impacts. No changes to the EA are required in response to this comment.

572-4: The commenter states, "The Plan puts all infrastructure funding, for transportation as well as other services, at increased risk of CEQA litigation and higher GHG/VMT mitigation costs."

Response: The comment provides an opinion that the 2022 Scoping Plan puts funding at increased risk of CEQA litigation. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

572-5: The commenter states, "Changes to the CEQA process include disfavoring all but high-density development and prejudicing against other types of development."

Response: The comment provides an opinion that the 2022 Scoping Plan's changes to the CEQA process disfavor all but high-density development and prejudice other types of development. While several legislative acts and amendments to CEQA have incentivized higher density housing by offering exemption and streamlined processes, CEQA does not disfavor or penalize other types of development. Further, the 2022 Scoping Plan does not in

any way result in "[c]hanges to the CEQA process". The commenter dramatically overstates the effect of the language at issue in the 2022 Scoping Plan. CEQA is a long-established statutory program, with a fundamental process that has existed for decades. The 2022 Scoping Plan does not change that process. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

572-6: The commenter states, "The concepts also include withholding state funding for infrastructure, development, or leases outside of infill areas that do not demonstrate clear alignment with State guidelines on VMT, climate, and equity outcomes. This costly housing and public transit prescription will likely accelerate employee migration to other states. This leakage will potentially increase emissions in other states that do not have the same environmental protections regarding housing and transportation. We are not in this alone and need to be sensitive as to how our actions impact increased emissions in other areas."

Response: CARB disagrees with the commenter's claims, noting the language at issue speaks to where the state directs various housing-related benefits. Appendix E also lists a number of potential actions that agencies across the state may choose to undertake to increase investment in under-resourced communities, expand access to high-resource neighborhoods, and accelerate production of a diversity of housing types in climate-smart locations. These actions, if undertaken, would undergo their own review processes under CEQA and other applicable procedural laws, as appropriate.

CARB further disagrees that these suggested measures, if undertaken, would cause California residents to leave the state and increase emissions in other states. Many factors have led to the state's housing affordability issues, including in particular overly-restrictive local zoning requirements.[83] While certain commenters attempt to frame the suggested sustainability-related considerations as a serious contributor to the state's housing issues, the evidence does not back up these claims. The commenter's claims amount to a policy disagreement, rather than an environmental concern. The Scoping Plan recognizes the housing challenge and the need for more housing in the state, and it advances ways to meet this challenge while supporting the state's other environmental priorities.

The effects of the 2022 Scoping Plan on potential displacement of housing (used as a surrogate for employment) are evaluated on page 199 of the First Draft EA, which ultimately concludes that "it is unlikely that implementation of the 2022 Scoping Plan would displace existing housing." Appendix E also discusses the state's housing cost related issues. Its vision includes "[t]he ability for every Californian to live, work, and play in climate-smart, transportation-efficient communities that provide travel choices and access to opportunity" (Appendix E). Finally, as the 2022 Scoping Plan is not a regulatory document and does not compel action, local decision makers may choose, but are not mandated, to use the 2022

[83] *See* O'Neill, Moira; Biber, Eric; Gualco-Nelson, Giulia; and Marantz, Nicholas. (September 18, 2021). Examining Entitlement in California to Inform Policy and Process: Advancing Social Equity in Housing Development Patterns. Available at SSRN: https://ssrn.com/abstract=3956250.

Scoping Plan as a guide for taking local action in a manner consistent with the State's climate priorities. No changes to the First Draft EA are required in response to this comment.

572-7: The commenter states, "While the existing infrastructure will surely be helpful, we share similar concerns as set forth above with electric infrastructure challenges, the need for expedited permitting and CEQA streamlining to ensure we are able to build out the additional hydrogen infrastructure needed."

Response: The comment suggests that CEQA streamlining be provided for hydrogen infrastructure. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 574

6/24/2022 Sean Charpentier ,C/CAG – City/County Assn of Govts SMC

574-1: The commenter states, "3. The electrification of transportation and buildings requires an analysis of the reliability of the California, regional or local power grid. The ability to electrify will depend in part on the reliability of the grid and also some form a redundancy or storage for the times whe1 the grid is not operational and/or green energy sources are not available."

Response: The comment does not raise an environmental issue related to grid reliability and no further response is required. No changes to the First Draft EA are required in response to this comment. Nevertheless, the following response is provided for transparency.

The proposed 2022 Scoping Plan includes expanded energy generation and associated infrastructure components to help ensure grid reliability. Chapter 2, "Project Description," of the First Draft EA includes increased renewable energy actions and expansion of electrical infrastructure as reasonably foreseeable compliance responses of the 2022 Scoping Plan. The impacts of these compliance responses are analyzed through Chapter 4, "Impact Analysis and Mitigation Measures," of the First Draft EA.

As part of reliability planning, the California Public Utilities Commission oversees two types of programmatic responses to electric emergencies: one deals with unplanned electric emergencies, ranging from car-pole accidents to severe storms (Emergency Standards), while the other activates pre-planning for imminent shortages which stem from generation or transmission problems (Electric Emergency Action Plans EEAPs). CPUC Decision D.16-01-008 directs the California Investor Owned Utilities (PG&E, SCE, SDG&E, Bear Valley Electric

Service, PacifiCorp, and Liberty Utilities/CalPeco Electric) to annually prepare electric system reliability reports detailing the previous year's electric reliability on the system and division levels.

In the context of the bulk power system, reliability is generally defined as the ability to meet the electricity loads of end-use customers at any given time, even when unexpected equipment failures or other factors reduce the amount of available generation and/or transmission to serve such loads. Electric system reliability is governed by a range of federal and state laws, Federal Energy Regulatory Commission (FERC) orders affecting the North American Electric Reliability Corporation (NERC), and NERC standards, which may then be modified to suit the particular circumstances within regional power grid areas. California's balancing authorities are responsible for ensuring that real-time supply and demand are balanced to maintain the safe and reliable operation of the power system. Maintaining electric reliability is complex and involves extensive engineering and planning to meet the applicable state and federal standards. As described in Chapter 4 of the 2022 Scoping Plan, moving to greater amounts of renewable and zero-carbon energy resources requires more active management of generation, greater coordination in the energy market, and improved resource planning, as many of these energy resources do not operate on demand like conventional fossil gas generation. The extreme heat events in California in 2020 and 2021 have highlighted some of the vulnerabilities in the electric system, and California's energy institutions have been taking action to reduce reliability risks to the grid. As outlined in the 2021 SB 100 Joint Agency Report, future SB 100 planning updates will be aligned with findings and outcomes from relevant state efforts, including CEC's energy demand forecasts (incorporating electrification trends and updates for extreme climate event planning); transmission planning and development; reliability planning; electric system resilience planning; and assessments from CPUC's Integrated Resource Planning, CEC's Integrated Energy Policy Report, and CARB's Scoping Plan. An additional recommendation has been included in the strategies for achieving success in Chapter 4 of the 2022 Scoping Plan related to completion of systemwide and local reliability assessments before state agencies update electricity sector GHG targets.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 581

6/24/2022 Michael Boccadoro ,Dairy Cares

581-1: The commenter states, "seventy years ago, California had nearly 20,000 small, mostly pasture-based dairy operations. Today, California has approximately 1,200 dairy operators and they are declining each year. The idea that we will return to pasture operations in the next 7 years is unrealistic and would lead to greater water, land, and resource consumption that is not available."

Response: Impacts to water supply associated with pasture-based management systems is addressed under Impact 19.B, under subheading "Manure Management System." As discussed under this impact, conversion of dairy operations to pasture-based management may require new irrigation facilities. The comment does not provide specific details related to how land or resource consumption would be increased. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 582

6/24/2022 Ignatio Fernandez, Joint Utilities Group

582-1: The commenter states, "Achieving carbon neutrality within California will require a reliable electricity supply. As acknowledged in the Draft SPU, California needs to further electrify other sectors of the economy to meet its clean energy goals. The success of this necessary electrification depends not only on a sufficient supply of renewable and zero-emission electricity generating resources but also on a reliable electric grid to deliver electricity to the end users. The JUG reiterates its previous comments on the critical need to assess electric grid reliability as part of the 2022 Scoping Plan analysis to determine if electricity portfolios can reliably produce and deliver clean energy 24 hours per day, 365 days a year to support electrification. CARB, the CPUC, and the CEC acknowledged that the first SB 100 report does not include a reliability assessment[11]; the Draft SPU, similarly lacks this analysis, leaving a significant gap in the overall examination and feasibility assessment.

[11] 2021 SB 100 Report March 15, 2021, page 62: "A comprehensive reliability assessment is not included in this first report; so the portfolio composition and associated costs may change after a more rigorous analysis is completed."

Response: Please refer to response to comment 574-1**.** Please also refer to response to comment 620-1 regarding reliability assessment plans within the SB 100 joint agency report process. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 597

6/24/2022 Collen Clementson, SANDAG

597-1: The commenter states, "SANDAG concurs with the framework of action built around policies that accelerate infill development, affirmatively further fair housing, and increase natural and working lands protection consistent with the State's Planning Priorities. We appreciate state funding programs like REAP and AHSC that advance our housing programs, but we encourage added flexibility to these programs to allows for faster implementation. To further reduce the barriers to building affordable housing, additional state action is needed to streamline CEQA review for infill housing projects and ensure that CEQA is not co-opted for goals outside of environmental protection."

Response: This comment is directed toward support for the 2022 Scoping Plan's framework of action built around policies that accelerate infill development, affirmatively further fair housing, and increase natural and working lands protection, while also indicating that additional state action is needed to streamline CEQA review for infill housing projects and ensure that CEQA is not co-opted for goals outside of environmental protection. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA, no further response to this comment is required.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 612

6/24/2022 Sydney Chamberlain, The Nature Conservancy

612-1: The commenter states, "We appreciate the discussion of CEQA opportunities in the Draft Plan and recommend including some discussion on opportunities to use CEQA GHG mitigation in ways that can support both SB 375 and nature-based climate solutions. For instance, CARB staff could work with the California Natural Resources Agency, air districts, and counties to develop guidance whereby a CEQA GHG mitigation hierarchy is developed to conserve land and sequester carbon locally in a manner that supports reduced vehicle miles traveled and associated transportation emissions. For specific examples, please see our Nature-based Climate Solutions Report."

Response: This comment indicates support of the 2022 Scoping Plan's discussion of CEQA opportunities and recommends including discussion on opportunities to use CEQA GHG mitigation in ways that can support both SB 375 and nature-based climate solutions. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless, CARB staff notes that CARB plans to continue to explore additional approaches to and

guidance for CEQA mitigation to assist CEQA practitioners with mitigating project GHGs in a manner consistent with the 2022 Scoping Plan Local Actions Appendix. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 617

6/24/2022 Jennifer Hernandez

617-1: The commenter states, "The Scoping Plan and Environmental Assessment must fully describe the existing baseline health conditions in the vast majority of California counties, towns and cities in neighborhoods where people must drive low cost cars to get to work and earn the incomes needed to provide housing, food, medical care, and other essentials to their families. CARB must then analyze the impacts of each of its Measures on those Californians during the implementation period - starting immediately after adoption - of each Scoping Plan Measure. CARB is then obligated to consider environmental justice - including race (notwithstanding its attorney's shocking assertion that CARB was fully empowered to require racially discriminatory housing policies during the 2017 Scoping Plan litigation)[6] - and modify its Measures to avoid causing disparate harms to low income and communities of color.[7] The costs, impacts, and other consequences of its Measures must also be disclosed. Measures that are "infeasible" - defined in CEQA to encompass Measures that cannot be achieved for legal or economic reasons within the time required to avoid the impact - may not be relied on by CARB to avoid disclosing the racially discriminatory and disparate health harms caused by these transportation, housing, and energy cost Measures.[8]

6. See The Two Hundred v. California Air Resources Board, Order on Demurrer After Hearing, (Super. Ct. Fresno County, 2018, No. 18CEC601494), 12 ("[W]hile defendants argue that there is no constitutionally protected right to housing free of discrimination and thus plaintiffs have not stated a valid due process claim, the court notes that it is well—established that there is a constitutional right to be free of discrimination based on race.").
7 Cal EPA must "[c]onduct its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations of the state." Pub. Res. Code § 71110(a).
8 The term "feasible" is defined in CEQA Guidelines § 15364 as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." See also Pub. Res. Code § 21061.1."

Response: The baseline for purposes of the First Draft EA consists of the existing environmental conditions and regulations described in Attachment A of the EA. Existing health conditions are described in Section 4.3, Air Quality, and Section 4.8, Greenhouse Gases. Please refer to Master Response 1 regarding the specificity, level of detail of the analysis and mitigation in the EA, and CARB's authority to implement the responses and mitigate for impacts.

The comment does not specify nor provide evidence to substantiate claims of the alleged "harms" that may occur from implementation of the 2022 Scoping Plan. The comment appears to raise social, economic, or environmental justice issues that are not required to be analyzed pursuant to CEQA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

The commenter also makes unfounded and misleading assertions. CARB notes that this comment letter is part of consistent and misleading attack by this commenter against efforts by CARB and other state agencies to responsibly and equitably address climate change in California. CARB takes equity seriously in all of its efforts. In separate public funding programs, guidance and planning efforts, and regulatory programs, CARB considers issues of equity as the agency and its partner agencies move toward ensuring a just transition to a lower-carbon future.

CARB notes that the commenter repeatedly attempts to conflate CARB's efforts with unrelated issues that do not flow from, and would not be caused by, the 2022 Scoping Plan, such as redlining, and drivers' licenses for undocumented immigrants. Neither CARB's 2022 Scoping Plan, nor any of CARB's air quality or climate change related efforts, is in violation of any legal obligation or have association with unrelated issues raised by the commenter such as drivers' licenses.

The comment appears to deliberately misrepresent key aspects of CARB's actions including false claims such as CARB is placing a "ban on affordable personal vehicles", that CARB is mandating a percentage decrease on "personal mobility", etc. The introductory sections of the 2022 Scoping Plan are clear: CARB is not imposing or contemplating a "ban on affordable personal vehicles" and the Scoping Plan is not a regulatory action. In fact, the 2022 Scoping Plan states that "all *new* passenger vehicles *sold* in California will be zero-emission by 2035." (May 2022 Draft Scoping Plan at vii.) CARB is not banning affordable vehicles, nor the use of gas-powered vehicles; the requirement applies to new vehicle sales. Rather than addressing each of the commenter's misrepresentations regarding what the 2022 Scoping Plan proposes, CARB categorically denies these assertions, and the 2022 Scoping Plan's actual measures speak for themselves.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 620

6/24/2022 Susie Berlin, Northern California Power Agency

620-1: The commenter states, "While acknowledging the importance of reliability, the Draft SPU lacks an analysis of how each alternative will impact the electric grid, or ensure electricity reliability during all hours of the day. It is important to note that the findings of the Joint Agencies in the first SB 100 Report specifically called for a reliability assessment. 7 None of the scenarios, including the "no combustion" alternative, include an assessment of the impact that it would have on the reliability of the electric grid. The legislature has recognized the importance of reliability, and SB 100 specifically requires "an evaluation identifying the potential benefits and impacts on system and local reliability associated with achieving" the SB 100 policy goals.8 That further assessment has yet to be completed. Until it is done, and until the state has the information necessary to make an informed decision about the impacts of any clean energy action plans, the reliance on the initial SB 100 Report is misplaced. CARB cannot use that report as a basis for the SPU."

Response: Please refer to response to comment 574-1.

As mentioned by the commenter, the 2021 SB 100 Joint Agency Report was intended to be a first step in an iterative and ongoing effort to assess barriers and opportunities to implementing the 100 percent clean energy policy. Topics the report identified for additional assessment include reliability, where the joint agencies specified the plan to evaluate resource portfolios in a multistep process to ensure reliability for all hours of the year in line with state planning requirements while meeting clean energy and climate goals. As such, the SB 100 report process is the identified venue for the type of reliability analysis the commenter suggests. No further response and no changes to the First Draft EA are required.

620-2: The commenter states, "In its comments on the Initial Modeling Results Workshop, NCPA observed that the electricity sector analysis did not adequately address reliability of the electric grid, or the implications associated with zero combustion alternatives.9 It does not appear that the Draft SPU includes any further analyses to address this shortcoming. In particular, nothing in the record demonstrates that the 2035 timeline proposed in Alternatives 1 and 2 would not disrupt electricity supply."

Response: Please refer to response to comment 574-1. Please also refer to response to comment 620-1 regarding reliability assessment plans within the SB 100 joint agency report process. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 622

6/24/2022 Jessica Nelson, Golden State Power Cooperative

622-1: The commenter states, "**Statewide Electrification will not be Successful without Reliable Electricity**

A safe and reliable electrical grid is essential to achieving the state's climate and energy equity goals. And just as importantly, reliable electric service is vital to member-owners of electric cooperatives. This is especially critical in rural areas where even water pumping is contingent upon electric service. The move to broader electrification will only make reliable electricity more important – and the lack of reliable electricity more disruptive.

As noted in the Joint Utility Group comments, there are significant gaps in the assessment of electric grid reliability throughout the SPU. As the JUG notes, there is a critical need to assess electric grid reliability as part of the 2022 Scoping Plan analysis to determine if electricity portfolios can reliably produce and deliver clean energy 24 hours per day, 365 days a year to support electrification. The SPU currently lacks that analysis, and reliance on the SB 100 Joint Agency Report to fill this gap is misplaced. The Joint Agency SB 100 Report specifically stated that "[f]urther analysis is needed to evaluate topics such as reliability" and while "[i]nitial analysis demonstrates that SB 100 is technically achievable, though additional analysis is needed to evaluate reliability and other factors more comprehensively." (SB 100 Joint Agency Report, p. 16, 19)

It is incumbent upon CARB to put forth scenarios that recognize the critical role of the electric grid in attaining the state's objectives. The Proposed Scenario's targeted 2045 decarbonization presents the only feasible alternative that does not compromise the provision of 24/7 reliable electricity. An unreliable or compromised electric grid would not only impede the state's ability to reach our electrification goals, but would also be dangerous and antithetical to the wellbeing of Californians. Achieving carbon neutrality any earlier would be infeasible, costly, and ill-advised. GSPC urges CARB to conduct the necessary reliability assessment as soon as possible, and in the interim, not accelerate the decarbonization target date."

Response: The reasonably foreseeable compliance responses of the 2022 Scoping Plan, evaluated in the First Draft EA, include expansion of renewable energy and electrical infrastructure (see Section 2.C.3 of the EA). An analysis of the environmental impacts related to these reasonably foreseeable compliance responses are included in Chapter 4 of the First Draft EA. Please also refer to response to comment 574-1 regarding grid reliability.

622-2: The commenter states, "In previous comments, GSPC noted the need to ensure that the role of the state's natural and working lands (NWL) is appropriately recognized in the context of the state's broader electrification goals, clean-energy objectives, and wildfire emissions reduction strategies. The ever-increase threat of wildfires exacerbated by years of drought must be addressed; failure to do so adversely impacts electricity affordability and reliability, as wildfires damage or threaten critical infrastructure. Rural electricity customers

are particularly isolated and vulnerable to electricity transmission and distribution disruptions from wildfires."

Response: The potential for increase wildfire risk is addressed in the First Draft EA under Impact 20.a. As discussed in the last paragraph on page 225 of the First Draft EA:

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

CARB agrees that the State must work to address the increasing threat of wildfires, and that such fires can impact electricity reliability. The 2022 Scoping Plan includes forest management related actions to help reduce wildfire risk across the state, while supporting California's electrification goals. No changes to the EA are required in response to this letter.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 630

6/24/2022 Tanya DeRivi, Western States Petroleum Association

630-1: The commenter states, "**5. WSPA agrees with CARB that an improved and streamlined project environmental review and permitting process is necessary to deliver the Draft 2022 Scoping Plan Update.**

The environmental review process under the California Environmental Quality Act (CEQA) has proved to be a significant barrier to projects and permitting certainty in the past. The following actions should be considered while creating a streamlined process for obtaining permits and for review and litigation under CEQA for eligible low carbon projects:

- Create a new agency under to Office of Planning and Research to act as a lead agency for eligible low carbon projects that opt into the streamlined process for environmental review and litigation.
- Streamline the environmental review process under CEQA by establishing aggressive timelines for completeness determination, preparation of environmental impact report or negative declaration, recirculation period, and project approval.
- Streamline the litigation process to facilitate quick resolution including expedited preparation of the administrative record.
- Provide flexibility for local, regional or state agencies that act as lead agency for eligible low carbon projects to access aspects of the expedited environmental review and litigation process.

Recommendation: CARB should work with the Office of Planning and Research to develop an improved and streamlined project environmental review (under CEQA) and permitting process for the low-carbon projects that are essential for the implementation and delivery of the Draft 2022 Scoping Plan Update."

Response: This comment indicates the environmental review process under the California Environmental Quality Act has proved to be a significant barrier to projects and permitting certainty in the past and recommends additional streamlining and coordination for low carbon projects. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. The comments are noted and are being provided to the Board members for their consideration. Nevertheless, CARB staff notes that streamlining for certain types of projects, such as infill, are currently allowed under CEQA (e.g., streamlining for Transit Priority Projects consistent pursuant to PRC § 21155.1 and infill projects pursuant to CEQA Guidelines § 15332). However, CARB has actively and will continue to coordinate with The Governor's Office of Planning and Research for additional streamlining opportunities, where feasible and appropriate. CARB notes the climate emergency requires a rapid build out and transition of existing energy assets to produce and deploy clean energy to support the transition away from fossil fuels in the next two decades to avoid the worst impacts of climate change. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 632

6/24/2022 Sasan Saadat ,Earthjustice

632-1: The commenter states, "In an effort to assuage the very real concerns raised by these groups, the Draft Scoping Plan cites a Stanford report that application of carbon capture "could reduce emissions of criteria air pollutant emissions from certain facilities." However,

the Draft Scoping Plan does not include the portion of the paper that also notes that "the local community benefits and impacts will vary by project and location" and that it "is possible that the installation of a [carbon capture and storage (CCS)] plant could lead to an increase in air pollutants other than CO2."[17] In fact, the report suggests that these increases in emission may be so significant that "a facility possessing a Title V operating permit for being a major source of air pollutants may have to undergo significant revisions of that permit."[18]

Because of the significant uncertainty associated with these carbon capture technologies, their inability to deliver air quality benefits and their apparent potential to increase air pollutants, the Scoping Plan should minimize reliance on engineered carbon removal (both CCUS and DAC) and elaborate on the risks inherent to each of these technologies. A more even-handed treatment of the risks in relying so heavily on an unprecedented and complication-free build-out of direct air capture must be incorporated.

[17] Benson, et al., An Action Plan for Carbon Capture and Storage in California: Opportunities, Challenges, and Solutions. CCS in CA at 107 (Oct. 2020), https://stacks.stanford.edu/file/druid:fy784bm4949/EFI-Stanford-CA-CCS-FULL-rev2-12.11.20.pdf.
[18] Id. at A-5."

Response: Please refer to Master Response 3.

632-2: The commenter states, "CCS technology can be extremely energy and water intensive. Solvent-based carbon capture technologies, in particular, can require a significant energy penalty to generate the solvent and compress the CO2 into the pipeline. This either reduces the efficiency of the host plant (similar to de-rating the plant) or alternatively requires a much larger power plant to achieve the same "net" power generation capacity that would have been available without CCS. CCS consumes large quantities of freshwater and requires substantial amounts of cooling water."

Response: Please refer to Master Response 3 regarding emissions and potential health impacts of mechanical CDR and CCS projects.

632-3: The commenter states, "It is also important to recognize that CCS technology could result in increased air pollution from power plants as well as other health risks. CCS technology would enable a power plant to avoid greenhouse gas emissions, but would have no impact on other air pollutants like fine particulates (PM2.5), NOx, or water pollution. CCS technology could allow emitting plants to operate more frequently and at higher levels, resulting in more pollution than they emit today. Carbon capture technologies that rely on solvents also risk solvent emissions slipping through the flue stack, resulting in new dangerous particulate and chemical emissions spewing into nearby communities and potentially contaminating surface water. Additionally, with the few CO2 transportation pipelines that exist today, there have already been signs of potential harm from accidents and pipeline ruptures."

Response: Please refer to Master response 3.

632-4: The commenter states, "**e. New gas capacity would exacerbate environmental injustices by worsening air quality in disadvantaged and overburdened communities.**

The new gas capacity described in the Draft Scoping Plan would undermine the state's work on environmental justice by worsening dangerous air pollution in overburdened frontline communities and increasing methane leakage. New gas build would have drastic additional impacts on air quality from increased capacity, even if the new build is more efficient and includes CCS technology. Even if carbon capture technology were deployed at these new gas plants, this technology does not decrease or alleviate other dangerous air pollutant emissions from gas plants.

Assuming that the new gas plants described in the Draft Scoping Plan will be used for flexible load, they are likely to be dispatched more often, resulting in more cycling and increased pollutant emissions. Gas plants emit significantly more air pollution while starting than during steady state operations. The cycling of gas plants produces significant amounts of pollution because emissions control systems are not as effective at capturing pollutants when plants are starting and stopping. In fact, pollution from a single start can be higher than if the plant operated the entire day.[42] For example, a single start of the Colusa Generating Station, a combined cycle gas plant, can emit as many NOx emissions as the facility would have emitted in 12 to 38 hours of steady-state operation.[43] These estimates are based on permitted values, but unfortunately operational monitoring data shows that plant emissions can be even higher. During a start in May 2020, the Colusa gas plant emitted over 900 pounds of NOx during its first three hours of operation, compared to around 10 pounds per hour of NOx after start-up.[44] This means that the Colusa facility emitted more than 90 times its regular rate of NOx emissions during a single start. These startling pollution data demonstrate why the Board must reject any proposal that would increase the use and cycling of gas plants.

California's air pollution already exceeds national standards, and new gas capacity would only exacerbate this problem. While it is unclear from the Scoping Plan model results where new gas plants will be built, new gas resources would likely increase pollution in air basins that are already in serious, extreme, or severe nonattainment for one or more or more criteria pollutants.[45] Gas-fired power plants emit many harmful pollutants, and the majority of California's gas-fired power plants are located in or near the state's most disadvantaged communities.[46] This injustice results in compounding harms. For example, fine particulate matter emissions from gas combustion are closely connected to decreased lung function, more frequent emergency department visits, additional hospitalization and increased morbidity.[47]

[42] See Birdsall et al., Senate Bill 350 Study Volume IX: Environmental Study (2016), Table 4.4-3, p. 100, https://www.caiso.com/Documents/SB350Study-Volume9EnvironmentalStudy.pdf.
[43] Id.

[44] See U.S. EPA Clean Air Markets Database, Colusa Power Plant, May 28, 2020 Data (according to the continuous emissions monitor data, the plant emitted 145, 393, and 404 pounds of NOx during its first three hours of operation. After those first three hours, the next 11 hours were between 8 and 10.5 pounds of NOx per hour).

[45] U.S. EPA, Green Book: Current Nonattainment Counties for All Criteria Pollutants (data current as of Dec. 31, 2020), available at https://www3.epa.gov/airquality/greenbook/ancl.html.

[46] Brightline Defense, Winding Up for Offshore Wind, p. 2, https://www.offshorewindnow.com/brightline-defense-report ("78% of gas-powered plants [in California] are located in frontline environmental justice communities"). 47 American Lung Association, Particle Pollution, https://www.lung.org/cleanair/outdoors/what-makes-air-unhealthy/particle-pollution.

Response: CARB circulated the First Draft EA for public review and comment for a period of 45 days that began on May 10, 2022 and ended on June 24, 2022. After the end of the First Draft EA public review period, CARB identified revisions to certain aspects of the proposal that merit revisions to the project description, and the EA was recirculated for 45-day public review from September 9, 2022 to October 24, 2022. The revised project description of the Recirculated Draft EA is directed toward "further transition away from fossil fuel-based electricity generation, and toward increased renewable energy generation resources," which is reflected in a revised modeling assumption of no new natural gas plant capacity for reliability needs for the Scoping Plan Scenario, consistent with direction provided by Governor Newsom requesting that state agencies plan for an energy transition that avoids the need for new natural gas plants to meet California's long-term energy goals. No further changes to the First Draft EA are required.

632-5: The commenter states, "**g. The Draft Scoping Plan failed to consider the impacts that new gas capacity would have on methane leakage, creating additional intense GHG impacts.**

Continued reliance on gas capacity also increases the risk of methane leakage. Methane has significantly more intense global warming potential over a short-term, posing intense climate damage, and methane leakage can cause severe health impacts, as witnessed by the community living near the Aliso Canyon gas storage facility. Between October 2015 and February 2016, the facility released at least 109,000 tons of methane, forcing the relocation of thousands of residents for several months. A UCLA study found that many community members living around Aliso Canyon experienced elevated indoor levels of air toxins and persistent health impacts following the leaks.[48] These residents exhibited headaches, nausea, stomach aches, dizziness, and trouble breathing following the leak, and a local physician found signs of bone marrow suppression, which can lead to anemia and leukemia.[49] In light of these health risks, then-Governor Jerry Brown directed the Public Utilities Commission to start identifying alternatives to Aliso. However, Aliso Canyon and other gas storage facilities cannot close if new gas-fired generation is dependent on it. Building new gas capacity risks another massive, dangerous, and climate-damaging leak again.

[48] Diane A. Garcia-Gonzales, et al., Associations among particulate matter, hazardous air pollutants and methane emissions from the Aliso Canyon natural gas storage facility during the 2015 blowout (Nov. 2019), https://www.sciencedirect.com/science/article/pii/S0160412018327314?via%3Dihub.

[49] Sharon McNary, What Did Porter Ranch Residents Breathe During the Massive Gas Leak? Here's What One Doctor's Quest Revealed, LAist (Nov. 5, 2019), https://laist.com/2019/11/05/aliso-canyon-porter-ranch-gas-leak-blowout-health-benzene-nordella.php."

Response: The First Draft EA (circulated from May 10, 2022 to June 24, 2022) describes the impacts from new natural gas capacity to reflect the initial electricity sector modeling for the 2022 Scoping Plan, which indicated the need for firm, dispatchable power for times when intermittent renewables such as solar and wind are not available, or when loads exceed planned forecasts. This need for backup power for grid reliability was reflected in the electricity model's selection of 10 GW of new natural gas capacity in 2045. However, the limited use of the new capacity was reflected in PATHWAYS modeling results showing reductions in energy-related GHG emissions from electric power relative to the Reference Scenario (see AB 32 GHG Inventory Sectors Modeling Data Spreadsheet4). Nevertheless, as described in the response to comment 632-5, the Recirculated Draft EA (circulated from September 9, 2022 to October 24, 2022), revised Scoping Plan Scenario, and proposed Final 2022 Scoping Plan reflect the revised modeling assumption of no new gas capacity in line with direction from Governor Newsom. Although the initial modeling results showed corresponding GHG emissions reductions from the electricity sector in the Scoping Plan Scenario, the revised modeling assumption of no new gas capacity, as reflected in the Recirculated Draft EA, also addresses the points raised by the commenter and no further changes to the First Draft EA are required.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 635

6/24/2022 Jennifer Hernandez

635-1: The commenter states, "The EA is a "programmatic" analysis for "implementation of the 2022 Scoping Plan."[2]

[2] EA, at p. 1."

Response: The comment restates an excerpt from the First Draft EA indicating that the EA provides a programmatic analysis of implementation of the 2022 Scoping Plan. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft

EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

635-2: The commenter states, "The legal errors in the EA are both profound and profuse. Broadly, the EA fails as an informational document because it (I) does not correctly characterize the Project, (II) does not analyze cumulative impacts of the Project, (III) fails to identify significant unavoidable impacts (IV) does not analyze a reasonable range of alternatives, (V) does not adequately disclose the environmental impacts of its Measures on any resource category, and (VI) fails to articulate lawful mitigation measures."

Response: The comment that the First Draft EA contains legal errors is an introductory remark that does not specify nor substantiate the rationale behind the commenter's opinion. CARB disagrees with this comment. Responses to specific issues are addressed in the responses below, as appropriate.

635-3: The commenter states, "I. The Environmental Assessment Must Comply With CEQA By Analyzing the Reasonably Foreseeable Impacts of the "Whole of the Action" that CARB Will Take in Approving the Scoping Plan.

Although CARB claims an exemption from CEQA pursuant to its certified regulatory program, "[a] certified program remains subject to other provisions in CEQA such as the policy of avoiding significant adverse effects on the environment where feasible."[3] As such, the EA must review the impacts of the whole "project," as defined by CEQA. First, for "CEQA's purposes, '[p]roject' means an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment."[4] Second, the "Project" must include the "whole of the action," including "ARB's action in enacting the regulations plus its actions in implementing of the regulations."[5] In violation of this principle, the EA attempts to bypass CEQA by mischaracterizing the Project, stating that that the Scoping Plan approval "would not lead directly to any adverse impacts on the environment" because CARB's approval "does not authorize any activities that would change the physical environment."[6] Such a claim – that a lead agency's approval of a foundational plan to direct future agency decisions that authorizing actual construction and related changes to the environment does not require assessment under CEQA – was decisively considered, and rejected, in numerous court challenges resolved decades ago.[7] The "project" CARB is required to consider in the EA is the entirety of the Scoping Plan, for which a "summary" is provided in Chapter 2 of the EA.[8]

[3] CEQA Guidelines § 15250; see also Id., Sierra Club v. State Bd. of Forestry (1994) 7 Cal.4th 1215, 1220.

[4] Muzzy Ranch Co. v. Solano County Airport Land Use Com. (2007) 41 Cal.4th 372, 381–382, as modified (Sept. 12, 2007)

[5] POET, LLC v. State Air Resources Bd. (2017) 12 Cal.App.5th 52, 74.

[6] Id. But note that "[t]he notion that the project itself must directly have directly have such an effect [on the environment] was effectively scotched in Friends of Mammoth." People ex rel. Younger v. Local Agency Formation Com. (1978) 81 Cal.App.3d 464, 479 citing Friends of Mammoth v. Board of Supervisors (1972) 8 Cal.3d 247, 265

[7] Bozung v. Local Agency Formation Com. (1975) 13 Cal.3d 263, 281 (holding that CEQA applies to annexation of land into county and that even though LAFCO was not itself authorizing project construction, as the lead agency it must analyze project impacts); see also Twain Harte Homeowners Association, Inc. v. County of Tuolumne (1982) 128 Cal.App.3d 644 and Koster v. County of San Joaquin (1996) 47 Cal.App.4th 29 (holding that General Plan adoption triggers CEQA even though no physical construction was authorized by General Plan and subsequent agency approvals would be obtained before any such physical construction activities occurred).

[8] EA, at p. 1."

Response: The comment states the provisions of CARB's certified regulatory program, which applies to the First Draft EA. CARB's approval of the 2022 Scoping Plan would indeed not authorize any activities that would change the physical environment. However, the First Draft EA discloses the potential for indirect significant impacts resulting from reasonably foreseeable compliance responses that may be implemented by other agencies and jurisdictions. The compliance responses represent the reasonably foreseeable physical changes that may result from the 2022 Scoping Plan. Therefore, the First Draft EA adequately considers the potential physical environmental impacts from the 2022 Scoping Plan.

Please refer to Master Response 1. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

635-4: The commenter states, "**A. The EA Must Review the Direct Effects of the Scoping Plan Activities and the Reasonably Foreseeable Indirect Effects Thereof.**

The EA neglects to conduct a detailed impacts analysis of many Measures, claiming that there is too much uncertainty around actual implementation given its programmatic level. Relatedly, the Attorney General has, on multiple occasions, tried and failed to persuade the courts that the Scoping Plan has "no physical impacts on the environment."[9] Furthermore, on one prior occasion, the Attorney General asserted this in a remarkable Demurrer to a still-pending lawsuit by our client The Two Hundred against the 2017 Scoping Plan wherein the Attorney General also asserted that it was entirely Constitutional for CARB to impose racially-discriminatory housing measures given the climate emergency.[10]

In fact, the Scoping Plan includes a discrete set of CARB staff policy decisions which would result in a "physical change to the environment," As acknowledged in the EA, the Scoping Plan "project" is the "set of measures" included in Tables 2-2 and 2-3 in Chapter 2 of the 2022 Scoping Plan (hereinafter referred to as "Measures"); CARB staff has selected these Measures to "achieve carbon neutrality by 2045."[11] The Plan expands on the substantive content of these Measures in Chapter 4, which lists multiple "Strategies for Achieving Success" that identify further physical changes to the environment that must be made to implement the Scoping Plan ("Strategies"). (as used hereinafter, "Measures" are used to describe both Measures and Strategies unless otherwise indicated) As explained in the EA:

1. This [EA] analysis addresses the environmental impact resulting from implementing the proposed 2022 Scoping Plan, compared to a baseline consisting of existing conditions.
2. The analysis of environmental impacts is based on the effects of compliance responses that are reasonably foreseeable, if the measures in the 2022 Scoping Plan are implemented.
3. The analysis in this Draft EA addresses environmental impacts both within California and outside the state to the extent that they are reasonably foreseeable and do not require speculation.
4. The level of detail in the impact analysis is necessarily and appropriately general because the 2022 Scoping Plan…is itself programmatic. Furthermore, it would be speculative to predict decisions by other entities regarding the specific location and design of new or modified facilities, source and production of materials, and other activities that may be undertaken to implement measures in the 2022 Scoping Plan.[12]

The EA overplays the uncertainty of implementation to conclude that that impacts are "potentially significant," but ignores impacts and implementation that is very reasonably foreseeable. The EA claims that it can only complete a certain level of analysis at this programmatic level.[13] While the EA claims that "[t]he impact analysis is based on foreseeable compliance responses that rely on a set of reasonable assumptions," CARB actually fails to analyze several reasonably foreseeable compliance actions which could result in impact of the environment.[14] In fact, the Scoping Plan selects some Measures, and rejects others, including Measures such as:

- the massive expansion of solar and wind electric generation facilities which do in fact have reasonably foreseeable locations, as well as modifications to transmission, substation, and other distribution infrastructure which are likewise reasonably foreseeable and in documentation commissioned by and submitted to CARB;
- a ten-fold expansion of forest "management" activities including timber harvesting and tree/vegetation removal which likewise will occur in reasonably foreseeable locations and - to pick just one example - will generate many thousands of tons of wood waste and debris requiring disposal or other management;
- the prescribed development of most new housing in transit priority areas (or equivalent), each of which is identified in Sustainable Communities Strategies prepared for both urban and other California regions which have been submitted to and accepted by CARB as meeting regional GHG reduction standards pursuant to SB 375; and
- the physical modification of scores of stationary sources of emissions subject to the Cap and Trade program, including but not limited to the installation of carbon capture and sequestration technologies requiring the modification of existing facilities as well as the construction or modification of off-site pipeline conveyance and sequestration facilities.
- The Plan boasts that "California has never undertaken as comprehensive, far reaching, and transformative an approach to climate change as this plan" and acknowledges that the ***Scoping Plan affects "every aspect of how we work, play and travel in***

> ***California***."[15] The EA then goes on to identify twelve categories of "reasonably foreseeable compliance responses" and explains that all are analyzed against the "existing environmental conditions and regulations" baseline.[16]

In short, the Scoping Plan, its Measures, CARB's implementation of those Measures, and the reasonably foreseeable effects of that implementation constitutes the "project." The implementation of the Measures has more certain and ascertainable impacts than CARB portends.

[9] See generally The Two Hundred v. California Air Resources Board, Order on Demurrer After Hearing, (Super. Ct. Fresno County, 2018, No. 18CEC601494).
[10] See The Two Hundred v. California Air Resources Board, Order on Demurrer After Hearing, (Super. Ct. Fresno County, 2018, No. 18CEC601494), 12 ("[W]hile defendants argue that there is no constitutionally protected right to housing free of discrimination and thus plaintiffs have not stated a valid due process claim, the court notes that it is well—established that there is a constitutional right to be free of discrimination based on race.").
[11] EA, at p. 11.
[12] EA, at p. 7.
[13] EA, at p. 1.
[14] Id.
[15] Scoping Plan, Executive Summary, at p. ix (emphasis added).
[16] EA, at pp. 18-27.

Response: Please refer to Master Response 1. The First Draft EA presents a programmatic analysis of the potential for implementation of the 2022 Scoping Plan to result in adverse environmental impacts, and it describes feasible mitigation measures for identified significant impacts. The First Draft EA represents a good-faith effort to evaluate and fully disclose the potential for significant adverse impacts associated with the compliance responses that are reasonably foreseeable based on information known at this time, if the recommended actions identified in the 2022 Scoping Plan are implemented. It evaluates potential significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses related to implementing the 2022 Scoping Plan, based on currently available information, without being speculative.

The commenter suggests that some measures have been included or rejected, and that the included measures were not analyzed in sufficient detail. In making this argument, the commenter overplays the level of specificity and foreseeability of the measures described in the 2022 Scoping Plan. As described throughout the 2022 Scoping Plan, its appendices, and the First Draft EA, the 2022 Scoping Plan is a high-level, statewide programmatic plan for achieving the state's climate goals. To the extent the commenter claims particular included measures were analyzed in insufficient detail, CARB responds that those measures were fully analyzed, at a programmatic level appropriate for the Scoping Plan's highly programmatic nature; for example:

- Increased renewable energy and electrical infrastructure is described in Section 2.C.1, "Increase in Renewable Energy and Decrease in Oil and Gas Use action," and Section 2.C.3, "Expansion of Electrical Infrastructure Actions,"). The impacts of these actions are included in Chapter 4 of the First Draft EA.

- Increased forest management activities are described in Section 2.C.10, "Forest, Shrubland, and Grassland Management Action." The impacts of these actions are described in Chapter 4 of the First Draft EA, including increase in wood waste and debris in Section 4.B.19, "Utilities and Service Systems under subheading, "Forest, Shrubland, and Grassland Management Actions." As discussed on pages 221-224 of the First Draft EA, the increase in pace and scale of vegetation treatments would result in an associated increase in the volume of solid organic waste generated during treatment, which would result in a significant and unavoidable impact.

- The 2022 Scoping Plan does not "prescribe[] development of most new housing in transit priority areas", contrary to the commenter's assertion. The 2022 Scoping Plan does not, and cannot, prescribe whether or where housing can be built; those decisions are left to local jurisdictions. Appendix E describes the need for "inclusive urban, suburban, and rural communities throughout the many regions of California – that provide for a range of affordable housing and transportation options, efficient access to a variety of jobs and services, clean air quality, opportunities to safely walk and bike, and open space and recreational opportunities" (Appendix E, page 3). As part of the Revised Draft EA, these issues were clarified through the addition of Section 2.C.14, "Reduced VMT Actions" and Section 2.C.16, "Guidance for Agencies Consistent with the 2022 Scoping Plan." As discussed on pages 37-40 of the Recirculated Draft EA, the VMT targets and strategy area discussion on land use and development in the 2022 Scoping Plan are not regulatory requirements. They provide advice and information on policy mechanisms that, if implemented, entities with authority over VMT may choose to rely upon. While the 2022 Scoping Plan's guidance may be influential, it is not controlling. The implementation of the VMT targets relies on many independent actors who may make a range of choices, given the complexity of the transportation system and the many options available to lower VMT. These may include, for instance, decisions to site and construct relatively more housing, particularly affordable housing for low-income households and communities of color, in transit or service-rich areas to reduce the need for automobile use and address historic inequities; decisions to prioritize the funding and expansion of transit; the use of various roadway pricing designs that can help shift transportation choices while generating funds for alternatives to driving; and perhaps other mechanisms identified as options in the relevant appendices and main document of the 2022 Scoping Plan, or mechanisms beyond those identified in the 2022 Scoping Plan.

  Actions specifically within CARB's authority that may influence VMT generally relate to the SB 375 regional planning process. They include the likely setting, after appropriate public process and analysis, of consistent regional greenhouse gas reduction targets under SB 375 for regional planning that may be followed by relevant jurisdictions.

Under SB 375, MPOs develop sustainable communities strategies that can include land use actions, among others, that if implemented, would help to achieve these targets. However, regional and local agencies have discretion in which actions they identify to meet the targets and may amend their plans at any time. As a result, both the actions and the potential ensuing environmental impacts of the specific strategies are unknown but would be evaluated by the appropriate regional and local agency upon adoption and implementation, as required by CEQA.

- Construction of new facilities to capture CO_2 emissions at industrial sources and construction of new infrastructure, such as pipelines, wells, and other surface facilities to enable transport and injection of CO_2 into geologic formation for sequestration is described in Section 2.C.5, "Mechanical Carbon Dioxide Removal and Carbon Capture and Sequestration Actions," which is analyzed in Chapter 4 of the First Draft EA. Additional industrial stationary source activities associated with modifications to facilities that may be subject to the Cap-and-Trade Program are described in Sections 2.C.1, "Increase in Renewable Energy and Decrease in Oil and Gas Use Actions," 2.C.2, "Low Carbon Fuels Actions," 2.C.3, "Expansion of Electrical Infrastructure Actions," and 2.C.6, "Improvements to Oil and Gas Facilities Actions." These activities include new renewable energy actions involving low-carbon fuels (e.g., hydrogen, biogas); modifications to existing crude production facilities, pulp and paper facilities, chemical and allied products, and other industrial manufacturing facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries, alternative fuel production facilities, food products facilities, pulp and paper facilities, chemical and allied products, and other industrial manufacturing facilities; construction of new infrastructure or modification to existing infrastructure to accommodate increased electrification; and modifications to existing oil and gas facilities to reduce emissions, such as installation of vapor recovery systems, installation of low-bleed or zero-bleed pneumatic devices, and replacement of leaking equipment. The impacts of these actions are described in Chapter 4 of the First Draft EA. For example, as described on pages 143-164 of the First Draft EA in the Hydrology and Water Quality resource area, solar thermal facilities may use substantial quantities of water for long-term operations, including steam generation; construction and placement of energy facilities on the landscape can contribute to off-site flooding; and CCS could place additional demand on water resources depending on the technology and approach deployed. Furthermore, the First Draft EA states that although unlikely, even after implementation of recognized practices (e.g., best management practices to reduce sedimentation and pollution of surface waters, design drainage plans for runoff to contain adequate capacity for projected flows on-site, preparation of a stormwater drainage and flood control analysis, preparation of a detailed hydrogeological analysis of potential project-related effects on groundwater resources), long-term operational-related impacts would be potentially significant and unavoidable.

The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

635-5: The commenter states, "**B. The EA Must Analyze the "Whole of the Action."**

In claiming that there is too much uncertainty about the implementation of the Measures to fully analyze their impacts in detail, the EA fails to adequately analyze the "whole of the action" constituting the project. While CARB has repeatedly tried, and failed in prior litigation to persuade courts that it does not have to really comply with CEQA for its Scoping Plan, courts have had none of it, holding that CARB must analyze "the whole of the activity constituting the 'project' includ[ing] the enactment, implementation and enforcement of the [Scoping Plan]."[17] Since the Scoping Plan identifies the concrete Measures described above and because the Scoping Plan is based on Measures which have been selected and rejected with certainty, the EA must review all of these Measures in as much detail as is currently known.

Having inadequately described the Scoping Plan "project," the EA then fails to disclose, analyze, or mitigate the impacts of almost all Measures that it does go on to analyze. "Because of CEQA's broad policy goals apply, the agency's environmental review document must include the same types of basic information as an EIR including a description of the activity and an analysis of impacts, mitigation measures, alternatives, and cumulative impacts."[18]

[17] POET, LLC v. State Air Resources Bd. (2017) 12 Cal.App.5th 52, 57 (CARB was required by CEQA to analyze the regulation being promulgated and the effects of implementing those regulations, including the foreseeable effects of the Low Carbon Fuel Standards.).

[18] Koska & Zischke, Practice Under the California Environmental Quality Act, §21.13; see also Pesticide Action Network N. Am. V. California Dep't of Pesticide Regulation (2017) 16 Cal.App 5th 224, 227.

Response: The First Draft EA evaluates the reasonably foreseeable impacts associated with implementation of the 2022 Scoping Plan, which represents the whole of the action. The First Draft EA represents a good-faith effort to evaluate and fully disclose the potential for significant adverse impacts associated with the compliance responses that are reasonably foreseeable based on information known at this time. It evaluates potential significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses related to implementing the 2022 Scoping Plan, based on currently available information, without being speculative. Additionally, the EA provides an adequate description of mitigation measures, alternatives, and cumulative impacts. The comment does not specify nor substantiate the rationale behind the commenter's opinion.

The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

635-6: The commenter states, "**III. The EA Fails to Identify Significant Unavoidable Impacts.**

The EA's impact summary states that 25 of 34 impact categories and subcategories are each "Potentially Significant and Unavoidable." This is a violation of CEQA: CARB may not duck its legal obligation to reach a conclusion about whether an impact is in fact significant and unavoidable. The CEQA Guidelines require that an EIR include a discussion of "Significant Environmental Effects Which Cannot be Avoided if the Proposed Project is Implemented."[20] The addition of the word "Potentially" plainly ignores the language of the Guidelines. The uncertainty expressed undermines the entire purpose of CEQA: "to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action."[21]

[20] CEQA Guidelines 15162.
[21] Save Round Valley Alliance v. County of Inyo (2007) 157 Cal.App.4th 1437, 1446 (internal citations omitted)."

Response: The First Draft EA was prepared consistent with the requirements of CARB's Certified Regulatory Program and represents a good-faith effort to evaluate and fully disclose the potential for significant adverse impacts associated with the compliance responses that are reasonably foreseeable based on information known at this time, if the recommended actions identified in the 2022 Scoping Plan are implemented. The scope of the analysis and assumptions are addressed in Section 1.D.2 of the First Draft EA, "Scope of Analysis and Assumptions." As discussed, the "…Draft EA represents a good-faith effort to evaluate and fully disclose the potential for significant adverse impacts associated with the compliance responses that are reasonably foreseeable based on information known at this time, if the recommended actions identified in the 2022 Scoping Plan are implemented. It evaluates potential significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses related to implementing the 2022 Scoping Plan, based on currently available information, without being speculative. The First Draft EA, including public comment and responses to environmental points raised in public comments, will inform CARB about the environmental implications of approving the proposed 2022 Scoping Plan." As further addressed in the third paragraph on page 32,

> [t]his Draft EA takes a conservative approach and considers some environmental impacts as potentially significant because of the inherent uncertainties in the relationship between physical actions that are reasonably foreseeable under the 2022 Scoping Plan and environmentally sensitive resources or conditions that may be affected. This conservative approach is effective because it helps avoid the risk of understating environmental impacts in light of these uncertainties and is intended to satisfy the good-faith, full-disclosure intention of CEQA. When specific later activities are proposed and subjected to project-level environmental review, many of the impacts recognized as potentially significant in this Draft EA may be avoided or reduced to a less-than-significant level.

The application of mitigation measures is addressed on pages 32–34 of the First Draft EA, under "Mitigation Measures":

> This Draft EA recognizes that a degree of uncertainty exists regarding the implementation of feasible mitigation measures for potentially significant impacts, because CARB has limited authority for mitigation enforcement outside its statutory mandates and mitigation implementation by other public agencies approving later activities is not assured or reasonably predictable. "'Feasible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (PRC Section 21061.1). While CARB is responsible for adopting the 2022 Scoping Plan, it does not have authority over to approve the potential later activities, such as infrastructure and development projects, that could be carried out in response to the 2022 Scoping Plan.
>
> Other agencies are responsible for the review and approval, including any required environmental analysis, of any facilities and infrastructure that are reasonably foreseeable compliance responses to the 2022 Scoping Plan, including any definition and adoption of feasible project-specific mitigation measures, and any monitoring of mitigation implementation. For example, local cities or counties must review and decide to approve proposals to construct new facilities; CARB does not have jurisdiction over land use permitting of any potential development associated with the compliance responses, such as new manufacturing or recycling facilities (Cal. Const., Article XI, Section 7 ["A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws."]; *California Building Industry Assn. v. City of San Jose* (2015) 61 Cal.4th 435, 455; *Big Creek Lumber Co. v. County of Santa Cruz* (2006) 38 Cal.4th 1139, 1151–1152; Health and Safety Code Sections 39000–44474 [CARB's statutory authority provides no authority to regulate local land use permitting]). Additionally, State and/or federal permits may be needed for specific environmental resource impacts, such as take of endangered species, filling of wetlands, and streambed alteration.
>
> Because CARB cannot predict the location, design, or site-specific setting of individual projects that may result and does not have authority over implementation of development that may occur, the programmatic analysis in this Draft EA does not allow for identification of the precise details of project-specific mitigation. As a result, there is inherent uncertainty in the degree of feasible mitigation that would ultimately need to be implemented to reduce any potentially significant impacts identified in this Draft EA.
>
> Given the foregoing, and because of legal factors affecting the feasibility of CARB's proposed mitigation for several of the identified potential significant indirect impacts associated with the 2022 Scoping Plan, CARB's implementation of the identified mitigation measures is infeasible based on the following: (1) the

> lack of certainty of the scope, siting, and specific design details of compliance-response development projects, which prevents CARB from being able to determine the projects' significant environmental impacts, and (2) the fact that even if there was certainty with respect to compliance-response development projects and associated significant environmental impacts, CARB lacks the legal authority and jurisdiction to permit these projects, which inherently prevents CARB from legally imposing any enforceable mitigation measures on the projects. Therefore, while the mitigation measures identified below in this Draft EA are considered by CARB to be feasible for project proponents to implement and in many cases for other agencies to enforce, CARB cannot legally enforce them.
>
> Consequently, this Draft EA takes the conservative approach in its post-mitigation significance conclusions (i.e., avoiding the risk of overstating the enforceability of feasible mitigation to reduce an impact to less than significant) and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable, where appropriate, because of the lack of jurisdiction by the lead agency to enforce the mitigation measures. It is also possible that the amount of mitigation necessary to reduce environmental impacts to a level below significant may be far less than disclosed in this Draft EA on a case-by-case basis. It is expected that many potentially significant impacts of facility and infrastructure projects would be avoidable or mitigable to a less than significant level as an outcome of their project-specific environmental review processes, conducted by the appropriate approval agency with jurisdiction as the lead agency under CEQA.

For the reasons described above, the First Draft EA properly identifies many of the impacts as potentially significant and unavoidable.

635-7: The commenter states, "**IV. The EA Fails to Identify or Analyze a Reasonable Range of Alternatives to Avoid or Minimize Significant Adverse Impacts to the Environment.**

The EA's failure to determine which impacts remain significant and unavoidable after mitigation renders the EA's analysis of alternatives fatally flawed. As the EA itself acknowledges:

> CEQA Guidelines section 15126.6(a) speaks to the need to describe 'a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but **would avoid or substantially lessen <u>any</u> of the significant effects of the project**, and evaluate the comparative merits of the alternatives.' The purpose of the alternatives analysis is to determine whether different approaches to or variations of the project would reduce or eliminate significant project impacts, within the basic framework of the objectives, a principle that is consistent with CARB's certified regulatory program requirements.[22]

The EA goes on to describe 3 alternatives in addition to the no project alternative, comparing them against the Scoping Plan's objectives.[23] The entirety of the environmental analysis for each alternative is set forth in one conclusory and incomplete paragraph, devoid of analysis and largely devoid of reference to the 25 sub-categories of impacts which CARB has identified as "PSU" (potentially significant and unavoidable) in the EA Impact Summary Table.[24]

The Regents of the University of California tried this shoddy sleight of hand to avoid meaningful analysis in an EIR evaluating the relocation of some operations into the Laurel Heights neighborhood in San Francisco.[25] The Supreme Court issued a stinging rebuke, first noting CEQA requires that alternatives to proposed projects must be "thoroughly assessed," then holding that CEQA requires a "meaningful analysis of alternatives" that include "facts and analysis, not just the agency's bare conclusions or opinions."[26] The Supreme Court continued:

> The EIR prepared by UCSF contains no analysis of any alternative locations. An EIR's discussion of alternatives must contain analysis sufficient to allow informed decision making… The Regents argue that alternatives had already been considered and found to be infeasible during the University's various internal planning processes and that an EIR need not discuss a clearly infeasible project alternative….The Regents miss the critical point that the public must be equally informed. Without meaningful analysis of alternatives in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process. We do not impugn the integrity of the Regents, but neither can we countenance a result that would require blind trust by the public, especially in light of CEQA's fundamental goal that the public be fully informed as to the environmental consequences of action by their public officials…If the Regents considered various alternatives and found them to be infeasible, we assume, absent evidence to the contrary, that they had good reasons for doing so. Those alternatives and the reasons they were rejected, however, must be discussed in the EIR in sufficient detail to enable meaningful participation and criticism by the public. … If the Regents previously considered alternatives in their internal processes as carefully as they now claim to have done, it seems the Regents could have included that information in the EIR. The Regents also contend the Association failed to point to any evidence in the record that demonstrates reasonable alternatives to moving the School of Pharmacy research units to Laurel Heights. This argument is somewhat disingenuous given the Regents' own failure to provide any meaningful information regarding alternatives. It is the project proponent's responsibility to provide an adequate discussion of alternatives… That responsibility is not dependent in the first instance on a showing by the public that there are feasible alternatives. If the project proponent concludes there are no feasible alternatives, it must explain in meaningful detail in the EIR the basis for that conclusion…CEQA requires that governmental agencies consider reasonable alternatives. It is not limited to alternatives proposed and justified by objectors [to an EIR]. (internal citations and quotation marks omitted).[27]

The EA alternatives selection and analysis fails on all counts. First, there is no explanation linking the selection of alternatives to the avoidance or minimization of adverse impacts; instead the alternatives simply reflect different GHG reduction measure policy choices (faster phase out of fossil fuels versus slower, more/faster versus less/slower deployment of certain technologies). The EA concludes that operational as well as construction impacts are "PSU" for aesthetics, agriculture and forests, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, land use and planning, noise, transportation/traffic, tribal cultural resources, utilities and service systems, and wildfire. The EA's failure to identify and evaluate a reasonable range of alternatives that avoid or substantially reduce these (or some subset of these) impacts is a fatal legal flaw under CEQA.

[22] EA, p. 251 (emphasis added).
[23] EA, Attachment B: Summary of Impacts; see also EA, at pp. 255-56.
[24] Id. Table 7-1, at pp. 256-57.
[25] Laurel Heights Improvement Assn. v. Regents of University of California (1988) 47 Cal.3d 376, 404, as modified on denial of reh'g (Jan. 26, 1989).
[26] See id. at p. 400, quoting Wildlife Alive v. Chickering (1976) 18 Cal.3d 190, 197 and id. at p. 404-05, quoting Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn. (1986) 42 Cal.3d 929, 935.
[27] Id. at pp. 404-06."

Response: CEQA states that consideration and discussion of alternatives to the proposed project is governed by the rule of reason (CEQA Guidelines 15126.6[a]). The factors that may be used to eliminate an alternative from detailed consideration include, and are not limited to: failure to meet most of the basic project objectives, infeasibility, or inability to avoid significant environmental impacts. The range of feasible alternatives are to be selected and discussed in a manner to foster meaningful public participation and informed decision making (CEQA Guidelines 15126.6[f]).

The Alternatives Analysis in Section 7 of the First Draft EA provides a discussion of whether and how each alternative meets the project's objectives, and an analysis of each alternative's potentially significant environmental impacts. The First Draft EA evaluates a reasonable range of alternatives to the 2022 Scoping Plan that could reduce or eliminate the project's significant effects on the environment while meeting most of the basic project objectives (Title 14 CCR Section 15126.6(a)). Pursuant to CARB's certified regulatory program, the First Draft EA 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.

The selection of the range of alternatives is described in Section 7.B of the First Draft EA, "Selection of Range of Alternatives." As described on pages 252–253 of the First Draft EA, beginning in the fourth paragraph:

> The 2022 Scoping Plan recognizes the need for broad-based strategies that require continued changes to how the State generates, transmits, and consumes electricity; how people and goods are transported; how communities are

> planned and built; how water and other resources are conveyed, distributed, and consumed; and how the State manages its vast natural and agrarian lands; however, specific actions are not yet fully defined at this stage of planning. The level of detail for each alternative must reflect that the project is a broad plan. Accordingly, this analysis cannot provide the level of detail that will be contained in subsequent environmental review that will be conducted when each of the 2022 Scoping Plan's recommended actions is subsequently developed and implemented by CARB or other lead agencies. (See Title 14 CCR Section 15168.)
>
> CARB has identified a reasonable range of four alternatives that allow the public and CARB to understand the differences among the different approaches. GHG emission reduction measures ongoing or already implemented as part of the initial Scoping Plan, and subsequent updates, are considered a part of the No-Project Alternative. Because these programs are already underway and reducing emissions at this time, they are reasonably expected to continue. In addition to the No-Project Alternative, CARB made a good-faith effort to identify other potentially feasible project alternatives. This effort included examining comments received at the public workshops held on June 8–10, 2021; July 20, 2021; August 2, 2021; August 17, 2021; September 8, 2021; September 30, 2021; November 2, 2021; December 2, 2021; December 13, 2021; February 15, 2022; March 15, 2022; and April 20, 2022 ; at the CARB hearings held on June 24, 2021; February 24, 2022; and March 24, 2022 and at 17 Environmental Justice Advisory Committee meetings to determine whether any commenters suggested potentially feasible alternatives. Although commenters made suggestions for particular components of recommended actions in the key economic sectors, no comments suggested an alternative, broad-based comprehensive approach to the project itself. CARB staff found no comments suggesting an alternative comprehensive approach to meet the State's long-term GHG reduction goals.
>
> Despite the challenge of identifying alternative approaches to the project as a whole, CARB identified three feasible action alternatives in addition to the No-Project Alternative rather than just partial alternatives to components within the project. The alternatives do not alter the basic nature of the project, and the information provided on them below is sufficient to allow comparisons with the proposed project.

As noted in the last paragraph on page 256, "[g]enerally, actions associated with the 2022 Scoping Plan and plan alternatives would be the same. Differences among the alternatives would be related to the degree to which individual actions are implemented. A summary of the differences among the alternatives, compared to the 2022 Scoping Plan, is presented in Table 7-1." The alternatives evaluation presented in Section 7.E of the First Draft EA, "Evaluation of Scoping Plan Alternatives," describes how significant environmental impacts of each alternative would be reduced as compared to the 2022 Scoping Plan. Consistent with CEQA Guidelines Section 15126.6(d), this evaluation provides "sufficient information about

each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project."

The comment does not provide recommendations for alternatives to the 2022 Scoping Plan that can be further evaluated. No changes to the First Draft EA are required in response to this comment.

635-8: The commenter states, "**V. EA Fails to Disclose, Analyze or Mitigate Significant Adverse Environmental Impacts for Scoping Plan Measures.**

The EA avoids disclosure, impact analysis, cumulative impact analysis and the imposition of all feasible mitigation measures to avoid or reduce significant adverse impacts (including an assessment of mitigation measure effectiveness) for almost all Scoping Plan Measures in violation of CEQA.

A closer examination of just four of the Measures demonstrate the EA's failure to disclose both currently known and reasonably foreseeable construction and operational impacts, and unlawfully defers both analysis and mitigation of such impacts to later agency actions in violation of CEQA's prohibitions on both piecemealing (breaking up the larger project of making California carbon neutral by 2045 into smaller subparts to avoid comprehensive environmental analysis of the "whole of the project"), and unlawful deferral of feasible mitigation to avoid or minimize such impacts. CARB, like other state agencies, claims that it is somehow too speculative to really do the disclosure, analysis and mitigation required to comply with CEQA. Courts haven't bought these arguments[28], and CARB's latest attempt to circumvent CEQA is constitutes willful violation of CEQA. Four specific examples of Measures whose impacts are not analyzed completely are provided below:

[28] The agency's certified CEQA regulatory program document "must provide detailed information on the project's potential significant effects on the environment and describe mitigation measures and alternatives that could reduce the project's significant environmental impacts." Koska & Zischke, Practice Under the California Environmental Quality Act §21.13; see also, Ebbetts Pass Forest Watch v. Dept of Forestry & Fire Protection (2008) 43 Cal.App. 936, 943."

Response: Please refer to Master Response 1.

The commenter's contention that the project is piecemealed into smaller subparts and does not represent the whole of the action because the 2022 Scoping Plan includes a wide range of compliance responses and potential implementation measures is misinformed. In fact, the First Draft EA analyzes the whole of the action as the comprehensive 2022 Scoping Plan, which is inclusive of the compliance responses and implementation measures and does not attempt to separate the project to avoid analysis and disclosure of impacts.

The comment that the First Draft EA contains legal errors is an introductory remark that does not specify or substantiate the rationale behind the commenter's opinion. Specific issues are addressed in forthcoming responses, as appropriate.

The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

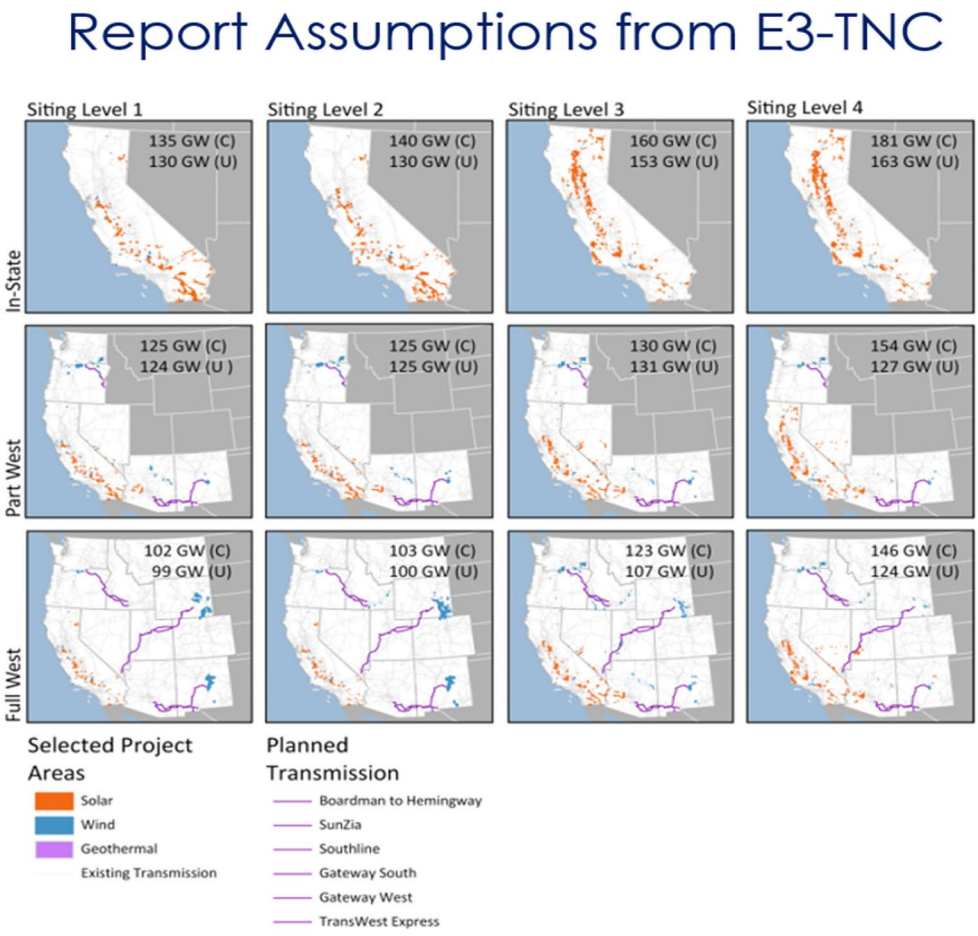
635-9: The commenter states, "**A. Solar & Wind Generation Facilities Required for Retail Electricity Supply.**[29]

The Scoping Plan includes the following Measure: "Per SB 100, achieve 100 percent renewable and zero-carbon retail sales [of electricity] by 2045."[30] The Scoping Plan further clarifies that, per a 2021 SB 100 Joint Agency Report prepared by CARB, the California Energy Commission, and the California Public Utilities Commission ("Joint Report"), non-retail electricity sales as well as electricity losses from storage, transmission and distribution lines, are not subject to the SB 100 renewable generation mandate.[31] Neither the EA nor Scoping Plan describe what portion of electricity generation that is not from solar, wind, and battery ("SWB") facilities will continue to occur, presumably from existing non-SWB facilities, and the EA does not disclose the location, size or schedule for the required SWB facilities.[32]

The Scoping Plan acknowledges that a four-fold increase of electricity is required under the Proposed Scenario.[33] However, due to the intermittent nature of solar and wind generation, even more electricity generation capacity as well as electric storage (battery) capacity is required to meet projected electricity demand. The Scoping Plan and EA falsely assert, however, that the location, size, and pace of SWB development is unknown and thus cannot be disclosed, analyzed, or mitigated.

The Joint Report, and related reports commissioned by the California Energy Commission, California Public Utilities Commission, and CARB itself,[34] acknowledge the massive expansion of SWB facilities as well as transmission lines and related distribution infrastructure are all required, and states that "[c]onstruction of clean electricity generation and storage facilities must be sustained at record-setting rates."[35]

An expert CEQA consulting firm, ERM, examined CARB and other Joint Agency commissioned studies that do in fact describe the size, scale and location of the planned "massive expansion" in these facilities, in a report titled Final Draft Assessment Report - Potential Impacts of California's High Electrification Scenario, 2021 (hereinafter "ERM Report"),[36] including for example a report prepared by The Nature Conservancy and E3 called "The Power of Place" ("E3-TNC") which sites are targeted for development of solar or wind facilities using 9 different scenarios which vary the amount of electricity imported into California (and thus partly reduce the need for California-sited generation facilities) and vary siting criteria to maximize avoidance of prioritized environmental impacts such as protected species and habitat. The siting Figure is reprinted here, as well as included in the ERM Report.

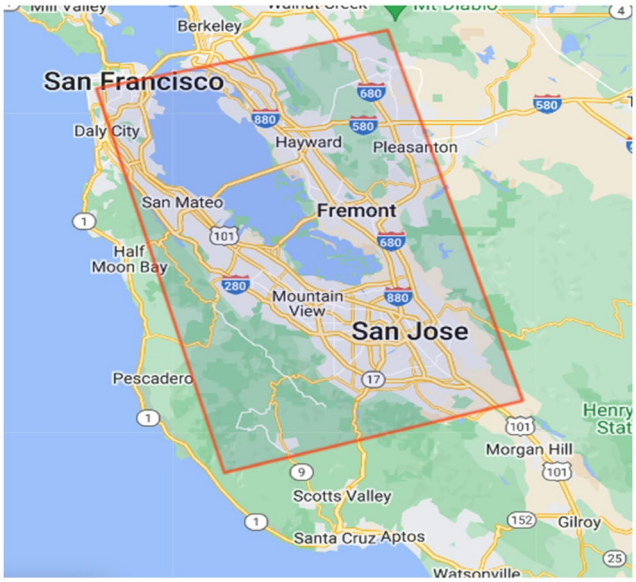


The ERM Report includes this E3-TNC and related Joint Agency studies, which collectively constitute the reasonably foreseeable physical consequences to the environment of just this 100 percent renewable retail electricity Measure. The ERM Report then uses the least impactful of the nine scenarios, which maximizes importation of electricity from other states and which avoids and minimizes impacts to prioritized environmental resources, to disclose the environmental impacts of the lowest impact version of this one Measure.

The ERM Report, using the physical siting, sizing, and scheduling information regarding SW facilities commissioned by and known to CARB, to identify the environmental impacts of this Measure. As set forth in the ERM Report:

- By 2050 installed capacity will need to increase by approximately 489 to 650 percent for solar and 30 to 250 percent for wind to provide the necessary supply. This is a net increase of between 101.5 to 107.3 gigawatts ("GW") of solar and 4.7 to 15.42 GW of wind.[37]
- Approximately 70 percent of overall solar and wind development would occur in the San Joaquin Valley and Mojave/Sonora desert regions; however, after accounting for land conservation and development prohibitions, only about 30 percent of these regions would likely be eligible for permits under existing legal constraints.

- If such development were in fact to occur, approximately 11,000 acres of wetlands and regulated waters, 43,000 acres of critical habitat, 40,000 acres of important bird areas, 2,000 acres of wildlife linkages, 119,000 acres of prime farmland, 100,000 acres of agricultural land, and 30,000 acres of rangeland would be impacted. Impacted protected species include the Giant Kangaroo rat, the San Joaquin Kit Fox, the Blunt Nosed Leopard Lizard, and the Desert Tortoise.[38]
- Assuming that California can in fact access the desired amount of electricity imports from other states, "approximately 740,000 to 1.24 million acres will be converted from agricultural, rangeland, and open space to industrial land in order to supply the needed electricity."[39] The ERM Report illustrates the size of this development activity on the Los Angeles area map; below is the construction overlay onto the Bay Area - which swallows San Francisco, Silicon Valley, San Jose, most of the Bay itself, and large swaths of Oakland and other East Bay cities. CARB's Scoping Plan and Environmental Assessment provide zero disclosure of the massive size, and massive impacts, of even this one Measure, as shown the Figure below.



Low Acre Conversion Estimate for Solar/Wind Facilities Required to Provide Retail Electricity from Renewable Sources; Estimate Assumes Increasing Already Massive Importation of Electricity from Other States.

- The increase in development is between 14 and 25 percent of the approximately 5.19 million acres of urbanized land in California.[40]
- The increase in solar development is approximately 6 to 10 times more than current solar facility development. Installed solar capacity in Fresno and Kings Counties combined is only 1.3 percent of the land area needed for solar.[41]
- The size of solar facilities would need to increase from today's average of 120 acres to an average of 988 acres.[42]
- The required schedule for solar and wind buildout would continue the record high buildout year for the next 25 years.[43]

- The ERM Report also describes other reasonably foreseeable impacts of this 100 percent renewable energy for retail sales measure, including for example foreseeable waste volumes associated with the routine and far more frequent need to replace batteries, windmill equipment, and solar panels. For example, battery equipment has a limited duration lifespan of about 13 years, wind turbines typically last 20 to 25 years, while solar PV panels last approximately 30 years, and thereafter must be replaced.[44] The EA does not disclose, analyze, or mitigate for this massive increase in electronic wastes, some of which include hazardous chemical constituents that require special handling under California's universal waste laws. Recycling and disposal both involve operations of waste handling facilities as well as waste transportation, and battery recyclers in particular have created legacy hazard conditions requiring regulatory interventions and taxpayer funded cleanups. The ERM Report identifies waste handling volumes omitted from the EA, which neither acknowledges, analyzes, or mitigates for these massive new quantities of spent batteries, solar panels, and turbines.[45] The EA omits even the most basic waste volume and landfill capacity analysis, which applies to shipping materials for new SWB equipment, new transmission and distribution lines and substations, and demolished or replaced existing infrastructure.[46]

More detailed information regarding this Measure that the EA fails to disclose, analyze, or mitigate is included in the ERM Report in Chapters 1, 2, 4 and 5.

30 Scoping Plan, at p. 164.
31 Scoping Plan, Table 2-2, at p. 60.
32 Id.
33 Scoping Plan, Figure 4-5: Projected electricity resources needed by 2045 in the Proposed Scenario, at p. 162, demonstrating the increase in need from 50,000 MW to almost 200,000 MW from 2025 to 2045."
34 See, e.g., Wu et al. 2019 ("E3-TNC") *Power of Place: Land Conservation and Clean Energy Pathways for California*, which provides details regarding the size, location and cost of solar wind, bulk transmission generation and geothermal facilities in California and other states required to implement the High Electrification Scenario as further described in ERM Report.
35 SB 100 Joint Agency Report Summary, at p. 8, available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=239588&DocumentContentId=73021 .
36 ERM, *Final Draft Assessment Report - Potential Impacts of California's High Electrification Scenario*, 2021. The ERM Report is included in its entirety as Attachment A to this comment letter. Each subsection of the ERM Report (e.g., section 2.3.1) constitutes a separate comment on the Scoping Plan, relating to failure to accurately describe energy costs, economic and equity impacts, land use and environmental impacts, and waste materials and volumes, of this SWB measure in the Scoping Plan. ERM has extensive experience in preparing EIRs for renewable energy projects in California, including analyzing and mitigating the environmental impacts of such projects as required by CEQA.

[37] ERM Report, at p. 1.
[38] Id. at p. 4.
[39] Id. at p. 3.
[40] Id.
[41] Id.
[42] Id. at p. 71.
[43] Id. at p. 73.
[44] Id. at p. 139.
[45] Id. at pp. 138-39.
[46] Id. at pp. 132-39.

Response: The comment includes a map of the general areas that are most viable for solar and wind development, it does not specify specific sites or locations. Solar and wind development is largely driven by the private market, and is subject to a number of real estate, land use, and environmental factors. While the ERM report identifies environmental impacts from implementation of a hypothetical development scenario, it too relies on assumptions and models, and provides a very general and programmatic description of potential impacts that may occur. Because of the size, scale, variability, and unknown details, it would not be prudent nor feasible to address specific details.

Furthermore, the level of detail in the First Draft EA reflects that the 2022 Scoping Plan is a high-level statewide planning document, and therefore the analysis is at a programmatic level and does not provide the granularity that would be presented in subsequent environmental documents prepared for specific regulatory actions that agencies may decide to pursue to reduce GHG emissions or any analysis carried out for specific construction projects by various entities. Nevertheless, consistent with this approach, the First Draft EA represents a good faith effort to evaluate the potentially significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses for implementing the 2022 Scoping Plan, based on currently available information, without being overly speculative. Similarly with the ERM report, the First Draft EA and Recirculated Draft EA include compliance responses associated with additional build-out of electricity resources and disclose potentially significant and unavoidable impacts related to land conversion; biological resource area impacts to avian, wildlife, protected species, and critical habitats; agricultural and forest resources habitat conservation impacts; as well as impacts to cultural resources, air quality and dust, and aesthetics. If CARB or other State agencies pursue regulations to implement any of the GHG actions discussed in the 2022 Scoping Plan, each regulation would go through the APA process, which includes a more detailed environmental analysis specific to that proposal.

Nevertheless, the First Draft EA acknowledges as part of the reasonably foreseeable compliance responses that implementation of the 2022 Scoping Plan could include operation of new facilities, including wind, solar thermal, solar photovoltaic, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. The operation of wind, solar thermal, and solar photovoltaic energy would occur over large expanses of land (e.g., acres).

As discussed in Section 4.A of the First Draft EA, "Approach to the Environmental Impacts Analysis and Significance Determination":

> The potential environmental effects of reasonably foreseeable compliance responses associated with the 2022 Scoping Plan are analyzed in a programmatic manner because it consists of a series of actions that can be characterized as one large project and are related in connection with the issuance of the 2022 Scoping Plan to govern the conduct of a continuing program under AB/SB 32. (Title 14 CCR Section 15168(a)(3)) While the types of foreseeable compliance responses can be reasonably predicted, the specific location, design, and setting of the potential actions cannot feasibly be known at this time. If a later activity would have environmental effects that are not examined within this EA, the public agency with approval authority over the later activity may need to conduct additional environmental review as required by CEQA or other applicable law.

These assumptions are consistent with standards of adequacy described in CEQA Guidelines (i.e., CEQA Guidelines Section 15151). That is, the First Draft EA provided a good-faith effort at disclosure that provide decision-makers with information related to the environmental consequences of the proposed regulation. This analysis provides enough relevant information and reasonable inferences such that fair arguments support the conclusions presented throughout the EA (CEQA Guidelines Section 15384[a]). Information associated with the compliance scenarios and environmental analysis includes facts, reasonable assumptions predicated upon facts, and expert opinion support by facts be used to discuss environmental effects (CEQA Guidelines Section 15384[b]).

The comments notes that renewable energy projects would affect agricultural and biological resources. The First Draft EA addresses the types of impacts, as follows:

- Impact 2.a discusses the effects of renewable energy projects on agricultural lands. Mitigation Measure 2a includes avoidance of Important farmland conversion, restoration activities, and if restoration is not feasible permanent preservation of offsite Important Farmland of equal or better agricultural quality, at a ratio of at least 1:1

- Impact 4.a addresses modifications to existing habitat, including the removal, degradation, and fragmentation of riparian systems, wetlands, and/or other sensitive natural wildlife habitats and plant communities; interference with wildlife movement or wildlife nursery sites; loss of or disturbance to special-status species; and/or conflicts with local ordinances or the provisions of adopted habitat conservation plans, natural community conservation plans, or other conservation plans or policies to protect natural resources. Mitigation Measure 4.a includes a list of actions that could mitigate potentially significant biological impacts, including: preparation of a biological inventory of site resources, preparation of site design and development plans that avoid or minimize disturbance to habitat and wildfire resources, and planting of replacement trees.

- Impact 4.b addresses the direct effects of solar energy development on habitat loss, particularly for desert wildfire. Mitigation Measure 4.b.1 provides a list of avoidance and minimization practices including: minimizing disturbance of habitat and wildlife resources through design features of individual projects, establishing protective buffers, and requiring monitoring of construction sites.

Impacts of renewable energy projects on agricultural and biological resources were determined to be significant and unavoidable, due to the uncertainty related to the degree that mitigation may be implemented (see pages 52-55, 82—83, and 94-97 of the First Draft EA).

Please refer to Master Response 1 for specificity, level of detail, and CARB's authority to implement projects and mitigation.

In addition, over its 23-year planning horizon, the 2022 Scoping Plan discusses the types and relative magnitude of energy resources needed to reflect an electricity sector target of 38 MMTCO2e in 2030, which is aligned with the Preferred System Plan adopted on February 10, 2022 (Decision 22-02-0041) by CPUC as part of its 2019-2021 Integrated Resource Planning process, and to meet the SB 100 (2018) and SB 1020 (2022) renewable and zero-carbon retail sales targets by 2045. The types of facilities that could be developed are consistent with eligible renewable and zero-carbon resources described in the 2021 SB 100 Joint Agency Report and addressed in the First Draft EA (pages 18-19) under Increase in Renewable Energy and Decrease in Oil and Gas Use Actions. The 2022 Scoping Plan does not require this specific resource development to occur; rather, it describes the types of resource development actions that could be taken to help achieve the electricity sector targets. The 2022 Scoping Plan is, ultimately, a source of science-based and policy-informed guidance in this area, rather than a source of mandates.

Other CARB and energy agency planning processes are more appropriate venues for more specifically analyzing energy resource development scenarios. For example, the 2022 Scoping Plan will inform CARB's approach to setting GHG planning target ranges for the electricity sector through 2030, as required by SB 350 (2015). The GHG target range is a separate process that provides a foundation for the CPUC's Integrated Resource Planning Process and other energy resource planning and investment decisions as they inform and direct the optimal procurement of renewable and zero-carbon resources and transmission that consider reliability, climate targets, and ratepayer impacts over the coming years. The CPUC's IRP process includes environment and land-use screens as part of capacity expansion modeling. The CEC then uses the land use and environmental information assembled from these landscape planning efforts to map selected resources to substation busbars for input to the California ISO's transmission modeling for their Transmission Planning Process.

Furthermore, as discussed in the 2021 SB 100 Joint Agency Report,2 future SB 100 reports, which are required every four years, will delve deeper into critical topics that include land use and other environmental implications. As the report states:

> "It will be important to incorporate land-use planning into electric system planning to consider trade-offs between energy development and conservation of land for agricultural, natural lands, or housing. Several geospatial studies, such as NREL's GIS mapping of renewable energy resources, have already screened for locations with high renewable energy resource potential in California. However, energy-planning processes have not yet been fully integrated with land conservation values to evaluate the environmental and system cost and benefit implications of clean energy policies and siting decisions. As California considers the more ambitious renewable energy goals of SB 100, proactive landscape-scale planning can help identify opportunities for renewable energy facility and transmission development while reducing adverse effects…As next steps, the joint agencies plan to review methods to include land-use impacts in system modeling and assess needs to update previous land-use studies to reflect the increased resource requirements of SB 100. Future system modeling and land-use impacts must be coordinated with any recommendations from the Climate Smart Strategy called for in Executive Order N-82-20 and the AB 32 Scoping Plan."

No changes to the First Draft EA are required in response to this comment.

635-10: The commenter states, "The Scoping Plan includes numerous measures to transition various categories of vehicles to electricity or hydrogen fuel sources, and to partly transition other vehicle categories to reduce but not eliminate fossil fuel use.[47] As with the Facility Measures, the EA does not disclose, analyze, or mitigate the physical effects to the environment of constructing or operating the required new solar, wind, and battery ("SWB") facilities, hydrogen, hydrogen fuel cell, or biomass fuel power source replacements, or of transporting, storing, and dispensing these new vehicular fuel sources at the scale needed to achieve Scoping Plan compliance. Please refer to our separate comment on the mandated phase-out of internal combustion engines, which is incorporated herein as a comment on the EA.

[47] See e.g., Scoping Plan, Table 2-2, at p. 58 (proscribing the following actions: "100 percent of LDV sales are ZEV by 2035," "100 percent of medium duty (MD)/HDV sales are ZEV by 2040," "10 percent of aviation fuel demand is met by electricity (batteries) or hydrogen (fuel cells) in 2045.")."

Response: The comment does not substantiate the opinion that the First Draft EA does not analyze and disclose the environmental impacts of solar, wind, and battery facilities, hydrogen, hydrogen fuel cell, or biomass fuel power source replacements, or of transporting, storing, and dispensing these new vehicular fuel sources at the scale needed to achieve Scoping Plan compliance. Contrary to the opinion, the EA adequately analyzes and discloses impacts, and incorporates feasible mitigation measure at a programmatic level, as appropriate.

Please refer to Master Response 1. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

635-11: The commenter states, "each paragraph of each lawsuit is separately submitted as a comment to this Scoping Plan and EA and attached hereto."

Response: The commenter purports to submit each paragraph from each of their lawsuits as a separate CEQA comment on the 2022 Scoping Plan. CARB notes that the commenter's sprawling complaints in those two lawsuits are 127 and 198 pages, consisting of 458 and 498 paragraphs of allegations, respectively. The allegations do not relate to the currently proposed 2022 Scoping Plan, so attempting to respond to them in the context of the current plan and First Draft EA would not yield meaningful information and could be confusing. The lawsuits relate to a different Scoping Plan (from 2017) with different measures and different guidance than the 2022 Scoping Plan. The commenter's claims regarding the 2017 Scoping Plan are no longer relevant. The commenter makes no attempt to explain whether or how their prior claims relate to the specific Scoping Plan measures or environmental analysis undertaken for the 2022 Scoping Plan – and, as mentioned above, they cannot do so given their claims regarding the 2017 Scoping Plan are no longer relevant. Moreover, CEQA Guidelines Section 15204(a) provides suggestions for how persons and public agencies should focus review of draft EIRs:

> In reviewing draft EIRs, persons and public agencies should focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate the significant environmental effects. At the same time, reviewers should be aware that the adequacy of an EIR is determined in terms of what is reasonably feasible, in light of factors such as the magnitude of the project at issue, the severity of its likely environmental impacts, and the geographic scope of the project. CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters. When responding to comments, lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR.

Thus, while the comment directs that previous lawsuits are submitted as a comment, without more information related to significant environmental issues that may pertain to the 2022 Scoping Plan EIR, no further response can be provided.

635-12: The commenter states, "The adverse environmental impacts of mandating VMT reductions have been well documented under SB 375, but are wholly and unlawfully ignored in the EA. As background, SB 375 expressly establishes a process by which regional GHG reduction targets must be established. CARB has published current GHG reduction targets on its website.[50] The most ambitious SB 375 reduction targets, for the most urbanized regions with the most transit service, is 19 percent below 2005 levels by 2035.[51] All other regions have targets of 16 percent or less and some rural regions have targets below 10 percent.[52] Differing regional targets are consistent with legislatively-mandated SB 375 target setting procedures. Also under SB 375, each region is required to develop a plan (a

sustainable communities strategy or alternative compliance strategy, collectively referred to as "SB 375 Plan") for achieving these regional GHG reduction targets[53]; each region has done so and has also certified an Environmental Impact Report ("EIR") or other CEQA compliance document (collectively, "EIRs") for their SB 375 Plan.[54] These SB 375 Plan EIRs document a staggering list of significant unmitigated adverse impacts to the physical environment; the Summary Impact Tables for the most recent of each such SB 375 Plan are included as Attachment D here. Like CARB, the regional agencies that adopt SB 375 Plans do not approve the commencement of physical (e.g., construction) changes to the environment. However, also like CARB, each such regional agency is required by CEQA to disclose the environmental impacts associated with such SB 375 Plans, such as substantial increases in housing and population densities for existing communities, and substantial shifts in planning resources away from roads and highways and into transit, bike paths, and higher density development near high frequency public transit to reduce VMT.[55]

50 Regional Plan Targets, CARB, available at https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets.
51 See SB 375 Regional Plan Climate Targets, California Air Resources Board, available at Regional Plan Targets | California Air Resources Board.
52 *Id*.
53 *Id*.
54 See Regional Plans & Evaluations, California Air Resources Board, available at Regional Plans & Evaluations | California Air Resources Board.
55 *Id*."

Response: The comment provides background on VMT reductions and the impacts thereof as a part of regional SB 375 plans and corresponding EIRs. Actions to address VMT reduction have been included in the Recirculated Draft EA.

635-13: The commenter states, "**C. AB 197 Facility Measures.**

Many of the Measures that CARB proposes to undertake under the authority of AB 197 have environmental impacts that have not been disclosed, analyzed, or mitigated in the EA. CARB has broad but by no means unfettered authority from the Legislature to select greenhouse gas ("GHG") reduction measures for specified types of "facilities" that emit GHG ("Facility Measures"). CARB's selection of which Measures should be applied at what time to what types of facilities in this Scoping Plan has direct physical effects on the environment. Examples of these industrial facility physical modification requirements include:

- 25 percent of Ocean-going Vessels are required to use hydrogen fuel cell electric technology by 2045.[60] Installation and operation of hydrogen fuel cell electric technology fuel depots, supply pipelines, fueling equipment, along with demolition and modification of complex Port infrastructure, are reasonably foreseeable consequences of implementation of this Measure which the EA ignores.
- 75 percent of "Food Product" processing facilities must convert from natural gas to "direct or indirect" electricity by 2045.[61] Electricity generation can be solar or wind (on an intermittent basis), supplemented with batteries, or through hydrogen-based fuel

systems, all of which have known but undisclosed and unanalyzed physical impacts to the environment.

- 100 percent of "Chemicals and Allied Products; Pulp and Paper" facilities must convert to hydrogen for "process heat," and electricity for "all other energy demand by 2045."[62] As with other industries, these energy source transitions have a physical footprint as energy consuming and energy product equipment is modified in complex physical plants.

For some but not all of these Facility Measures, the Scoping Plan expressly acknowledges that implementation requires physical changes to the environment, e.g., by noting that "[s]ignificant increases in marine imports would likely require significant reconfiguring, retrofitting, or replacing of crude pipelines and storage tanks at current marine terminals and possible reconfiguring of existing finished fuel infrastructure to account for changes in volumes and locations of supply points."[63]

Under CEQA, CARB, as the lead agency has the legal obligation to first disclose, then analyze, then mitigate, physical impacts to the environment.[64] The level of detail required is based on what's known, and what's reasonably foreseeable.[65]

The EA fails to disclose the physical impacts to the environment of the Facility Measures, including but not limited to construction-phase impacts such as air emissions, and hazardous materials and accident risks, onsite operational impacts following Facility modifications, indirect impacts such as hazards from intermittent power shortages and offsite impacts if as is reasonably foreseeable changes to the existing configuration of electricity and natural gas systems as well as the creation of new hydrogen-based energy sources, and cumulative impacts from the concurrent construction and reconfiguration of all other Facilities during overlapping implementation deadlines.

61 Id. at p. 61.
62 Id.
63 Scoping Plan, at p. 84.
64 "'[T]he agency which is to act first on the project in question shall be the lead agency (following the principle that the environmental impact should be assessed as early as possible in governmental planning).'" Bozung v. Local Agency Formation Com. (1975) 13 Cal.3d 263, 282, quoting CEQA Guidelines § 15065, subd. (c) (now CEQA Guidelines § 15051 subd. (c).).
65 "[A]n agency must use its best efforts to find out and disclose all that it reasonably can." Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova (2007) 40 Cal.4th 412, 428, as modified (Apr. 18, 2007); see also San Franciscans for Livable Neighborhoods v. City and County of San Francisco (2018) 26 Cal.App.5th 596, 614 ("The sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible .... The courts have [therefore] looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure." The overriding issue on review is thus 'whether the [lead agency] reasonably and in good faith discussed [a project] in detail sufficient [to enable] the public [to] discern from the [EIR] the "analytic route the ... agency traveled

from evidence to action." (internal citations omitted) (citing California Oak Foundation v. Regents of University of California (2010) 188 Cal.App.4th 227, 262.)"

Response: The comment purports to identify impacts associated with specific reasonably foreseeable compliance responses to the 2022 Scoping Plan project that were not disclosed and analyzed by the First Draft EA. CARB disagrees with the commenter's assertions, as the First Draft EA does disclose and analyze the specific potential impacts identified by the comment (specifically construction, demolition, or modification of new or existing facilities and associated electricity and fueling infrastructure) at a reasonable and adequate level of detail to satisfy the requirements of CEQA, given the statewide, high-level programmatic nature of the 2022 Scoping Plan. See Chapter 4 of the First Draft EA for a detailed analysis of impacts associated with reasonably foreseeable compliance responses for the 2022 Scoping Plan. The 2022 Scoping Plan has the longest planning horizon of any Scoping Plan to date, focusing on outcomes the state needs to achieve to be on track to achieve carbon neutrality by 2045. With this outcome-focused approach, the 2022 Scoping Plan modeled paths for clean technology, energy deployment, nature-based solutions, and other actions rather than discrete facility measures. The 2022 Scoping Plan is the state's vision for attaining its climate goals; it is not a regulation. Specific regulatory and project-level approvals will undergo environmental review as appropriate when those actions are ultimately considered and implemented.

Please also refer to Master Response 1 regarding the programmatic nature of evaluating reasonably foreseeable compliance responses, CARB's role and other agency responsibilities, and the need for subsequent environmental review by lead agencies for specific project activities. No changes to the First Draft EA are required in response to this comment.

635-14: The commenter states, "**D. Ban on Housing Affordable to Median Income (80-120% AMI) Households.**

As described in greater detail in our other comment letters, and in the attached Complaints filed against CARB and OPR on behalf of The Two Hundred[66], as further validated by Federal District Judge Carter's decision in a pending "skid row" homeless lawsuit, Scoping Plan measures demand that housing be built at higher densities on previously-developed land in neighborhoods with existing high frequency public transit service so new housing residents will drive a minimum of 30 percent less than other residents. Some of these Measures are directly and immediately activated (e.g., by CEQA lawsuits challenging housing that is inconsistent with the Scoping Plan's housing and VMT measures), others are in direct conflict with existing laws (e.g., the civil rights law requiring Affirmatively Furthering Fair Housing by dispersing new housing throughout California's counties and cities, and within transit-served communities dispersing new housing even in driver-dependent lower-density neighborhoods that most often house whiter and wealthier single family neighborhoods with more park and school amenities).

The EA fails to disclose, analyze, or mitigate the environmental impacts of imposing radical housing measures as climate policies that directly contradict existing civil rights and other

housing laws, or have been expressly rejected by the Legislature, as more fully discussed in *Green Jim Crow: How California's Climate Policies Undermine Civil Rights and Racial Equity*.[67]

[66] See The Two Hundred et al. v. California Air Resources Board et al., (Super. Ct. Fresno County), Case No. 18CECG01494, attached hereto as Attachment B and The Two Hundred et al., v. The Governor's Office of Planning and Research et al., (Super. Ct. Sac. County.), Case No. 34-2020-80003447-CU-WM-GDS, attached hereto as Attachment C.

[67] J. Hernandez, Green Jim Crow: How California's Climate Policies Undermine Civil Rights and Racial Equity, The Breakthrough, August 21, 2021, available at Green Jim Crow | The Breakthrough Institute."

Response: The comment mentions pending lawsuits brought by the commenter against CARB and OPR. The commenter claims the 2022 Scoping Plan requires measures that, in turn, require housing be built at high densities and near frequent public transit service, so that new housing residents will drive 30 percent less than other residents. It states that some measures would be immediately activated, e.g., by CEQA lawsuits challenging housing inconsistent with the 2022 Scoping Plan. Furthermore, the commenter indicates these measures conflict with existing laws such as CEQA and Affirmatively Furthering Fair Housing. Additionally, the commenter claims the First Draft EA fails to disclose, analyze, or mitigate the environmental impacts of these claimed housing measures.

These arguments are not supported by substantial evidence and are not an accurate representation of the 2022 Scoping Plan's measures, nor of their legal effect. The 2022 Scoping Plan does not, and cannot, prescribe whether, how much, or where housing can be built; those decisions are left to local jurisdictions. In discussing VMT, the 2022 Scoping Plan does not draw a distinction between "new housing residents" and "other residents" nor does it set a target of 30 percent less driving from the "new housing residents," nor is it clear where this figure is drawn from. Appendix E outlines a broad suite of strategies, including many that do not focus exclusively on infill but also on other climate-friendly, transportation-efficient areas appropriately planned for growth. The Appendix E strategies broadly seek to facilitate less auto-dependent lifestyles for all Californians. For example, Appendix E envisions improving access to transportation choices and "improving the balance of housing, employment, shopping, and other key services within any given community" (page E-23). Nor does the 2022 Scoping Plan demand that new development be limited to infill areas near high-frequency transit. (See answer to comment below.) Also refer to Master Response 1.

Appendix E describes the need to address two of California's greatest challenges: meeting climate goals and "building more inclusive and equitable places that prioritize providing low-income and Black, Indigenous, and People of Color (BIPOC) communities all the necessary opportunities to thrive and repairing the harms caused by decades of discriminatory transportation, land use, and housing policies and practices to people of low-income and BIPOC communities" (page E-3). Section 2.3 of Appendix E addresses how moving away from transportation and land use patterns that have marginalized and divided communities would ease inequitable burdens on California's low-income and BIPOC communities, and it speaks to the need for shifting California's development patterns to achieve the goal of "making livable, affordable homes with multi-modal connections to jobs, services, open

space, and education available to all Californians, not just the white and the wealthy" (page E-6). Section 2.4 outlines how reducing the need to drive advances other quality of life outcomes and opportunities for these communities by helping to reduce financial burdens, providing better access to economic and social opportunities, and enabling greater economic efficiency.

Furthermore, CEQA includes several "streamlining" provisions and exemptions for affordable housing, including agricultural employee housing and low-income housing; that are designed to help alleviate commenter's concerns. (See, e.g., Public Resources Code §§ 21159.21, 21159.22, 21159.23, 21159.24, and 21159.28; see also Gov. Code § 65913.4.) Additionally, Appendix D assists lead agencies with making a determination of whether residential projects are consistent with the 2022 Scoping Plan, and Appendix E includes numerous objectives and actions to support affordable housing and emissions reductions. For example, Appendix E includes an action to accelerate production of affordable housing in forms and locations that advance VMT reduction and affirmatively further fair housing policy objectives. To the extent commenter is asserting that existing legally-mandated regulatory programs that are already in place, but discussed in the 2022 Scoping Plan, are driving the claimed impacts, those programs have already been analyzed under CEQA in prior rulemakings and plan decisions. The commenter does not appear to have participated in these processes. The commenter also seems to misunderstand the fundamental nature of the 2022 Scoping Plan. "The Scoping Plan adopted pursuant to AB 32 is a plan for reducing greenhouse gas emissions, but does not itself establish the regulations by which it is to be implemented; rather, it sets out how existing regulations, and new ones yet to be adopted at the time of the 2022 Scoping Plan, will be used to reach AB 32's emission reduction goal." *Center for Biological Diversity v. California Dept. of Fish and Wildlife* (2015) 62 Cal.4th 204, 222. Furthermore, many of the 2022 Scoping Plan aspects referred to by the commenter are not future regulatory actions; rather, they are policy recommendations provided to guide future action by other agencies with jurisdiction over land use and housing development. Thus, impacts associated with specific rulemakings already adopted, or more specific impacts associated with future (sometimes speculative) actions, need not be further analyzed in this programmatic document. Accordingly, please see the certified regulatory program documents associated with those programs. No changes to the First Draft EA are required in response to this comment.

635-15: The commenter states, "The specific locations of these high frequency transit areas are known to CARB in the Sustainable Communities Strategies required to be submitted under SB 375. The relocation of housing density - prohibiting housing in most counties, cities and neighborhoods that do not have high frequency public transit - in contravention of state and local law has known environmental impacts, ranging from massive amounts of demolition and new construction in targeted areas, to increased exposure to urban pollutants, higher temperatures, and other impacts.[68] The EA fails to disclose, analyze, or mitigate these Scoping Plan housing, natural and working lands, and VMT measure impacts on housing, population, and employment.

[68] See, e.g., Judge Glock, The Environmental Case for Suburbia 2022, Breakthrough Institute, available here https://urbanreforminstitute.org/2022/02/sprawl-is-good-the-environmental-case-for-suburbia/ and attached hereto as Attachment F."

Response: The commenter claims the 2022 Scoping Plan relocates housing density and prohibits housing in areas without high frequency public transit. Additionally, the commenter claims the First Draft EA fails to disclose, analyze, or mitigate the environmental impacts of these housing measures.

The 2022 Scoping Plan neither requires any particular type of development pattern, nor establishes specific SB 375 targets, nor approves or disapproves any development project. The 2022 Scoping Plan does not, and cannot, prescribe whether, how much, or where housing can be built; those decisions are left to local jurisdictions. It does not require new housing be associated with high frequency transit areas nor prohibit housing in locations that lack it (or in any other location, for that matter), and speaks to the need for "inclusive urban, suburban, and rural communities throughout the many regions of California" (page E-3) and to "accelerate production of a greater diversity of housing types in climate-smart locations," referencing the State Housing Plan (Strategy Area 4).

California currently faces both a housing and a climate crisis and the 2022 Scoping Plan and Appendix E provide a suite of objectives and actions that could address the housing crisis and the climate crisis simultaneously. Appendix E describes the need to address two of California's greatest challenges: meeting climate goals and "building more inclusive and equitable places that prioritize providing low-income and Black, Indigenous, and People of Color (BIPOC) communities all the necessary opportunities to thrive and repairing the harms caused by decades of discriminatory transportation, land use, and housing policies and practices to people of low-income and BIPOC communities" (page E-3). Section 2.3 and Section 2.4 of Appendix E address how moving away from transportation and land use patterns that have marginalized and divided communities would ease inequitable burdens on California's low-income and BIPOC communities and outline how reducing the need to drive can reduce financial burdens, provide better access to opportunities, and greater economic efficiency for these communities. Additionally, Appendix E identifies actions such as accelerating, preserving, and protecting affordable housing and delivering equitable improvements in accessibility for vulnerable communities. The 2022 Scoping Plan articulates the current state of greenhouse gas emissions data and describes the importance of careful analysis of greenhouse gas impacts, consistent with governing law. No further analysis of particular project impacts is required, as these are beyond CARB's jurisdiction, and would be entirely speculative. No changes to the First Draft EA are required in response to this comment.

635-16: The commenter states, "The Scoping Plan and related EA must be revised and recirculated to clearly and separately identify, and analyze, the AB/SB 32 40 percent target measures."

Response: Health and Safety Code Section 38561(h) directs CARB to "update its plan for achieving the maximum technologically feasible and cost-effective reductions of greenhouse

gas emissions at least once every five years." The 2022 Scoping Plan, as described in the supporting First Draft EA and Recirculated Draft EA, does update the California's plan for achieving the maximum technologically feasible and cost-effective reductions of greenhouse gas emissions. The 2022 Scoping Plan describes recommendations for actions to achieve the State's GHG emissions reductions targets, which include the SB 32 target of at least 40 percent GHG reductions by 2030 from the 2020 statewide limit developed under AB 32. The project description in the Recirculated Draft EA accurately reflects the project, which in turn accurately reflects legislative and executive direction to CARB. Accordingly, no changes to the First Draft EA are required in response to this comment.

635-17: The commenter states, "**VI. The EA Fails to Evaluate or Disclose the Impacts that Measures Will have on Urban Decay and Blight**

Implementation of the Scoping Plan Measures listed above and many others will cause certain employers to go out of business, causing job loss and deterioration of existing facilities – economic and physical blight. "CEQA requires urban decay or deterioration to be considered as an indirect environmental effect of a proposed project" and the lead agency must analyze this environmental impact where the project is likely to cause a "downward spiral of business closures, vacancies and deterioration."[69] CARB must fully analyze the impacts that the Measures will have on urban decay "when the economic or social effects of a project cause a physical change."[70]

For example, the "Increase in Renewable Energy and Decrease in Oil and Gas Use Actions"[71] group of measures could result in job loss at natural gas plants, pipelines, and oil and gas extraction facilities. The ERM Report estimates that, under the HES, "[t]he assumed 86 percent decline in petroleum demand in 2050 may lead to up to 179,000 job losses, including over 7,000 jobs in the San Joaquin Valley specifically."[72] "Labor income for the oil and gas industry could decline by $13.4 billion (57 percent), with a $34.1 billion decline in GDP (63 percent). Total output may decrease by $100 billion (69 percent), decreasing state and local tax revenue by $14.2 billion."[73] Loss of major employers will lead to economic blight that itself creates adverse environmental impacts on the environment, including physical deterioration of both plant sites, refinery operations, and retail stores reliant on this industry.[74] Loss of state and local tax revue on such a large scale could also result in degradation of local infrastructure, contributing to environmental impacts caused by urban decay. Since the Scoping Plan Measures will impact these industries by causing facility shutdown and job loss, the Scoping Plan needs to analyze the impacts of the project on urban decay.

[69] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1205, citing *Citizens Assn. for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151 and *Citizens for Quality Growth v. City of Mt. Shasta* (1988) 198 Cal.App.3d 433, 445–446.

[70] Bakersfield Citizens for Local Control v. City of Bakersfield (2004) 124 Cal.App.4th 1184, 1205, citing CEQA Guidelines § 15064 (e).

[71] EA, at p. 18-19.

[72] ERM Report, at p. 2.; see also *id*. at 54 ("The California oil and gas industry contributes to over 365,000 jobs and $21.6 billion in state and local taxes.").
[73] *Id*.
[74] *Oil & Gas In California: The Industry, Its Economic Contribution and User Industries at Risk*, 2019 Report, Los Angeles County Economic Development Corporation, available at Oil and Gas Industry in California: 2019 Report - Los Angeles County Economic Development Corporation (laedc.org) (detailing the jobs, facilities, tax bases supported)."

Response: The comment does not substantiate the opinion that the 2022 Scoping Plan measures would create urban decay as a result of employers going out of business, job loss, and deterioration of existing facilities. While some oil and gas industries could result in job losses, the increase or establishment of other industries as a result of the 2022 Scoping Plan could create new, increased employment opportunities in renewable electricity and hydrogen production, as well as NWL-related industries and sectors. Loss of employers does not automatically result in deterioration of facilities and urban decay, the same way that construction of new facilities does not automatically result in significant aesthetic impacts. The commenter also does not explain how job losses at natural gas plants, pipelines, and oil and gas extraction facilities would lead to urban decay. There must be a direct causal effect from the loss of employers to the physical deterioration that may result. The comment does not provide any evidence that such impacts could potentially occur, only unsubstantiated opinion. No changes to the First Draft EA are required in response to this comment.

635-18: The commenter states, "**VII. The EA's Mitigation Measures Are Unlawful.**

As shown above, the EA fails to apprise the public of the environmental impacts of the Scoping Plan because it conducts a sparse, vague, and incomplete analysis of the environmental impacts of the selected Measures. Beyond this, the mitigation measures and general mitigation approach that CARB has identified breaks nearly every rule in the CEQA handbook, failing, on even a basic level, to demonstrate that they will "[p]revent significant, avoidable damage to the environment."[75] First, the EA's basic approach to mitigation, relying on enforcement of laws by other regulators, fails because the EA neglects, as a preliminary matter, to disclose which impacts need to be mitigated. Second, the EA unlawfully defers mitigation measures until a later time[76] and, third, fails to create specific performance standards for the mitigation measures[77].

[75] CEQA Guidelines § 15002(a)(3).
[76] CEQA Guidelines, § 15126.4, subd. (a)(1)(B).
[77] *Oakland Heritage Alliance v. City of Oakland* (2011) 195 Cal.App.4th 884, citing *California Native Plant Society v. City of Rancho Cordova* (2010) 172 Cal.App.4th 603."

Response: Please refer to Master Response 1 regarding the specificity, level of detail, and CARB's authority to mitigate impacts.

CEQA Guidelines Section 15126.4(a)(1) requires an EIR to describe feasible measures to minimize significant adverse impacts. The mitigation measures must not be deferred until some future time; however, the specific details of a mitigation measure may be developed

after project approval if the agency 1) commits itself to the mitigation, 2) adopts specific performance standards the mitigation will achieve, and 3). identifies the types of potential actions that could feasibly achieve that performance standard (CEQA Guidelines Section 15164.4[a][1][B]). The First Draft EA contains a good-faith effort to disclose impacts and provide mitigation measures that would reduce significant impacts. However, because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with the First Draft EA does not attempt to address project-specific details of mitigation because there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. While the type of potential actions that could feasibly reduce significant environmental effects is described throughout the EA, because the evaluation of specific projects would be subject to the discretion of local land use authorities, CARB cannot commit itself to the mitigation and adopt performance standards. Thus, the First Draft EA appropriately contains the conservative approach of assuming potentially significant and unavoidable in many cases for impacts related to the reasonably foreseeable compliance responses of the 2022 Scoping Plan.

635-19: The commenter states, "**A. The EA's Approach to Mitigation Is Inadequate because the Scoping Plan's Environmental Impacts Have Not Yet Been Adequately Evaluated and Disclosed**

The EA relies on compliance with already established laws and regulatory programs to mitigate the environmental impacts of the 2022 Scoping Plan Measures, repeatedly citing to the EA's Environmental and Regulatory Setting Description in its own Attachment A.[78] Without first disclosing the impacts of the proposed Measures to the public, to the extent possible, the efficacy of CARB's approach to mitigation through reliance on established laws cannot be demonstrated: "…[c]ompliance with a regulatory permit or other similar process may be identified as mitigation if compliance would result in implementation of measures that would be reasonably expected, based on substantial evidence in the record, to reduce the significant impact to the specified performance standards."[79] CARB must fully analyze the impacts of all twelve groups of Table 2 Measures in order to demonstrate that these Mitigation Measures are adequate. For example, the impacts of the following Measures have not been analyzed in the EA:

- Forest, Shrubland, and Grassland Management Actions: Table 2-2 proposes "Forest, Shrubland, and Grassland Management Actions" to decrease emissions from our Natural and Working lands ("NWL").[80] This includes, among other actions, mechanical thinning of forests, targeted herbicide uses, and prescribed burns meant to mitigate the severity of wildfires.[81] The following potential impacts have not been disclosed or considered in the EA, such that it is impossible to know whether compliance with all applicable laws and regulations will be effective mitigation.
  - While proposing and encouraging the use of herbicide in forest management, the EA fails to consider specific known impacts of herbicide use on biological resources, water quality, soil quality, and impacts on human health.[82] Regarding

biological resources, the impacts of glyphosate on flora can be catastrophic: "[e]xcessive glyphosate application has been linked to disease development in many crops."[83] "Glyphosate can also predispose plants to diseases indirectly by reducing the overall growth and vigor of the plants, modifying soil microflora that affects the availability of nutrients required for disease resistance, and altering the physiological efficiency of plants."[84] With respect to soil quality and water quality, "[g]lyphosate has an affinity to bind to soil particles and thus mostly accumulates in the top-soil layers," but has also been "found to transport deep into the soil and leach out with drainage water."[85] In humans, exposure to glyphosate has been shown to cause infertility, birth defects and other hormone disorders.[86] Without having disclosed these impacts, the public cannot know whether CARB's approach to mitigation is effective.

- The EA fails to consider specific known environmental impacts of mechanical forest thinning[87] and prescribed burns on biological resources.[88] CARB only vaguely gestures at these impacts, anticipating that these will have potentially significant impacts to biological resources by causing "modifications to existing habitats," "interference with wildlife movement or wildlife nursery sites," "loss of or disturbance to special-status species," and conflicting with various habitat conservation plans.[89] CARB neglects to provide details about the specific species that forest thinning and prescribed burns could impact, even though the locations of these burns could be reasonably ascertained by looking at the California Vegetation Control Treatment Plan.[90]

78 See e.g., EA, Mitigation Measure 1.a, at pp 36-37, Mitigation Measure 2.a, at pp. 53-55.

79 CEQA Guidelines 15126.4 (a)(1)(B) (emphases added).

80 Scoping Plan, Table 2-2, at p 64.

81 EA, at p. 25.

82 See Statement of Overriding Considerations for the California Vegetation Treatment Program, Final Program EIR, Board of Forestry and Fire Protection, available at ceqa-template-findings_soc-508-compliant.dotx (live.com).

83 R. Kanissery et al. *Glyphosate: Its Environmental Persistence and Impact on Crop Health and Nutrition, Plants* vol. 8,11 499, November 13, 2019, available at Glyphosate: Its Environmental Persistence and Impact on Crop Health and Nutrition - PMC (nih.gov).

84 *Id*.

85 *Id*.

86 K. Gandhi et al., *Exposure risk and environmental impacts of glyphosate: Highlights on the toxicity of herbicide co-formulants*, Environmental Challenges, Volume 4, August 2021, available at Exposure risk and environmental impacts of glyphosate: Highlights on the toxicity of herbicide co-formulants - ScienceDirect.

87 R. Graham et al.. *The effects of thinning and similar stand treatments on fire behavior in Western forests*. Gen. Tech. Rep. PNW-GTR-463. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station (1999), available at https://www.fs.fed.us/pnw/pubs/pnw_gtr463.pdf; G. Moreau et al., *Opportunities and limitations of thinning to increase resistance and resilience of trees and forests to global change*, Forestry: An International Journal of Forest Research, 2022, available at Opportunities and limitations of thinning to increase resistance and resilience of trees and

forests to global change | Forestry: An International Journal of Forest Research | Oxford Academic (oup.com).

[88] *See* : W. Block et al., *Effects of Prescribed Fire on Wildlife and Wildlife Habitat in Selected Ecosystems of North America*. The Wildlife Society Technical Review 16-01. The Wildlife Society, Bethesda, Maryland, USA (2016), available at TechManual16-01FINAL.pdf (wildlife.org).

[89] EA, at p. 78-79.

[90] California Vegetation Treatment Program, Final Program EIR, Board of Forestry and Fire Protection, available at Welcome to CalVTP Programmatic EIR.

Response: The impacts of Forest, Shrubland, and Grassland Management Actions are analyzed in Chapter 4 of the First Draft EA. Please refer to Master Response 1, regarding the level of specificity required.

635-20: The commenter states, "

- Agricultural Actions: Table 2-2 proposes Measures to "[r]educe short-lived climate pollutants," "[i]ncrease soil water holding capacity," and"[i]ncrease organic farming and reduce pesticide use."[91] According to the EA, these Measures include "reduced till practices, cover cropping, transitioning to organic agriculture, and compost application."[92] The following potential impacts have not been disclosed or considered in the EA, such that it is impossible to know whether compliance with all applicable laws and regulations will be effective mitigation.
    - The EA fails to consider the impact of increasing the agricultural dependence on composting on energy resources, odors, and air quality. Specifically, the EA does not describe the extensive research on the increased emission volatile organic compounds ("VOCs") on our working farms that result will from increased compost use.[93] Not only can these VOCs react with other precursors to make criteria pollutants, but they can release noxious odors that disproportionately impact the low-income and minority groups that live adjacent to agricultural lands.[94] While the EA proposes compliance with other state laws as a general approach to Mitigation, the public cannot be sure that this Mitigation will be effective without adequate disclosures of these impacts. Furthermore, the composting programs created by SB 1318 do not guarantee that compost will not be contaminated with pesticides or other hazardous chemicals.[95] The EA discloses no state infrastructure available to ensure that the compost applied to agricultural lands is free of these hazards.
    - The EA also does not consider the negative environmental impacts of increased organic farming. Organic farming can have significant environmental impacts to soils, land use, and air quality.[96] Broadly, organic farming may cause a reduction in soil profile soil organic carbon stocks and may require that more overall land be used for crop agriculture due to lower crop yields.[97] One study showed that 40 percent more land is needed with organic farming to produce the same crop yield as using conventional

methods.[98] Studies have also found that increased use of organic farming may actually cause air quality impacts as well: "[d]irect GHG emissions are reduced with organic farming, but when increased overseas land use to compensate for shortfalls in domestic supply are factored in, net emissions are greater."[99] Without proper disclosure of these impacts, among numerous others, the public will not know whether CARB's approach to mitigation is effective.

[91] Scoping Plan, Table 2-2, at p 65.

[92] EA, at p. 25.

[93] Composting Emissions and Air Permits, CalRecycle, available at Composting Emissions and Air Permits - CalRecycle Home Page ("actively composting piles of organic feedstocks emit volatile organic compounds (VOC), which can react in the atmosphere with oxides of nitrogen (NOx) to make ground-level ozone, a criteria pollutant. VOCs can also react with ammonia (NH 3) to create fine particulates (alternatively referred to as particulate matter (PM 2.5), another criteria pollutant). VOCs are a class of more than 1,000 chemicals with greatly varying degrees of reactivity and toxicity.").

[94] *Id*.; see also A. Kumar et al., *Volatile organic compound emissions from green waste composting: Characterization and ozone formation*, Atmospheric Environment, Volume 45, Issue 10, 2011, available at https://linkinghub.elsevier.com/retrieve/pii/S1352231011000215.

[95] See Pesticide/Herbicide Residues in Compost - CalRecycle Home Page

[96] K. Lorenz, R. Lal, *Environmental Impact of Organic Agriculture*, Carbon Management and Sequestration Center, School of Environment and Natural Resources, College of Food, Agricultural, and Environmental Sciences, The Ohio State University (2016), available at Environmental Impact of Organic Agriculture (osu.edu).

[97] *Id*. at p. 46.

[98] H. Treu et al., *Carbon footprints and land use of conventional and organic diets in Germany*, Journal of Cleaner Production, Volume 161, 2017.

[99] L.G. Smith, et al. The greenhouse gas impacts of converting food production in England and Wales to organic methods. *Nat Commun*, 10, 4641 (2019)."

Response: The First Draft EA addresses odors associated with composting activities in Impact 3.c: Long-Term Operation-Related Effects on Odor Effects. This discussion has been modified to provide some clarification in the last paragraph on page 89 of the Final EA:

> In response to the 2022 Scoping Plan, new and expanded organic waste recovery facilities would be operated throughout the state. Adverse odors potentially affecting nearby sensitive receptors could be generated by activities performed at these facilities, including the handling of feedstock materials, and from the off-gassing of odors generated during the decomposition of organic materials. Odor control techniques used during operations at outdoor compost facilities and greater use of enclosed compost facilities with structural odor controls can substantially reduce odor generation. Finished compost applied to agricultural and other land uses could also create objectionable odors perceptible by nearby sensitive receptors. Because standardized use of odor control techniques is variable, . Oodor impacts related to the 2022 Scoping Plan would be potentially significant.

As indicated in Table 4-9 of the Final EA, Mitigation Measure 3.c.3 is included to address potential odor emissions. This mitigation measure required development of an odor management plan, and provides a long list of possible strategies to reduce odors from composting activities. As noted on page 92 of the Final EA, odor impacts would not be reduced to a less-than-significant level through implementation of Mitigation Measure 3.c.3, because of uncertainties in the degree of odor reduction required by agencies approving the facilities. Thus, odor impacts from composting activities are identified as significant and unavoidable in the Final EA.

The changes shown above provide clarification and do not change the severity of significant and unavoidable impacts related to odor emissions from composing.

In response to the suggestion that increased use of compost on farms would increase VOC emissions, published scientific literature (including those cited in the comment letter) does not indicate that compost application or use is expected to result in increased VOC emissions. VOC impacts of compost application and use are not expected to be significant and are therefore not included in the First Draft EA. Rather, VOC impacts of compost production at composting facilities may be significant and are disclosed in the First Draft EA within Section 3.b. Further, some research[84] indicates that composting results in lower emissions of VOCs than if materials are allowed to naturally decay, and CARB has estimated[85] that composting reduces VOC emissions relative to landfilling by at least 0.5 lbs per ton waste.

In regard to compost contamination, as discussed in the last paragraph on page 160 of the First Draft EA:

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[84] Fatih Büyüksönmez & Jason Evans (2007) Biogenic Emissions from Green Waste and Comparison to the Emissions Resulting from Composting Part II: Volatile Organic Compounds (VOCs), Compost Science & Utilization, 15:3, 191-199, DOI: 10.1080/1065657X.2007.10702332. Available at https://calrecycle.ca.gov/organics/air/

[85] See ROG Flare Combustion Emission Factor – Greenwaste and Foodwaste https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/calrecycle_organics_finalcalc_6-15-20.xlsx

> The composting process used at such facilities releases water that may contain nutrients, metals, salts, pathogens, and oxygen-reducing compounds. Without proper management, these compounds can be carried into surface waters or can leach into groundwater, causing water quality degradation. However, California regulates composting and other organic waste recovery operations through the issuance of WDRs, which include a suite of protections to ensure that stormwater and water generated by the composting process is managed in a manner that prevents degradation of surface water and groundwater.

The 2022 Scoping Plan is not suggesting a wholesale prohibition on conventional farming practices. Under the 2022 Scoping Plan, approximately 65,000 acres are transitioned annually to organic farming, resulting in 20% of statewide annual croplands operating under organic practices by 2045. Thus, a significant portion of annual croplands will remain under conventional practices. Additionally, the acres modeled in the 2022 Scoping Plan are only recommendations to achieve the level of emissions reductions in the 2022 Scoping Plan and are not intended to establish goals or targets for CARB or other agencies to implement. Coordination between CARB, other lead agencies, stakeholders, and local experts will be necessary to incentivize the implementation of the management strategies identified in the 2022 Scoping Plan. Published scientific literature indicates that more carbon is sequestered into soil organic matter of annual croplands under organic farming practices compared to conventional farming practices. For the 2022 Scoping Plan NWL analysis, the literature estimates were used to estimate the increase in statewide soil organic carbon sequestration from transitioning annual croplands to organic farming practices.

In response to suggestions that organic farming may increase the degree to which farmland is required to meet demanded crop yields, an increase in land required for agricultural production is not necessarily an adverse environmental impact. Rather, the conversion of agricultural lands to nonagricultural uses is considered an adverse environmental impact. Furthermore, it is speculative to assume that increases to organic farming practices would cause a decrease in crop yield such that substantial land conversion would be necessary. Organic farming practices would be subject to economic considerations and other factor determined by the producers, and the extent to which land is zoned for agricultural use is subject to long-term planning considerations determined by local agencies.

635-21: The commenter states, "**B. EA Unlawfully Defers Mitigation to Future Third Party Agency Actions.**

"Formulation of mitigation measures shall not be deferred until some future time."[100] A lead agency "evade[s] its duty to engage in a comprehensive environmental review by approving the [project] subject to a condition requiring future regulatory compliance" because this "effectively remove[s] this aspect of the project from environmental review." [101] It is inadequate and deferred mitigation, therefore, to entrust the other regulatory bodies and the project applicant will just work out a solution to environment impacts in the future because "reliance on tentative plans for future mitigation after completion of the CEQA process significantly undermines CEQA's goals of full disclosure and informed decision making."[102] Therefore, CARB's overreliance on compliance with regulatory programs and

future CEQA review constitutes deferred mitigation. For example, the following Mitigation Measures defer mitigation to other regulatory bodies in a manner that is impermissible - and scores of other "mitigation" in the EA suffer from the same deficiency.

- Mitigation Measures 3.c.1 and 3.c.3 propose to mitigate odor associated with "development of new or expanded organic material composting, digestion and/or other facilities throughout the state" through future CEQA review and through compliance with the SB 1813 SLCP EIR. Both Mitigation Measures require creation of Odor Impact Minimization Plans ("OIMP").[103] However, these are merely "tentative plans for future mitigation" and defer the mitigation to CalRecycle without creating any concrete requirements.
- Mitigation Measure 9.b.1 requires compliance with applicable laws and regulations in order to mitigate impacts from hazards. The EA states that, although there could be potential hazards impacts from Measures in the "Improvements to Oil and Gas Facilities Actions" that promote conveyance of methane, these impacts would be mitigated because "collected vapors may be injected into existing, permitted underground wells," and those wells must be in compliance with UIC permit requirements.[104] This is deferred mitigation because it puts the onus of ensuring no hazards impacts on CalGEM or EPA, concluding that, through the UIC permit process, there would be reduced impacts with little to no analysis.[105]
- Mitigation Measures 1.a, 2.a, 3.a, 4.a, 5.a, 7.a, 9.a, 10.a, 11.a, and 13.a all assume that impacts will be mitigated because state and local government will complete CEQA review for all "new development and new facilities and structures constructed…" wherein they will require that proponents implement all feasible mitigation to reduce or substantially lessen the potentially significant … impacts of the project."[106] This is deferred mitigation because it assumes that, through CEQA processes, project proponents and lead agencies in the future will come up with solutions to these impacts. The Mitigation Measures thus allow CARB to skip any meaningful review of these reasonably foreseeable impacts where a future lead agency has no concrete standard against which to measure mitigation or no opportunity to mitigate because the project is exempt from CEQA. These Mitigation Measures assume that every single project that is the result of Scoping Plan implementation is subject to CEQA, when in fact, many infrastructural projects and programs are exempt from CEQA. For example, CEQA provides statutory exemptions for the following projects which the Scoping Plan could cover: modifications to existing facilities, minor infrastructure projects, increase passenger or commuter services on rail or highway rights[107], various minor transit projects[108], work on pipelines less than eight miles in length[109] and certain water infrastructure[110], just to name a few. Therefore, certain impacts from modifications to existing facilities pursuant to the Scoping Plan's "Improvements to Oil and Gas Facilities Actions" that are purportedly mitigated by CEQA compliance could potentially be exempt.[111]

[100] CEQA Guidelines § 15126.4.

[101] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 309.

[102] *Id*. ("By adopting the condition that applicant would comply with environmental standards for sludge disposal, the county effectively removed this aspect of the project from

environmental review, trusting that the Regional Water Quality Control Board and the applicant would work out some solution in the future.") and *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 92, citing *Gentry v. Murrieta* (1995) 36 Cal.App.4th 1359, 1396, (conditioning a permit on "recommendations of a report that had yet to be performed" constituted improper deferral of mitigation), *Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1275 (deferral is impermissible when the agency "simply requires a project applicant to obtain a biological report and then comply with any recommendations that may be made in the report"), *Endangered Habitats League, Inc. v. County of Orange* (2005) 131 Cal.App.4th 777, 794 ("mitigation measure [that] does no more than require a report be prepared and followed, ... without setting any standards" found improper deferral), *Quail Botanical Gardens Foundation, Inc. v. City of Encinitas* (1994) 29 Cal.App.4th 1597, 1605, fn. 4 (city is prohibited from relying on "post approval mitigation measures adopted during the subsequent design review process").

[103] EA, at pp. 74-77.
[104] EA, at p. 141-42.
[105] *Id*.
[106] See e.g., EA, at p. 36, regarding aesthetic impacts.
[107] Cal. Pub. Res. Code § 21080(b).
[108] Cal. Pub. Res. Code § 21080.25.
[109] Cal. Pub. Res. Code § 21080.23.
[110] Cal. Pub. Res. Code § 21080.47.
[111] See e.g., EA, at p. 134-35."

Response: Deferred mitigation refers to the practice of putting off the precise determination of whether an impact is significant, or precisely defining required mitigation measures, until a future date. The First Draft EA is intended to provide CEQA compliance for CARB's approval of the proposed 2022 Scoping Plan. A local lead agency that may consider implementation of the reasonably foreseeable compliance responses related to the 2022 Scoping Plan would be required to address CEQA requirements for the proposed project before them. The First Draft EA discloses the potential for indirect significant impacts resulting from the reasonably foreseeable compliance responses of the 2022 Scoping Plan and presents feasible mitigation measures in as much detail as can be provided at a statewide level of analysis. Nevertheless, public agencies may come to similar conclusions with regard to the significance of environmental impacts and types of required mitigation measures. However, in cases where CARB has determined that mitigation measures are necessary to reduce impacts to a less-than-significant level, because of the uncertainty related to the significance of environmental impacts and degree to which mitigation measures would be required by a local lead agency the First Draft EA concludes that these impacts would be significant and unavoidable.

The mitigation measures presented in the First Draft EA provide recognized practices that are routinely required to avoid and/or minimize environmental impacts. Because the mitigation measures that are beyond CARB's authority cannot be enforced by CARB, many impacts are considered in the First Draft EA to be potentially significant and unavoidable. And because the programmatic level of analysis associated with the First Draft EA does not

attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately by implemented to reduce potentially significant impacts (stated throughout Chapter 4 of the First Draft EA). Thus, mitigation is not deferred.

635-22: The commenter states, "**C. The EA's Mitigation Measures Are Inadequate because they Lack Specific Performance Standards**

"[F]or kinds of impacts for which mitigation is known to be feasible, but where practical considerations prohibit devising such measures early in the planning process ..., the agency can commit itself to eventually devising measures that will satisfy specific performance criteria articulated at the time of project approval. Where future action to carry a project forward is contingent on devising means to satisfy such criteria, the agency should be able to rely on its commitment as evidence that significant impacts will in fact be mitigated."[112] The following Mitigation Measures are representative of the scores of mitigation measures that lack specific performance standards, and could be made more concrete to ensure adequate mitigation:

- Mitigation Measure 2.a suggests that the impacts of construction on agricultural and forest resources could be mitigated through compliance with CEQA for each individual projects and then lists measures that an EIR should include to minimize impacts on agricultural and forestry resources. These include:
  - "Avoid lands designated as Important Farmland (State-defined Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) as defined by the Farmland Mapping and Monitoring Program. Before converting Important Farmland to non-agricultural use, analyze the feasibility of using farmland that is not designated as Important Farmland (e.g., through clustering or design change to avoid Farmland) prior to deciding on the conversion of Important Farmland.
  - Avoid lands designated as forest land or timberland before converting forestland or timberland to non-forest use, analyze the feasibility of using other lands prior to deciding on the conversion of forest land or timberland."[113]
- These do not include specific performance metrics, and there is no way to determine whether these measures would result in adequate mitigation. The requests to "avoid" and "analyze feasibility" create no real mandates. To ensure adequate mitigation, one of these measures could require complete avoidance. The alternative to this avoidance is a suggestion to mitigate by preserving "Important Farmland of equal or better agricultural quality, at a ratio of at least 1:1," but this mitigation also lacks specific performance standards because it leaves the lead agency and project proponent to decide what "agricultural land of equal or better quality" means. For forestland, "[m]itigation 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." However, it is unclear still here what "equal or better quality means, and it is unclear what "lost ecological value" means.[114]

[112] *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 94.
[113] EA, at p. 54.
[114] Id.

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

Many of the identified potentially significant impacts of the reasonably foreseeable compliance responses could be feasibly avoided or mitigated to a less-than-significant level either when the specific regulatory measures are designed and evaluated during the rulemaking process or through project-specific approval or entitlement processes related to reasonably foreseeable compliance responses, which typically require a project-specific environmental review by another public agency.

The EA is intended to provide CEQA compliance for CARB's approval of the proposed 2022 Scoping Plan. That is, local lead agencies that may consider implementation of the reasonably foreseeable compliance responses related to the 2022 Scoping Plan would be required to address CEQA requirements for the proposed project before them. Public agencies may come to similar conclusions with regard to the significance of environmental impacts and types of required mitigation measures. However, a local lead agency would be responsible for establishing thresholds of significance for environmental impacts and assessing implementation of an individual project against the existing conditions. Once a specific significant environmental impact has been identified, the appropriate level of mitigation can be established, including the performance standards to reduce impacts to a less-than-significant level.

Please refer to Master Response 1, which addresses the level of specificity required for the EA and CARB's authority.

635-23: The commenter states, "**VIII. Conclusion**

In summary, the EA for the Draft 2022 Scoping Plan fails to apprise the public of the true environmental impacts of the entirety of the Scoping Plan and requires substantial revision. A revised Scoping Plan, and revised EA, must be revised and recirculated. The comment period should commence with the later of the publication of the revised Scoping Plan, EA, and other appendices - and the disclosure of the public records identified in Public Records Act requests submitted under separate cover on behalf of The Two Hundred. The public

comment period should be at least 90 days, to provide adequate time for expert analysis and community engagement and feedback from low income communities and communities of color."

Response: The comment summarizes prior comments and suggests that the First Draft EA be revised and recirculated, and that the comment period be at least 90 days. As discussed in the responses above, CARB did release a recirculated Draft EA for a 45-day public comment period from September 9, 2022 through October 24, 2022. The Recirculated Draft EA adequately evaluates and discloses potential environmental impacts from implementation of the 2022 Scoping Plan, and incorporates feasible mitigation measures, where appropriate. No evidence has been provided to the contrary that would trigger the need to additionally revise and recirculate the EA or provide another public review beyond the statutory requirements.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 636

6/24/2022 Katelyn Roedner Sutter, Environmental Defense Fund

636-1: The commenter states, "**Hydrogen is a potential climate solution in hard-to-decarbonize sectors - but only if leaks are accounted for and prevented**

The draft Scoping Plan relies on a significant increase in hydrogen production and deployment, which has the potential to be an important climate strategy. **Scaling up the use of hydrogen to decarbonize heavy-duty transportation, aviation, shipping, or certain industrial applications requires careful consideration of hydrogen's environmental and climate impacts, which recent EDF research finds have historically been underestimated.**[39]

There is emerging consensus among the scientific community on hydrogen's warming impact as a powerful short-lived indirect greenhouse gas. Specifically, it is over 30 times more potent than an equal amount of carbon dioxide emissions over a 20-year period, which is three times higher than its impact over a 100 year period. Hydrogen should be measured, including in modeling underpinning the draft Scoping Plan, using both a global warming potential (GWP) 20 and GWP100 in order to accurately capture the impact of hydrogen emissions (including leakage and venting) in the near- and long-term. When considering near-term climate impacts, soon-to-be published EDF research shows that climate benefits from hydrogen usage can be severely diminished for moderate to high emissions rates (around 5 to 10%). Minimizing or eliminating hydrogen leakage is absolutely critical to the success of hydrogen as part of the solution to climate change.

Not all hydrogen is green nor a climate solution

The draft Scoping Plan fails to sufficiently explain which types of hydrogen would be acceptable for California's decarbonization pathway. Specifically, In the March 15, 2022 Scoping Plan workshop, CARB stated that it would only pursue zero-carbon hydrogen produced through renewable energy ('green' hydrogen), or through feedstocks paired with CCS ('blue' hydrogen). In the May 2022 draft, CARB further stated that "for the purposes of the Draft 2022 Scoping Plan, 'green hydrogen' is not limited to only electrolytic hydrogen produced from renewables." This is a counterintuitive definition, since the broadly understood definition of 'green hydrogen' is limited to renewable-powered electrolytic hydrogen.

CARB should revise its use of 'green hydrogen' in the draft Scoping Plan to avoid this misleading characterization, and instead clearly state whether its intended buildout of hydrogen will rely on fossil power with carbon capture or not. **Because the climate impacts of this type of hydrogen production are potentially significant, fossil generated hydrogen should not be considered a climate solution in this Scoping Plan.**

The extent to which hydrogen will be renewable-generated is also a crucial question when considering the viability of the proposed scenario, which is modeled assuming off-grid buildout of the needed renewable energy. However, this is a very ambitious, if laudable, assumption and casts doubt on whether the projected emissions reductions contained in its proposed scenario are realistic.

While EDF appreciates the emphasis placed on hydrogen produced through renewable energy in the draft Scoping Plan, hydrogen produced through feedstocks paired with CCS is also contemplated and brings additional climate impacts. EDF's findings point out that carbon dioxide is not the only important climate pollutant produced through the hydrogen generation process, especially when not produced with renewable energy; methane can also be released at significant levels in addition to hydrogen emissions, contributing to the overall climate warming effects of fossil fuel-based hydrogen.

Specifically, methane leakage from producing hydrogen using natural gas and CCS technologies is of significant concern; the climate effects of methane leakage are often underestimated in hydrogen assessments, and methane is a powerful greenhouse gas with high global warming potential. As stated in the draft Scoping Plan, "hydrogen can be produced through electrolysis with renewable electricity or through steam methane reformation of renewable or fossil gas. If steam methane reformation is paired with CCS, the hydrogen produced could potentially be zero carbon."[40] This language is not sufficiently stringent to ensure that any hydrogen produced is zero carbon, and it does not address the issue of methane leakage which is critical to prevent when developing any potential hydrogen production using any feedstocks with CCS. The level of climate harm only increases if there is embedded carbon in the lifecycle analysis of hydrogen. To that end, EDF suggests that the Scoping Plan only assumes hydrogen from renewable energy generation.

[39] Ocko, I. B. and Hamburg, S. P.: Climate consequences of hydrogen emissions, Atmos. Chem. Phys. in press, 2022.
[40] California Air Resources Board, Draft 2022 Scoping Plan Update, pg 69. https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf"

Response: Please refer to responses to comments 296-5, 166-2 and 166-5.

Regarding the commenter's claim regarding hydrogen's warming impact, prior to very recent research, scientific discussion around the GWP of hydrogen typically centered on the indirect warming effects caused by the chemical interactions of hydrogen in the troposphere, which result in higher atmospheric concentrations of methane and ozone. These effects were studied in Derwent et al. (2001, 2006, 2020),[86] all of which proposed 100-year GWP values of around 5 ± 1. Subsequent research using a more advanced model in Field and Derwent (2021)[87] resulted in a lower 100-year GWP value of 3.3 ± 1.4.

In 2021, Paulot et al.[88] first proposed that a significant portion of the believed warming effects of hydrogen should come from the increased concentration of water vapor in the stratosphere, which was not considered in previous studies. This study did not propose a GWP value, but it laid the groundwork for Warwick et al. (2022)[89], which states: "we have also considered, for the first time, previously ignored changes in stratospheric water vapour and stratospheric ozone in our calculations of hydrogen's GWP." Their calculation gives a 100-year GWP value of 10.9 ± ~4.5. In this study, about 30% of the GWP specifically derives from stratospheric effects. This study is complemented by Ocko and Hamburg (2022)[90], which finds similar values for the 100-year hydrogen GWP value and proposes other modeling approaches that may lead to even higher values. These two studies appear to be the most recent research on the subject, and the only papers that use stratospheric effects to calculate hydrogen's GWP.

In light of this, there does not appear to be a consensus on the GWP of hydrogen. While the influence of water vapor induced by hydrogen emissions is a compelling area of research, hydrogen's status as an indirect GHG and the wide error ranges proposed by these studies indicate that there is not widespread agreement that the warming effects of hydrogen are significantly higher than previously asserted.

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[86] Transient Behaviour of Tropospheric Ozone Precursors in a Global 3-D CTM and Their Indirect Greenhouse Effects (ed.ac.uk); Microsoft Word - 07 Derwent.doc (ed.ac.uk); Global modelling studies of hydrogen and its isotopomers using STOCHEM-CRI: Likely radiative forcing consequences of a future hydrogen economy - ScienceDirect

[87] Global warming consequences of replacing natural gas with hydrogen in the domestic energy sectors of future low-carbon economies in the United Kingdom and the United States of America - ScienceDirect

[88] Global modeling of hydrogen using GFDL-AM4.1: Sensitivity of soil removal and radiative forcing - ScienceDirect

[89] Atmospheric implications of increased hydrogen use (publishing.service.gov.uk)

[90] acp-22-9349-2022.pdf (copernicus.org)

Regarding the commenter's claim regarding hydrogen leakage, hydrogen will require new production and distribution systems that are likely to differ in the key characteristics that can result in leakage (i.e., material composition, components, interconnections, transport distances, pressure, temperature, etc.) compared to the existing fossil gas production, transmission, and distribution system. Hydrogen injection into California's common carrier pipeline is still being examined as part of CPUC's renewable gas proceeding (R.13-02-008).[91] The Proposed Decision issued in November 2022 does not yet authorize system-wide pipeline injection of hydrogen into the common carrier pipeline, but instead directs the development of pilot projects to further evaluate standards for the safe injection of hydrogen. As such, additional data collection on hydrogen supply leak prevalence and rates, beyond the U.C. Riverside study commissioned by CPUC, has been determined to be needed. The Proposed Decision states that the U.C. Riverside study's conclusions highlight the importance of understanding safety-related properties of different blends, identifying methods and strategies (e.g., use of odorants) for prompt detection, and developing effective safety procedures for the monitoring, identification, and repair of leaks to reduce safety risks. CARB acknowledges the importance of minimizing hydrogen leakage, particularly given the higher energy per mass and economic value of hydrogen relative to other gaseous fuels.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 639

6/24/2022 Sarah Wiltfong, Los Angeles County Business Federation

639-1: The commenter states, "**As a consequence, CARB's approach is to impose increasingly on activities and industry occurring in California in ways that cause the actors and industries to either move or keep their operations outside of California (i.e., to move or keep all such activities in other states and nations, which in most cases leads to more harmful GHG impacts).**

An example is CARB's proposed regulation of cement production within California. Whereas CARB proposes an eventual standard of GHG neutrality on such in-state cement production irrespective of the costs, CARB blindly welcomes the importation of cement into California even though it may be produced in Asia using the worst possible GHG causing production methods. From CARB's point of view, it does not matter if the cement produced in California were already the world's most GHG efficient cement. If GHG-intensive imported cement could be moved about within California to its ultimate destination by means of a GHG-free

[91] https://apps.cpuc.ca.gov/apex/f?p=401:56:0::NO:RP,57,RIR:P5_PROCEEDING_SELECT:R1302008

vehicle, then CARB will assume that such imported cement has no GHG associated with its production, application and consumption in California.

Because CARB ignores extra-jurisdictional GHG emissions (except from electricity production), CARB's approach is irrational in relation to the State's legitimate governmental interest in reducing GHG and its worldwide impacts. In other words, CARB has chosen to make intra-state GHG betterment the direct enemy of global GHG betterment – even though global climate change caused by GHG is unarguably a global problem that can best be addressed only when it is considered at a global scale.

While AB32 expressly requires CARB to minimize "leakage" 1 of GHG emissions from California's economy,2 the flawed design presented in this draft Scoping Plan is likely to cause leakage."

Response: California's industrial sector produces materials and products—cement, food, steel, minerals—that the state relies on to function and thrive. The need for these materials and products will continue, and it will be important to the State's economic health and to global GHG emissions that these needs are met by efficient in-state manufacturing. AB 32 directs CARB to minimize emissions leakage in designing GHG regulations to help ensure that reductions in California's GHG emissions from the State's climate regulations do not result in simply shifting emissions outside the State's borders given the State's ongoing need for these materials and products. AB 398 (2017) and SB 596 (2021) also provide specific direction to CARB on preventing leakage within the industrial sector.

Indeed, CARB has paid close attention to leakage risk and has carefully designed regulations to minimize leakage risk. AB 398 (2017) requires the Cap-and-Trade Program to maintain high leakage protection for all covered industrial sectors through 2030 and provide a report on any leakage concerns to the legislature by the end of 2025. The Cap-and-Trade Program is California's primary regulation for reducing GHGs from the industrial sector. To minimize potential emissions leakage due to the Cap-and-Trade Program, CARB followed globally accepted methodologies to identify the leakage risk faced by each covered industrial sector and included provisions for facilities operating in these sectors to receive free allowance allocation targeted to minimize leakage. A recent assessment of emissions trading systems, like California's Cap-and-Trade Program, globally found either no evidence or very little evidence of leakage or competitiveness impacts from such programs.[92]

Based on recent economic trends, there is little evidence of significant leakage occurring in California's manufacturing sector directly tied to California's climate policies. Since the Great Recession, the manufacturing sector in California has experienced strong and steady

[92] International Carbon Action Partnership (ICAP) (icapcarbonaction.com)

growth.[93],[94] Long-term trends demonstrate that the GHG-intensity of California's economy—its GHG emissions per gross domestic product—continues to decline.[95]

SB 596 requires CARB to develop a comprehensive strategy to achieve net-zero emissions of GHGs associated with all cement used within the state by 2045. CARB has not proposed any strategy, regulatory measures, or incentive structures pursuant to SB 596. The commenter presupposes CARB actions pursuant to SB 596 and incorrectly states that "…CARB will assume that…imported cement has no GHG associated with its production, application and consumption in California." In fact, SB 596 includes provisions to address GHG emissions from both domestically produced and imported cement that is used in California. SB 596 requires CARB to:

> Include provisions to minimize and mitigate potential leakage and account for embedded emissions of greenhouse gases in imported cement in a similar manner to emissions of greenhouse gases for cement produced in the state, such as through a border carbon adjustment mechanism.

Furthermore, SB 596 requires CARB to:

> Define a metric for greenhouse gas intensity and evaluate the data submitted by cement manufacturing plants to the state board for the 2019 calendar year and other relevant data about emissions of greenhouse gases for cement that was imported into the state to establish a baseline from which to measure greenhouse gas intensity reductions.

These provisions within SB 596 ensure that when CARB ultimately proposes any measures pursuant to SB 596, the proposal will minimize leakage by addressing GHG emissions associated with all cement used in California, regardless of whether it was produced in-state or imported.

639-2: The commenter states, "The Update contains four main land use regulatory concepts that are particularly problematic. First, CARB proposes policy changes under the California Environmental Quality Act ("CEQA"), which requires deciding agencies (usually local governments) to study impacts and impose mitigation requirements when approving projects and land use plans. CARB's CEQA proposals would strongly disfavor all but relatively high-density (e.g., at least 20 units per acre), central urban, mass transit-oriented development and re-development. The aim and effect of such policies is to disfavor, prejudice and relatively burden all other types of development (lower density communities and redevelopment projects, suburban development, "edge" development, "new towns," and the like). (See Update pp. 195-206 and Appendices D and F.). Some of CARB's recommended CEQA changes have nothing to do with air quality and GHG (i.e., within CARB's purview and relative expertise), such as CARB's proposed CEQA exemption for

[93] International Carbon Action Partnership (ICAP) (icapcarbonaction.com)

[94] 2021 California Manufacturing Facts | NAM

[95] https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000_2019_ghg_inventory_trends_20220516.pdf

projects that contain at least 20% subsidized housing and meet certain labor standards. Although BizFed's members have long advocated for CEQA reform, CARB should not be championing CEQA reform that would undercut local governments' prerogatives and disfavor many reasonable types of development which are (i) needed in substantially greater quantity, (ii) most affordable, and (iii) popular with California's consumers."

Response: The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless, CARB staff notes that the 2022 Scoping Plan and Local Actions Appendix D indicates the key attributes that help to meet the Priority Strategy of reducing VMT, as evidence shows that infill and transit-supportive development supported by other attributes listed in the Local Actions Appendix D can reduce VMT via less trips and shorter trip lengths. Language has been added to the last paragraph under heading "Project Attributes for Residential Projects that Reduce GHGs" in Section 3.2 of Appendix D to indicate the project attributes may not be applicable to all residential and mixed-use projects. In addition, CARB will continue to explore additional project attributes, as appropriate.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 643

6/24/2022 Michael Wara, Stanford University

643-1: The commenter states, "**4. The scale of proposed CDR and CCS implies both a very large pipeline infrastructure and a need to carefully evaluate the potential for induced seismicity.**

As mentioned previously, the combined magnitude of CDR and CCS raise important questions around scaling that need careful evaluation. Both pipeline safety and induced seismicity issues would benefit from further analysis in the final Scoping Plan Update.

A. Pipeline safety

As ARB is no doubt aware, a supercritical CO_2 pipeline accident occurred in 2020 in Mississippi. Subsequently, the Pipeline Safety Trust commissioned an expert report that was highly critical of the current state of CO_2 pipeline regulation in the United States, particularly given the large number of CO_2 pipeline proposals currently under development or in review. [14] Further, in response to this accident, PHMSA has recently opened a new rulemaking on CO_2 pipeline safety. [15] We urge ARB to estimate, at least in a preliminary sense, what degree of CO_2 pipeline infrastructure might be required to serve the envisioned CCS and CDR infrastructure deployed in California under the proposed scenario, and the degree to which it

would have to be sited in heavily populated areas (because that is where sites requiring capture are located) ..

The combined scale of CDR and CCS in the proposed scenario also raises important questions regarding the actual usable amount of CO_2 storage in deep saline aquifers in California. The EFI-Stanford report has estimated that up to 70 gigatons of storage are available.[16] But this estimate does not fully account for induced seismic risks associated with pressurization of aquifers as injection occurs. Evidence from Oklahoma indicates that deep water disposal at similar scales in aquifers close to bedrock- or even in some cases separated from bedrock by seemingly impermeable layers - can create induced seismicity as pressures build.[17] There is good reason to think that CO_2 injection at scale may cause similar impacts if not carefully managed.[18]

This is not a new phenomenon. What is new is the level of disposal in deep aquifers that occurred in Oklahoma's Arbuckle Formation and what is proposed in terms of long term injection of liquid supercritical CO_2 in California deep saline aquifers. We believe that this issue can be managed with careful assessment of storage formations and of injection rates and locations.

We urge ARB to consider these risk as it proposes a ramp to 80MMt CO_2 or more of CDR over the next two decades. If the proposed scenario, or a modified version of it is ultimately adopted, the ARB should develop programs to safely construct and operate supercritical CO_2 pipelines as well as responsibly develop a detailed and nuanced understanding of induced seismic risk for deep saline aquifers in California.

[14] https://pstrust.org/wp-content/uploads/2022/03/3-23-22-Final-Accufacts-CO2-Pipeline-Report2.pdf
[15] https://www.phmsa.dot.gov/news/phmsa-announces-new-safety-measures-protect-americans-carbon-dioxide-pipeline-failures
[16] https://sccs.stanford.edu/sites/g/files/sbiybj17761 /files/media/file/EFI-Stanford-CA-CCS-FULL-rev2 -12.11.20_0.pdf
[17] https://www.science.org/doi/full/10.1126/sciadv.1601542
[18] https://www.pnas.org/doi/10.1073/pnas.12024 73109”

Response: Please refer to response to comment PH-1 and Master Response 2.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB’s certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 651

6/24/2022 George Peridas

651-1: The commenter states, "*Predictable and time certain permitting of CCS Projects is critical to successful adoption*

The California Air Resources Board 2022 Scoping Plan Update draft rightly identifies the challenging permitting environment currently present in California as numerous federal, state, regional, and local entities play different roles in approving a CCS or a CDR project. Further, the requirements of California's Environmental Quality Act (CEQA) and the associated environmental impact report (EIR) process can often derail a project through protracted litigation efforts, redundant agency review requirements, and excessively lengthy review timelines. While the CEQA review process is important to ensure that all relevant project impacts are being evaluated and all necessary mitigations are being implemented, this process should not be carried out in a way that precludes the practical deployment of the very projects that CARB has identified as critical to meeting the goals of this Scoping Plan. This applies to both point-source CCS projects as well as CDR projects. CARB should work with other state and local agencies to navigate the CEQA process efficiently, ensuring that projects' environmental impacts are fully considered and properly mitigated while projects are approved in a timely manner."

Response: The comment provides a general opinion regarding the CEQA process with respect to litigation and review timelines and suggests that CARB work with other agencies to navigate the CEQA process and fully consider and mitigate impacts of projects in a timely manner. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 668

6/24/2022 Julia May, Connie Cho, and Gabriel Greif of Communities for a Better Environment, Shayda Azamian of Leadership Counsel for Justice and Accountability; Juan Flores of Center on Race, Poverty & the Environment; Antonio Díaz of People Organizing to Demand Environmental and Economic Rights; Marven E. Norman of Center for Community Action and Environmental Justice; Lucia Marquez and Sofi Magallon of Central Coast Alliance United for a Sustainable Economy; Amee Raval of Asian Pacific Environmental Network; Eric Romann of Physicians for Social Responsibility-Los Angeles; Agustin Cabrera of

Strategic Concepts in Organizing and Policy Education; and Neena Mohan of California Environmental Justice Alliance

668-1: The commenter states, "● Additionally, the environmental impacts, alternatives, public health, and social costs analyses in the Draft Scoping Plan and Draft EA are inadequate.

As a result of these profound inadequacies, the Draft Scoping Plan and Draft EA fail to provide crucial information that the CARB Board needs in order to meaningfully evaluate the costs and benefits of each proposed alternative, and ensure that the alternative that is ultimately adopted will not disproportionately harm low-income and disadvantaged communities. As such, we request that the Board direct CARB staff to substantially revise the Draft Scoping Plan and accompanying Draft EA to achieve compliance with the State's climate laws and the California Environmental Quality Act ("CEQA"). We specifically request that CARB analyze and adopt the Real Zero Alternative, attached below as Attachment A."

Response: Please refer to responses to comments provided for the remainder of this letter.

668-2: The commenter states, "This failure undermines the effectiveness of the plan in cutting GHGs toward the state's 2030, 2035, 2045, and 2050 GHG emission reduction goals, and causes new environmental impacts. Under CEQA, CARB must analyze the "reasonably foreseeable responses" to its proposed measures under the Draft Scoping Plan. However, CARB fails entirely in its Draft EA to analyze and mitigate potentially significant air quality and environmental health impacts that would result from the likely increase of refinery exports. These exports cause significant increased global climate impacts downstream due to use of these exported fuels. CARB is required to minimize such emission shifting under AB32. Furthermore, this increase in petroleum refining for export can result in significant continued local air quality impacts through local refining, transport, and shipping, particularly in refining communities which are already known to be disproportionately impacted by pollution.[51] The Draft EA does not analyze or propose mitigation measures for these reasonably foreseeable impacts.

[51] For example, the Office of Environmental Health Hazard Assessment recently found that of facilities categorized in high CalEnviroScreen quartiles [highest disproportionate impacts], 71% were Refineries, This report also found that "Black Californians experience three times greater exposure from refinery emissions than all other stationary source sectors covered by the Cap-and-Trade Program combined," and that "four of the top five entities that use the most offsets own petroleum refineries, and refineries contribute more to PM disparity by CES score and race/ethnicity than any other sector." Moreover, "[r]efineries and other combustion sources are even more likely to be near communities with high CES scores and high percentage people of color." CAL. OFFICE OF ENV'T HEALTH HAZARD ENF'T, IMPACT OF GREENHOUSE GAS EMISSIONS LIMITS WITHIN DISADVANTAGED COMMUNITIES: PROGRESS TOWARD REDUCING INEQUITIES (Feb. 2022), available at: https://oehha.ca.gov/media/downloads/environmental-justice/impactsofghgpoliciesreport020322.pdf."

Response: Please refer to Master Response 6.

668-3: The commenter states, "The attached Karras Report finds that even if all other emissions are cut to their share of the State's GHG goal, the goal cannot be achieved without cutting refining rates (which CARB rejects in Alternative 3). Without crude rate cuts, emissions from the petroleum fuel chain linked to refining in California would drive total statewide carbon emissions to exceed the State's 2050 direct emissions goal. In-state fuels demand reduction measures alone cannot ensure the needed refining rate phase down. Acting now to start five to seven percent per year gradual refinery phase downs would provide petroleum fuel chain cuts that enable cumulative emissions to meet the 2050 direct emission goal. Delay until after 2029 could force the need for rapid phase down of refinery capacity —if the 2050 direct emission goal is to be met at all. The Draft Scoping Plan would fail to achieve "maximum feasible" direct emission reductions required by AB 32. The Draft EA does not identify or mitigate the severe impacts which could result from this failure."

Response: Please refer to response to comment letter 166.

668-4: The commenter states, "**c. California's oil refineries are aging and highly complex; prior rulemakings demonstrate the long timelines required to build new systems, and known space-constraints increase safety hazards if new controls are forced.**

CARB's fundamental assumption that refinery CCS in California is technologically and logistically feasible is unsupported. CARB has not demonstrated feasibility of implementing refinery CCS in California refineries in the Draft Scoping Plan. Additionally, CARB has failed to analyze in the Draft Scoping Plan and EA the space constraints, lengthy timelines, or environmental as well as health and safety hazards associated with deploying CCS technology at California refineries. Many of the comments below were originally submitted to CARB on April 4, 2022, following CARB's release of its Initial Modeling Results.[65] We include them here again since these concerns have not been adequately addressed in the Draft Scoping Plan and Draft EA.

[65] CARB Comment Log Display (Comment 51 for Public Workshop on the 2022 Scoping Plan Update), Public comment submitted by Communities for A Better Environment (Apr. 4, 2022), available at: https://www.arb.ca.gov/lispub/comm2/bccomdisp.php?listname=sp22-odelresultsws&comment_num=56&virt_num=51."

Response: The First Draft EA contains a discussion of the reasonably foreseeable compliance responses related to implementation of CCS projects and provides a discussion of the potentially significant impacts throughout Chapter 4. Issues pertaining to CCS safety are addressed in Master Responses 2 and 3.

668-5: The commenter states, "**f. CARB failed to analyze and mitigate the environmental and health impacts of transporting captured CO2 in pipelines associated with Refinery CCS or any CCS strategy. CO2 pipelines are highly specialized, dangerously underregulated, and vulnerable to seismic, subsidence, and other rupture hazards.**

In the Draft EA, CARB provides that reasonably foreseeable compliance responses to its proposed actions on mechanical CDR and CCS include the "modification of existing or construction of new industrial facilities to capture CO2 emissions (CCS), and construction of new infrastructure, such as pipelines, wells, and other surface facilities to enable the transport and injection of CO2 into a geologic formation for sequestration."[85] However, CARB fails to analyze environmental and health impacts of transporting captured CO2.

In particular, CARB fails to analyze potential long-term air quality and health impacts and other environmental impacts from possible CO2 pipeline explosions in the Draft EA.

[85] Draft EA at 21."

Response: Please refer to Master Responses 2 and 3.

668-6: The commenter states, "The Pipeline and Hazardous Materials Safety Administration (PHMSA), a regulatory agency under the U.S. Department of Transportation (DOT), recently issued a bulletin detailing the risk of subsidence or seismic activity ("changing subsurface geological conditions") which threaten pipeline safety.[95] Importantly, the agency guidance notes that:

> PHMSA is issuing this updated advisory bulletin to remind owners and operators of gas and hazardous liquid pipelines, including supercritical carbon dioxide pipelines, of the potential for damage to those pipeline facilities caused by earth movement in variable, steep, and rugged terrain and terrain with varied or changing subsurface geological conditions. Additionally, changing weather patterns due to climate change, including increased rainfall and higher temperatures, may impact soil stability in areas that have historically been stable. These phenomena can pose a threat to the integrity of pipeline facilities if those threats are not identified and mitigated. Owners and operators should consider monitoring geological and environmental conditions, including changing weather patterns, in proximity to their facilities.

CARB fails to evaluate the risk of seismic hazards with regard to significant challenges this presents to safely operating the extensive network of CO2 pipelines that would be required to support operation of CCS at refineries in California. In accordance with the above-referenced PHMSA bulletin, these significant environmental and safety risks must be carefully addressed and evaluated.

[95] Pipeline and Hazardous Materials Safety Administration (PHMSA), Pipeline Safety: Potential for Damage to Pipeline Facilities Caused by Earth Movement and Other Geological Hazards, Federal Register 87 F.R. 33576 (June 2, 2022), available at: https://www.federalregister.gov/documents/2022/06/02/2022-11791/pipeline-safety-potentialfor-damage-to-pipeline-facilities-caused-by-earth-movement-and-other."

Response: Please refer to Master Response 2.

668-7: The commenter states, "Yet the Draft EA failed to analyze potentially significant environmental and health impacts in the Central Valley that could result from this anticipated storage. CCS storage could result in the emission of harmful gases (such as CO2 gas and Hydrogen Sulfide, or H2S) due to wellbore leaks, seismic events and other causes. Such leaks specific to carbon capture activities have already occurred, for example in Canada. These new potential hazards add to already substantial pollution hazards facing communities of color and low income communities in the Central Valley."

Response: Please see Master Response 3.

668-8: The commenter states, "**h. CARB fails to adequately analyze the environmental impact, safety, and mitigation strategies necessary for mechanical carbon dioxide removal (CDR) technology.**

California must not rely heavily on nascent, uncertain technologies mechanical CDR technologies. CARB must fully evaluate the ramifications of adopting emerging technologies that would directly capture carbon from the atmosphere. While some Direct Air Capture (DAC), a subset of CDR, is being proposed to remove excess CO2 from the air, it is also eligible for subsidies in California as a means to offset continued fossil fuel operations.[102] Such an application would further delay a necessary fossil fuel phaseout, undermine projected emission cuts, and would instead increase cumulative GHG emissions over time (see Karras Report, Attachment D), and allow continued harmful smog-forming and toxic pollutants from fossil fuel industries.

New infrastructure required for mechanical CDR is also likely to disproportionately impact low-income communities of color whose health already suffers from over-pollution and undue safety risks of volatile fossil fuel infrastructure. As we discussed above, California's Central Valley, where much of the CO2 sequestration would be located,[103] is heavily disproportionately impacted by air pollution and health vulnerabilities.[104] New impacts of CO2, Hydrogen Sulfide (H2S), as well as construction impacts of the new infrastructure is likely to heavily impact any regions across which CO2 pipeline corridors may need to be sited in order to reach sequestration sites as proposed in the Central Valley. However, CARB has failed to adequately analyze the environmental and health impacts of mechanical CDR, especially on low-income and disadvantaged communities.

In addition, CARB failed to evaluate the following: (1) the amount of electricity sector generation and other energy use required for all steps to operate DAC, transport, and store carbon; (2) the feasibility and impact of siting, construction, and sequestration, as well as regional operational feasibility considerations in the regions identified as reasonably foreseeable candidates for storage; (3) the total amount of CO2 storage available without triggering seismic events, an issue that has yet to be fully considered by the the EPA Title VI permitting process.[105] 3

DAC may actually undermine California's climate goals if it is used to offset new fossil fuel emissions instead of removing legacy excess carbon in the atmosphere because (1) CARB does not include all reasonably available options for fossil fuel phaseout such as oil refining

phasedown in Alternative 3; (2) many DAC developers are funded through oil industry investment;[106] and (3) DAC is currently eligible for LCFS credits that can be used by polluting industries.[107]

CARB attributes large cumulative quantities of emission reductions (542 MMTCO2e) to DAC technology from 2033 to 2045.[108] CARB estimates that direct air capture (DAC) technology will remove either 79 MMT or 100 MMT CO2e in residual emissions under Alternative 3.[109] However, this amount could be much smaller if CARB adopted direct emission reduction measures, including a phase out of oil and gas and phase down of refinery operations as well as accelerated targets in other sectors such as in the transportation or electricity sectors.

[102] Cal. Air Res. Bd., Carbon Capture and Sequestration Project Eligibility FAQ (Dec. 2021). https://ww2.arb.ca.gov/resources/fact-sheets/carbon-capture-and-sequestration-project-eligibility-faq.

[103] Scoping Plan at 67 (citing Lawrence Livermore National Laboratory. 2020. Getting to Neutral: Options for Negative Carbon Emissions in California. Revision 1.); see also Sammy Roth, Is a Michigan energy firm using dark money to influence California's climate plans?, LOS ANGELES TIMES (June 23, 2022) available at : https://www.latimes.com/environment/newsletter/2022-06-23/michigan-energy-firm-dark-money-california-climateplans-boiling-point.

[104] Cresencio Rodriguez-Delgado, California has Some of the Worst Air Quality in the Country. The Problem is Rooted in the San Joaquin Valley, PBS NEWS HOUR (June 16, 2022) (The San Joaquin Valley "has been out of compliance with Environmental Protection Agency standards for 25 years, earning the region the unwanted distinction of being among the most polluted regions in the country . . . [a]s California heads into another wildfire season, environmentalists and lawmakers are trying to revive a decades-long push to strengthen air quality regulation to curb pollution and reduce the many consequences of daily life with dirty air, including rising health care costs"), available at: https://www.pbs.org/newshour/nation/california-has-some-of-the-worst-air-quality-in-thecountry-the-problem-is-rooted-in-the-san-joaquin-valley.

[105] Video, Mark Zoback, Geomechanical Issues Affecting Long-Term Storage, Stanford Center for Capture Storage, Jan. 25, 2022, https://www.youtube.com/watch?v=IDwOQhhQ9Uk.

[106] Exxon Mobile, ExxonMobil expands agreement with Global Thermostat, sees promise in direct air capture technology (last visited June 23, 2022), available at: https://corporate.exxonmobil.com/News/Newsroom/News-releases/2020/0921_ExxonMobil-expands-agreementwith-Global-Thermostat-re-direct-air-capture-technology; Chevron, Occidental invest in CO2 removal technology, REUTERS (Jan. 9, 2019), available at: https://www.reuters.com/article/us-carbonengineering-investment/chevronoccidental-invest-in-co2-removal-technology-idUSKCN1P312R.

[107] Cal. Air Res. Bd., Carbon Capture and Sequestration Project Eligibility FAQ (Dec. 2021) ("DAC projects that store the captured carbon dioxide (CO2) underground may apply for CCS Permanence Certification regardless of location"), available at: https://ww2.arb.ca.gov/resources/fact-sheets/carbon-capture-and-sequestration-

projecteligibility-faq#:~:text=Do%20CCS%20projects%20have%20to,capture%20(DAC)%20projects.

[108] 2022 Scoping Plan, Modeling Information: AB 32 GHG Inventory Sectors Modeling Data Spreadsheet, Sum of CDR in Alternative 3 through 2045 (May 10, 2022), available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plandocuments#:~:text=The%202022%20Scoping%20Plan%20Update%20focuses%20on%20outcomes%20needed%20to,economic%2C%20environmental%2C%20energy%20security%2C.

[109] There is a confusing discrepancy between the initial modeling results presentation in which the Key Metrics chart and graph show 95 MMT of residual emissions to be removed by DAC in 2045, and the data spreadsheet of emissions provided for the modeling (Alternative 3, CDR) at 79 MMT, which necessitates explanation by CARB."

Response: Please refer to Master Responses 2 and 3, and responses to comment letter 166.

668-9: The commenter states, "**i. CARB must not incentivize carbon capture for enhanced oil recovery.**

Burying a critical fossil fuel extraction measure in the Draft EA, CARB opens the door to the utilization of carbon capture for "enhanced oil recovery" (EOR). The Draft Plan contemplates the potentially significant impact of EOR, outlining how EOR from carbon capture, utilization and storage (CCUS) projects could result in "emissions…released into the air, soil, aquifers, or surface waterways because of unidentified and/or poorly abandoned wells or other pathways (e.g., natural fractures)."[110] CARB then fails to adequately describe and analyze such a significant potential action under the Draft Scoping Plan.[111]

Instead, California should explicitly prohibit the use of carbon capture for Enhanced Oil Recovery (EOR). The notion of allowing building subsidized systems to capture carbon, in order to extract more climate-harming crude oil is so inherently counter to climate goals that it should be considered nonsensical.

[110] Draft Scoping Plan at 132.
[111] Draft Scoping Plan at 141."

Response: Please refer to Master Responses 2 and 3.

668-10: The commenter states, "Moreover, CARB must analyze the economic, environmental, and health benefits and impacts of transit and active transportation expansion measures."

Response: Please refer to Master Response 4 for a discussion related to the application of Appendix E to the 2022 Scoping Plan. The Recirculated Draft EA includes a discussion of reduced VMT actions associated with the 2022 Scoping Plan in Section 2.C.14.

668-11: The commenter states, "**ii. CARB must conduct a cost savings and environmental impacts analysis for its VMT reduction measure.**

Under AB 197, CARB must identify (a) the range of projected GHG emissions reductions; (b) the range of projected air pollution reductions; and (c) the cost-effectiveness, including avoided social costs, for each proposed measure.127 While CARB includes VMT targets as an emissions reduction measure under all of the AB 32 GHG Inventory Alternatives, it has failed to analyze potential cost savings that the Draft Scoping Plan could achieve through VMT reductions. In their April 20, 2022 presentation, E3 noted that its modeling does not evaluate cost savings related to VMT reduction measures.128 CARB has not explained why it excluded, in violation of AB 197, any estimation of potential cost savings from the proposed VMT reduction measures, in violation of AB 197.

The draft EA also fails to analyze the potential environmental impacts of the reasonably foreseeable responses to this measure, including expanding transit, active transportation, and "new mobility" options as specified in Appendix E.

[127] Cal. Health & Safety Code § 38562.7.

[128] Cal. Air Res. Bd. & Energy, Economy, and Environment Modeling, 2022 Scoping Plan Update - Initial Air Quality & Health Impacts and Economic Analyses Slide 3 (Apr. 20, 2022), available at: https://ww2.arb.ca.gov/sites/default/files/2022-04/SP22-Initial-AQ-Health-Econ-Results-ws-E3_0.pdf ("Costs for Vehicle Miles Traveled (VMT) Reduction Measures [are] not included"); See also Video, 2022 Scoping Plan Update - Initial Air Quality & Health Impacts and Economic Analyses Workshop, at 15:04-16:30, available at: https://www.youtube.com/watch?v=PtsFweUncT4."

Response: Please refer to response to comment 668-10.

668-12: The commenter states, "**iii. CARB fails to model or otherwise analyze feasibility, cost savings, and environmental impacts of potential active transportation expansion measures in the proposed AB 32 GHG Sector alternatives.**

In the Draft Scoping Plan, CARB staff also propose to "[i]nvest in making public transit a viable alternative to driving by increasing affordability, reliability, coverage, service frequency, and consumer experience"; and "reallocate[e] revenues to improve transit, bicycling, and other sustainable transportation choices".[129] Appendix E provides additional strategies, including (1) rescoping Caltrans' project pipelines; (2) implementing recommendations in the Climate Action Plan for Transportation Infrastructure (CAPTI); (3) doubling transit coverage and service frequencies by 2030; and (4) increasing transit affordability through easing local and state-level funding restrictions.[130]

Although CARB proposes various measures under the category of "Deploy ZEVs and reduce driving demand" in the Draft Scoping Plan, most of these measures focus on improving vehicle fuel economy and transitioning to electric or hydrogen powered vehicles, with the exception of the VMT reduction measure discussed above.[131]

CARB must analyze the measures to reduce driving demand, as outlined in Appendix E. These measures, including doubling transit coverage and service frequency by 2030, may facilitate greater emissions reductions at potentially lower cost than the one-to-one zero-emission passenger vehicle adoption that CARB proposes. However, because transit expansion measures were not modeled in the draft alternatives, CARB did not compare the cost-effectiveness of these additional transportation measures against its proposals to increase deployment of zero-emission passenger vehicles and associated charging infrastructure.

In light of CARB's proposed strategy to expand transit and active transportation in the Draft Scoping Plan, CARB's failure to conduct any modeling or analysis on cost savings or cost effectiveness of this measure, contrary to AB 197.[132]

[129] Draft Scoping Plan at 156.
[130] Appendix E at 13-16 (emphasis added).
[131] Draft Scoping Plan at 58-63, Table 2-2 (listing GHG reduction measures under Alternative 3); Draft Scoping Plan, Appendix C at 2-10, Table C-1 (comparing measures for all AB 32 GHG Inventory alternatives).
[132] Cal. Health & Safety Code § 38562.7."

Response: Please refer to response to comment 668-10.

668-13: The commenter states, "CARB's failure to effectuate its statutory and regulatory requirements necessitates significant revisions to its treatment of the electric sector. Moreover, its omission of critical information and failure to consider available resources evinces a basic lack of CEQA compliance, particularly in its project description and alternatives analysis. To remedy these shortcomings, the Board must adopt a scenario requiring the electric sector to achieve 0 MMT by 2035, and incorporate the above suggestions into the Draft Scoping Plan. Further, it must revise its Draft EA to incorporate a full analysis of the environmental impacts resulting from any scenario that CARB ultimately adopts. Moreover, the Draft EA must comply with CEQA's mandate to avoid, where feasible, significant adverse effects to the environment. City of Arcadia v. State Water Res. Control Bd., 135 Cal. App. 4th 1392, 1422. This is the best way to ensure that California meets its air quality, climate, and equity goals and requirements."

Response: This comment provides policy recommendations, and notes that changes to the 2022 Scoping Plan would need to be addressed in an updated First Draft EA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required.

668-14: The commenter states, "CARB staff admits that its estimates do not capture local variation,[163] which is likely to be significant with increased biomass emissions. Although CARB indicates in its EA that it analyzes community-level issues to the degree feasible and appropriate, it makes no attempt to discuss the reasonably foreseeable local impacts of its predicted expansion of biomass facilities.[164] Neither the Draft Scoping plan nor the Draft EA take community-level impacts arising from new biomass into account, and they both also fail

to consider the increased GHGs that result from burning biomass by wrongfully assuming it is carbon neutral. Given that the locations of existing biomass plants is known, increased emissions are reasonably foreseeable, and failing to analyze them is a basic derogation of CEQA's fundamental requirements to accurately describe, analyze and mitigate project impacts, and adopt less harmful alternatives.

[163] Draft Scoping Plan at 117 ("[i]n addition, emissions are reported at an air basin level and do not capture local variations. These estimates also do not account for impacts from global climate change, such as temperature rise, and are only based on the scenarios in this Draft 2022 Scoping Plan").
[164] Draft EA at 7."

Response: Please refer to Master Response 1, regarding the level of specificity required for EAs.

668-15: The commenter states, "**ii. CARB errs by bailing to analyze and mitigate the impacts of GHG and co-pollutant emissions from exports.**

CARB staff states that "[e]ach of the scenarios is designed to achieve reductions in emissions from sources within the state."[165] The Draft Scoping Plan fails, however, to consider instate emissions from exported energy or from facilities that achieve statutory compliance through renewable energy credits ("RECs").[166] In fact, the Draft Scoping Plan fails to make any explicit reference to energy exports or RECs. The Draft EA includes cursory recognition of the potential for increasing exports of energy from dairy digesters and biomass generation facilities.[167] However, it incorrectly fails to adopt, or even consider, any mitigation measures, such as prioritizing retirement of gas-fired generation in disadvantaged communities, that could address the impacts from generating energy for export or based on RECs. This failure contravenes CEQA's clear mandate that CARB consider and mitigate significant environmental impacts to the extent feasible.

The Draft Scoping Plan and the Draft EA must include an estimate of all electrical sector emissions in the state, regardless of whether the energy is exported or if a REC is later purchased. Section 38505 of the Health and Safety Code confirms this interpretation, defining "Statewide greenhouse gas emissions" as:

The total annual emissions of greenhouse gases in the state, including all emissions of greenhouse gases from the generation of electricity delivered to and consumed in California, accounting for transmission and distribution line losses, whether the electricity is generated in state or imported. Statewide emissions shall be expressed in tons of carbon dioxide equivalents.[168]

In other words, total annual emissions to be tallied must not exclude categories such as line losses. It in no way limits the emissions to be analyzed. The statute further defines "direct environmental benefits in the state" as "the reduction or avoidance of emissions of any air pollutant in the state."[169] Section 38530(b)(1) of the Health and Safety Code also requires "the monitoring and annual reporting of greenhouse gas emissions from greenhouse gas

emission sources beginning with the sources or categories of sources that contribute the most to statewide emissions."[170] As this plain language demonstrates, CARB must consider all emissions in the state, especially from sources such as power plants that contribute the most to statewide emissions. Therefore, this language mandates the inclusion of emissions from exports and RECs, and potential future increases of emissions from exports, in its Draft Scoping Plan and Draft EA.

The requirement to consider both GHGs from imports and line losses does not in any way change the first, more general requirement to monitor and require reporting of all GHG emissions emitted in the state. This necessarily includes GHGs from electricity that suppliers export to other states. Exported power produces GHGs and harmful criteria and toxic co-pollutants in communities, no matter where that energy is ultimately exported.

CARB Staff's failure in the Draft EA to analyze GHG and air pollution emissions related to exports, despite the projected increase in gas-fired generation,[171] is in violation of its mandate to analyze the environmental impacts of this reasonably foreseeable compliance response under Alternative 3.[172] CARB shirks its duty to explore the possibility that its proposed target will lead to increased exports and associated emissions.

Furthermore, neither the Draft Scoping Plan nor the Draft EA consider the likelihood that some utilities will satisfy their Renewable Portfolio Standard ("RPS") requirements by purchasing RECs. While the RPS requirements limit purchases of unbundled RECs, there still is a possibility that utilities will rely on RECs while still combusting fuel at facilities in the State. Therefore, CARB cannot rely on chimeric distinctions between actual in-state emissions and illusory emissions reductions secured through RECs. The failure to examine this potential is in error and must be included for consideration of any possible electric sector target.

165 Draft Scoping Plan at 39.
166 The Draft Scoping contains a similar treatment relating to exports of refined fuels. It notes, without further explanation, that its estimated demand reductions "do[] not assume any need for ongoing operations to support exports to neighboring states." Nonetheless, it asserts that "[i]f demand assumes an ongoing need to support exports to neighboring states, the residual demand would require a five-fold increase in finished fuel imports." Draft Scoping Plan at 84, fn. 150-51.
167 Draft EA at 220, 226-27.
168 Cal. Health & Safety Code § 38505(m).
169 Cal. Health & Safety Code § 38562(c)(2)E(iii) (emphasis added).
170 Cal. Health & Safety Code § 38530(b)(1).
171 Draft Scoping Plan at 162.
172 17 C.C.R. § 60004.2(a)(3).
173 Draft Scoping Plan, Appendix H at 65."

Response: Please refer to Master Response 6.

668-16: The commenter states, "starting than they do during full-load steady state operation.[176] In fact, the pollution from one start at a natural gas power plant can be greater

than a full day of steady-state operations.[177] The amount of pollution emitted in a start may vary significantly, emitting NOx anywhere from the equivalent of 5 to 38 hours of steady-state operations .[178] Although these estimates are based on permitted values, data shows that actual emissions can be even higher. For example, during a start in May of 2020, the Colusa facility emitted more than 900 pounds of NOx, more than 90 times its regular hourly rate of NOx emissions, during one start.[179] These values demonstrate how significant startup emissions can be and why the Draft Scoping Plan and Draft EA must account for increased cycling of fossil fuel power plants to protect air quality.

[176] ASPEN ENVIRONMENTAL GROUP, supra note 174 at 100, Table 4.4-3.
[177] Id. This information is based on permitted values. The U.S. EPA tracks actual hourly rates of emissions, but it does not track startup emissions. Nevertheless, review of that data demonstrates that the hourly rate of emissions during startup is higher than steady-state emissions. See, e.g., U.S. EPA, Clean Air Markets Database, Panoche Energy Center Emissions (last visited June 23, 2022), available at https://ampd.epa.gov//ampd/.
[178] ASPEN ENVIRONMENTAL GROUP, supra note 174 at 99.
[179] See U.S. EPA, Clean Air Markets Database, Colusa Power Plant (May 28, 2020) (according to the continuous emissions monitor data, the plant emitted 145, 393, and 404 pounds of NOx during its first three hours of operation. After those first three hours, the next 11 hours were between 8 and 10.5 pounds of NOx per hour), available at: https://ampd.epa.gov//ampd/."

Response: Please refer to response to comment 632-4, regarding cycling of gas plants.

668-17: The commenter states, "In the Draft EA, CARB staff does not analyze the potential for increased air pollution from electrical generation facilities that are projected to utilize CCS, even though Staff admits that the Council of Environmental Quality has highlighted the need to "further assess and quantify potential impacts [of CCS deployment] on local criteria air pollutants and other emissions."[180]

[180] Draft Scoping Plan at 70."

Response: Power supplies for CCS project would be provided by nearby renewable energy sources (see pages 217 to 218 of the First Draft EA). Chapter 4 of the First Draft EA contains an analysis of the impacts related to increase construction and development of renewable energy projects.

668-18: The commenter states, "**VIII. CARB Must Include an Analysis on the Effectiveness and Environmental Impacts of the Cap-and-Trade Program, and Consider Reforming Cap-and-Trade In This Scoping Plan.**

As noted in the Draft Scoping Plan, CARB states that the Cap-and-Trade program is a critical "part of the portfolio to achieve the state's GHG reduction targets.[303] However, CARB improperly defers analysis or evaluation of California's Cap-and-Trade program until 2023, after the adoption of the Final Scoping Plan.[304] CARB must take this opportunity to analyze the effectiveness, as well as the environmental impacts, of the Cap-and-Trade program.

These analyses may give rise to new or modified regulatory measures and inform current and future decision-making related to the role of Cap-and-Trade in California. To facilitate informed policy solutions, further involve the public, and facilitate transparency, the Draft Scoping Plan must include robust analysis and modeling. The Draft Scoping Plan can also leverage existing analysis that has already identified major flaws in California's Cap-and-Trade design and implementation.

By failing to provide these analyses, CARB paints an incomplete picture of the efficacy and environmental and health impacts of the Scoping Plan. Further, it ignores substantial evidence of significant environmental impacts resulting from its implementation of Cap-and-Trade. Cap-and- Trade leads to emissions of harmful co-pollutants from covered facilities, the majority of which are within half a mile of a disadvantaged community.[305] Another report issued in fall 2016 showed that the number of GHG-emitting facilities in an area is correlated with the percentage of people of color in that area.[306] Further, as described in detail below, the continued issuance of offsets runs the risk of further jeopardizing these same communities.

Consequently, CARB must also analyze and adopt reforms to Cap-and-Trade to reduce the program's disproportionate air quality and other environmental impacts on low-income and disadvantaged communities. Although it is welcome information that Cap-and-Trade is likely to play a reduced role in California's future climate policy,[307] CARB fails to provide a compelling explanation for why the Draft Scoping Plan does not analyze or consider potential changes to the Cap-and-Trade program, particularly post-2030. Nor does it provide any firm guarantee that CARB will reduce the role of Cap-and-Trade through future regulatory processes.

CARB has the necessary data to consider reforms to its Cap-and-Trade program during the Scoping Plan process. CARB's failure to provide this data for public review and comment undermines the Board and public's ability to comment on Cap-and-Trade in the context of other measures proposed in the Scoping Plans. Accordingly, we call for CARB Staff to adopt a revised Draft Scoping Plan that includes: (1) modeling and analysis of Cap-and-Trade's efficacy and environmental impacts, and (2) consideration of potential reforms to its Cap-and-Trade program.

303 Draft Scoping Plan at 86.
304 Id. at 87.
305 CAL. OFFICE OF ENV'T HEALTH HAZARD ASSESSMENT. TRACKING AND EVALUATION OF BENEFITS AND IMPACTS OF GREENHOUSE GAS LIMITS IN DISADVANTAGED COMMUNITIES 22-23 (Jan. 2017), available at: https://oehha.ca.gov/media/downloads/environmentaljustice//impactsofghgpoliciesreport020322.pdf.
306 Manuel Pastor et al., A PRELIMINARY ENVIRONMENTAL EQUITY ASSESSMENT OF CALIFORNIA'S CAP-AND-TRADE PROGRAM, UC BERKELEY 2, Table 1 (Sept. 2016) ("neighborhoods with a facility that emitted localized GHGs within 2.5 miles have a 22 percent higher proportion of residents of color and 21 percent higher proportion of residents living in poverty than neighborhoods that are not within 2.5 miles of such a

facility. Neighborhoods within 2.5 miles of a facility are also more than twice as likely to be among the worst statewide in terms of their CalEnviroScreen score, a relative ranking of cumulative impact based on indicators of social and environmental stressors to health"), available at: https://dornsife.usc.edu/assets/sites/242/docs/Climate_Equity_Brief_CA_Cap_and_Trade_Sept2016_FINAL2.pdf.

[307] Draft Scoping Plan at 89."

Response: The Cap-and-Trade Program is not a part of the proposed project (see Chapter 2, "Project Description", of the First Draft EA). Rather, it is an established regulatory program that already exists in the environmental baseline. The 2022 Scoping Plan Update does not alter or change the Cap-and-Trade Program. Therefore, no further analysis is necessary.

668-19: The commenter states, "**IX. CARB Should Not Rely on Dairy Digesters and BioMethane, and Should Directly Cap Livestock Methane Emissions to Ensure Effective Reductions.**

CARB's proposed strategies to reduce livestock methane will not put California on course to effectively methane derived from livestock operations and will undermine California's efforts to achieve the 40 percent methane emission reduction from 2013 levels by 2030 target set forth in SB 1383.327 However, CARB proposes to significantly expand dairy digesters, which commodify and perversely incentivize the production of manure and, consequently, associated climate and environmental impacts. CARB also proposes to address enteric emissions through unproven and speculative technologies. Further, CARB evinces a misplaced reliance on a continued reduction in California's population of cattle, despite the potential for this trend to be counteracted through CARB's incentive programs encouraging increased production of manure by awarding low carbon credits and other subsidies. In effect, CARB's proposed measures on livestock methane will perpetuate pollution and health impacts in already overburdened communities, in violation of both AB 32 and SB 1383.

[327] Cal. Health and Safety Code § 39730.5"

Response: Please refer to response to comment 177-6.

668-20: The commenter states, "Moreover, the inadequacies identified herein render the Scoping Plan's Draft Environmental Analysis ("Draft EA") deficient under CEQA. While CARB's proposal to massively increase dairy digesters will directly and indirectly result in environmental and health impacts, CARB fails to adequately analyze these impacts in the Draft EA. The Draft EA fails to adequately disclose, analyze, and mitigate impacts to, among other resource areas, air quality, greenhouse gas emissions, water quality, biological resources, and agriculture and forest resources, from the Scoping Plan's *incentivization of dairy biogas*. Promoting factory farm gas with windfall financial rewards has the perverse effect of actually *increasing* methane generation and entrenching the myriad co-pollutants and nuisances associated with ever larger dairies that would be producing this alternative fuel. CARB cannot ignore these serious environmental impacts."

Response: Please refer to response to comment 177-6.

The concerns presented in Attached 3 of this letter are addressed in Master Responses 2 and 3; please see responses to comment letter 166 regarding issues raised in Attachment D of this letter.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 670

6/24/2022 Chelsea Tu

670-1: The commenter states, "Unfortunately, CARB's Proposed Scenario ("Alternative 3") and the Draft Scoping Plan fail to meet these clear mandates. As detailed in the proceeding sections, CARB has failed to meet these statutory directives for the following reasons:

- Alternative 3, if adopted, will not ensure that California's GHG emission reduction measures are direct, equitable, and maximize the total benefits to California, in violation of both AB 32 and AB 197.
- Alternative 3 will not allow the State to meet its 2030 emission reduction target and 2045 carbon neutrality goal.
- If adopted, Alternative 3 will create an overreliance on costly and high-risk mechanical carbon capture and sequestration ("CCS") and carbon dioxide removal ("CDR") actions.
- Alternative 3 will perpetuate unacceptable climate, air quality, and health impacts resulting from the extraction and refining of oil and gas, transportation, electricity generation, building emissions, industrial agriculture, and livestock methane sectors.
- CARB fails to analyze a range of viable and cost-effective alternatives that would allow CARB to meet all of the Scoping Plan's objectives while maximizing short and long-term health, environmental, and economic benefits. See Attachment A: Real Zero Alternative.
- Despite relying on Cap-and-Trade as a vehicle for emissions reductions, CARB improperly defers its analysis of California's Cap-and-Trade until after its adoption of the Final Scoping Plan.
- Additionally, the environmental impacts, alternatives, public health, and social costs analyses in the Draft Scoping Plan and Draft EA are inadequate.

As a result of these profound inadequacies, the Draft Scoping Plan and Draft EA fail to provide crucial information that the CARB Board needs in order to meaningfully evaluate the costs and benefits of each proposed alternative, and ensure that the alternative that is ultimately adopted will not disproportionately harm low-income and disadvantaged communities. As such, we request that the Board direct CARB staff to substantially revise the

Draft Scoping Plan and accompanying Draft EA to achieve compliance with the State's climate laws and the California Environmental Quality Act ("CEQA"). We specifically request that CARB analyze and adopt the Real Zero Alternative, attached below as Attachment A.

We provide cross-sector comments on the Draft Scoping Plan and Draft EA in this letter. Additionally, we provide comments on CARB's proposed alternatives and measures focusing on specific AB 32 GHG Inventory sectors in a separate letter.

Response: The comment provides a general opinion regarding the adequacy of the environmental impact and alternatives analysis. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment. Detailed comments are addressed separately below, as appropriate.

670-2: The commenter states, "**I. CARB fails to disclose the sources of its emissions estimates, making it impossible for the public to verify the accuracy of its project baseline regarding GHG emissions.**

CARB uses 2021 statewide emissions of GHGs as its project baseline for the Draft Scoping Plan's GHG emissions modeling and analysis in the Draft EA.[4] Under CEQA, CARB must describe physical environmental conditions as they exist at the time the notice of preparation is published, or at the time the lead agency commences its environmental analysis. [5]

As detailed below, the Draft Scoping Plan and Draft EA's baseline GHG emissions estimate is unsubstantiated. CARB has not disclosed the source(s) of the emissions data included in its Modeling Data Spreadsheet. Therefore, it is impossible for the public to verify it. The GHG emissions modeling data that CARB includes in the Draft Scoping Plan is significantly lower than CARB' s own publicly-available emissions data. [6] The Draft Scoping Plan estimates that the 2021 baseline GHG emissions for the Reference Scenario totaled 381.8 MMT CO2e.[7] Alarmingly, this is more than *27 MMTCO_2e less* than CARB 's own provisional estimate of 2021 emissions of 409 MMT CO_2e.[8] Even in 2019, GHG emissions under the Reference Scenario were 402.7 MMT, which is more than *15 MMT lower* than the 418.1 MMT CO2e emissions level that CARB includes in its official GHG emissions inventory.[9]

CARB fails to explain the significant discrepancy between its prior estimates and the reference scenario on which it relies. As such CARB must revise the Draft Scoping Plan's modeling and Draft EA to incorporate its provisional estimate of 2021 emissions, or include an updated estimate based on actual emissions in 2021 to ensure that the project baseline is based on available data supported by substantial evidence, in accordance with CEQA. [10] An accurate baseline, drawing from CARB's provisional estimate of sector-by-sector GHG emissions, would likely reveal greater total GHG emissions in 2030. Accordingly, CARB must ensure that the Final Scoping Plan acknowledges and addresses the significant discrepancy between its provisional estimate of 2021 emissions and its project baseline estimate-either by increasing direct emission reduction measures or adopting additional ones, as we propose in the Real Zero Alternative (see Attachment A) and throughout our comments.

[4] Draft Scoping Plan at 88; Draft EA at 31.
[5] 14 C.C.R. § 15125(a)(l); 14 C.C.R. § 15125(a)(3) (baselines cannot contain hypothetical conditions).
[6] See AB 32 GHG Inventory Sectors Modeling Data Spreadsheet. https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents [hereinafter ("Modeling Data Worksheets")].
[7] *Id*.
[8] *See* Cal. Air Res. Bd., Preliminary Assessments of California's 2020 and 2021 Greenhouse Gas Emissions for Budget Item 3900-001-3237 1 (Apr. 2022), available at: https://ww2.arb.ca.gov/sites/default/files/2022-04/2021%20GHG%20Estimates%20Report%20for%20Item%203900-001-323 7%20-%20Remediated.pdf.
[9] Draft Scoping Plan at 33; Cal. Air Res. Bd., Current California GHG Emission Inventory Data (last visited June 23, 2022), available at: https://ww2.arb.ca.gov/ghg-inventory-data.
[10] *North County Advocates v. City of Carlsbad* (2015) 241 Cal.App.4th 94.

Response: Please refer to Master Response 5. The commenter does not otherwise identify any potential GHG emissions increases above the baseline, or other impacts resulting from the claimed inventory estimate differences. The 2022 Scoping Plan has been developed principally to reduce GHG emissions across the state, and there is no evidence to suggest it would lead to GHG increases compared to the existing environmental setting. No further response is necessary.

Nevertheless, CARB provides the following response for transparency: Exact agreement between the California GHG emissions inventory and the Scoping Plan modeling inventory is not expected or necessary to inform the Scoping Plan and its recommendations. Rather, the goal is to ensure significant consistency between the estimates to provide confidence the plan and its recommendations can achieve the goals. The 2022 edition of the California GHG emission inventory released in late October 2022 included methodological updates inclusive of improved integration of Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (MRR) third-party verified emissions data and other technical updates. 2019 emissions are 3.3 percent lower than the previous inventory edition (404.5 $MMTCO_2e$ versus 418.2 $MMTCO_2e$). The CARB GHG emission inventory represents a data set compiled from various sources to show statewide emissions trends. MRR includes GHG emissions reporting and verification of that data for 85 percent of emissions included in the GHG emission inventory; therefore, MRR data is a subset of the larger inventory. For the 2022 Scoping Plan, the PATHWAYS model calibration used a sector-by-sector approach applying the best available data. MRR-reported data was used where available; if no MRR data was available, then GHG emission inventory data was used. The PATHWAYS model accounts for all sectors in the GHG emission inventory, and the model has not changed from the beginning of the Scoping Plan update process. The update to the inventory methodology shows even greater alignment between the Scoping Plan modeling and the latest publicly released AB 32 GHG Inventory.

670-3: The commenter states, "**II. Alternative 3 will not achieve the State's 2030 GHG emissions reduction target.**

SB 32 mandates that CARB reduce statewide emissions to below 259 MMT CO_2e (or 40 percent below 1990 levels) by 2030.11 CARB incorporates this requirement into the Draft EA's Project Objective 2.[12] Further, CARB must assess the State's progress towards achieving its 2030 emission reduction target (Project Objective 1). [13] As discussed in detail in our technical comments, many of CARB 's GHG reduction measures do not result in real-world emissions reductions or do not incorporate significant sources of GHGs from oil and gas, industrial, or agricultural sectors. Moreover, as noted above, CARB presents an unsubstantiated project baseline that likely underestimates overall emissions of GHGs in California. As such, although CARB claims that Alternative 3 will allow the State to meet its 2030 target, [14] this statement is likely based on incorrect and overly-optimistic assumptions. Consequently, California is likely not on track to meeting its 2030 target based on CARB's 2030 GHG emissions projection for the Reference Scenario.[15] Further, in Appendix C, CARB fails to describe the quantity of GHG emissions reductions necessary under each proposed reduction measure to achieve its 2030 target.

On the contrary, CARB will not be able to meet the 2030 target under Alternative 3. Among other things, CARB has incorrectly assumed that carbon capture and sequestration (CCS) technology at refineries *had already been implemented and achieved substantial GHG emissions at refineries beginning 2021*. This assumption is clearly false; refinery CCS technology has not been deployed at any California refinery. [16] Thus, accurate AB 32 GHG Sector modeling, including using a feasible timeline for deployment of CCS technology at refineries, would reveal that Alternative 3, which relies heavily on speculative CCS technology, will not meet the 2030 target. We discuss this fatal flaw in Section IV of our Sector-Specific Comments.

Because Alternative 3 will not achieve the State's 2030 emission reduction target, CARB must analyze and adopt the Real Zero Alternative, in order to meet this goal and comply with SB 32.

11 EO B-30-14 and SB 32; Legislative Analyst Office, Assessing California's Climate Policies-Electricity Generation (Jan. 2020), available at: https://lao.ca.gov/Publications/Report/4131.
12 *Id*. at 12.
13 Draft EA at 11.
14 Draft Scoping Plan at 56 ("The Proposed Scenario achieves GHG emission reductions that exceed levels expected based on existing policies represented in the Reference scenario, keeping California on track to achieve the SB 32 GHG reduction target for 2030 and become carbon neutral no later than 2045."). See also Draft Scoping Plan at 57 (Figure 2-1).
15 See Draft Scoping Plan at 90 (Figure 2-10).
16 See Sector-Specific Comments, Section IV.

Response: CARB disagrees with the commenter that the 2022 Scoping Plan would fail to achieve its goals. Furthermore, this comment does not raise specific issues related to the

adequacy, accuracy, or completeness of the First Draft EA; rather, it presents policy questions or disagreements regarding the 2022 Scoping Plan itself. No further response is required by CEQA. No changes to the First Draft EA are required in response to this comment.

Please also refer to responses to comments H246-1 and H636-1.

670-4: The commenter states, "**III. Alternative 3 will not achieve the State's 2045 carbon neutrality goal.**

CARB claims that Alternative 3 will meet the carbon neutrality goal established under Executive Order B-55-18, which directs the State to achieve net-zero emissions by 2045 .[17] (Project Objectives 1 & 2). However, contrary to this mandate and CARB's own goals, CARB's modeling data makes clear that all of the proposed alternatives will in fact result in net 15 MMT CO2 emissions by 2045.[18]

This discrepancy likely stems from CARB's error in assuming that Natural and Working Lands (NWL) Sector measures will act as a net carbon sink of 15 MMT CO_2e per year by 2045.[19] CARB acknowledges that this assumption was incorrect: "[f]or purposes of the Draft 2022 Scoping Plan, CARB assumed NWL could compensate for 15 MMTCO_2e of residual emissions. This assumption was made prior to completion of the NWL GHG analysis described in Chapter 2."[20] Indeed, CARB concludes that NWLs will be a net source of CO_2, emitting 8 MMT CO_2e per year from 2025 through 2045.[21] Although CARB recognizes, in the Draft Scoping Plan, that NWLs will be a net source of emissions, this is not reflected in CARB's technical modeling spreadsheet. In actuality, CARB's claim that Alternative 3 will achieve net-zero emissions does not reflect any real pathway towards net neutrality, but rather represents an artifact of CARB 's prior, admittedly incorrect assumption that NWLs would be a net carbon sink. In total, this discrepancy accounts for a 23 MMT CO_2e per year difference between CARB' s incorrect modeling assumptions and the actual GHG emissions resulting from implementation of Alternative 3.

This error represents only one, albeit significant, discrepancy of many between CARB 's modeling assumptions and the actual climate implications of the Proposed Scenario. We further reiterate that CARB' s incorrect assumption that refinery CCS can achieve emissions reductions immediately-and may even be applied retroactively-jeopardizes any opportunity for CARB to achieve a true net-zero scenario by 2045.

Because neither Alternative 3, nor any other proposed alternative, will achieve CARB's 2045 carbon neutrality goal, CARB must analyze and adopt the Real Zero Alternative (Attachment A).

[17] Cal. Exec. Order No. B0-55-18 § 1; see also Draft EA at 11 (describing the Scoping Plan's goals of achieving carbon neutrality no later than 2045).
[18] AB 32 GHG Inventory Sectors Modeling Data, supra note 6.

[19] Danny Cullenward, *California's Draft Climate Change Scoping Plan is Incomplete*, CARBONPLAN (May 17, 2022), available at: https://carbonplan.org/research/scoping-plan-comments.
[20] Draft Scoping Plan at 94, fn. 165.
[21] Draft Scoping Plan at 72.

Response: Please refer to response to comment H263-1. Furthermore, this comment does not raise specific issues related to the adequacy, accuracy, or completeness of the First Draft EA; rather, it presents policy questions or disagreements regarding the 2022 Scoping Plan itself. No further response is required by CEQA. No changes to the First Draft EA are required in response to this comment.

670-5: The commenter states, "**IV. CARB's alternatives analysis is inadequate.**

CARB 's Draft EA shall contain "[a] discussion of a reasonable range of alternatives to the proposed project [that] could feasibly attain most of the project objectives but could avoid or substantially lessen any of the identified significant impacts[]."[22] CARB must discuss a reasonable range of alternatives in order to "foster informed decision making and public participation."[23] Unfortunately, the alternatives sections in both the Draft Scoping Plan and Draft EA fail in several fundamental ways, which CARB must correct by revisiting its analysis of potential alternatives or adopting the attached Real Zero Alternative. We discuss these points in further detail below.

A. CARB fails to analyze the same alternatives in the Draft Scoping Plan and Draft EA.

The Draft Scoping Plan provides that "[flour scenarios for the AB 32 GHG Inventory and NWL were considered separately and helped to inform the Proposed Scenario."[24] The Draft EA concludes that "CARB has identified a reasonable range of four alternatives that allow the public and CARB to understand the differences among the different approaches."[25] However, the alternatives analyzed in the Draft EA are drastically different from the proposed AB 32 GHG Inventory and NWL alternatives in the Draft Scoping Plan. As a result, there is simply no way that the alternatives analyzed in the Draft EA allow the Board to make an informed decision on completely different alternatives included in the Draft Scoping Plan. [26]

Specifically, in the Draft Scoping Plan, Alternatives 1 and 2 would allow the state to achieve carbon neutrality by 2035, while Alternatives 3 and 4 would allow the state to achieve carbon neutrality by 2045.[27] The Draft Scoping Plan also provides four NWL alternatives with various management intensities for forest shrublands/chaparral/grasslands, croplands, developed lands, wetlands, and other lands. [28] The Draft EA, however, describes environmental impacts of a no project alternative and Alternatives A to C that are significantly different from the alternatives presented in the draft Scoping Plan. Below, we detail the ways in which the alternatives in the Draft EA differ from those presented in the Draft Scoping Plan, which again makes it impossible to understand the environmental impacts of the Draft Scoping Plan's alternatives or for the Board to make an informed decision, in violation of CEQA.

[22] 17 C.C.R. § 60004.2(a)(5) (citing 14 C.C.R. § 15126.6).

[23] 14 C.C.R. § 15126.6(a), (f) (lead agencies must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation).
[24] Draft Scoping Plan at 39.
[25] Draft EA at 252.
[26] 14 C.C.R. § 15126.6; 17 C.C.R. Section 60004.2(a)(5).
[27] Draft Scoping Plan at 40, 43-47.
[28] *Id*. at 48-51, 64-65; Draft Scoping Plan, Appendix Cat 10-13, Table C-2.
[29] Draft EA at 256, 260.

Response: The comment suggests that the CEQA document should have evaluated the same alternatives as the policy alternatives set forth in the 2022 Scoping Plan Update. However, the fundamental purposes of the 2022 Scoping Plan alternatives and the First Draft EA alternatives are different. The 2022 Scoping Plan's policy alternatives were developed to evaluate the technical and policy-related advantages and disadvantages of several alternative policy approaches to the 2022 Scoping Plan. By contrast, the Alternatives Analysis in Section 7 of the First Draft EA provides a discussion of whether and how each alternative meets the project's objectives, and an analysis of each alternative's potentially significant environmental impacts, with an eye toward reducing the 2022 Scoping Plan's potentially significant environmental impacts. The purpose of the CEQA alternatives analysis is to determine whether different approaches to or variations of the project would reduce or eliminate significant project impacts, within the basic framework of the objectives, a principle that is consistent with CARB's certified regulatory program requirements. 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)).

The First Draft EA evaluates a reasonable range of alternatives to the 2022 Scoping Plan that could reduce or eliminate the project's significant effects on the environment while meeting most of the basic project objectives (Title 14 CCR Section 15126.6(a)). Pursuant to CARB's certified regulatory program, the First Draft EA 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.

Guidance for evaluation of alternatives is to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines 15126.6[d]). Table 7-1 of the First Draft EA provides a relative comparison of Scoping Plan Alternatives, and the analysis of alternatives in the First Draft EA provides a sufficient level of detail pursuant to CARB's certified regulatory program.

670-6: The commenter states, "i. Alternative A

- CARB claims that Alternative A in the Draft EA is the "most similar" to the AB 32 GHG Inventory Sector Alternative 1 in the Draft Scoping Plan. However, these two alternatives are fundamentally different, as Alternative A analyzes carbon neutrality by 2045, not 2035.[29]

Response: Please refer to response to comment 566-40 explaining the connection between Alternative A and AB 32 GHG Inventory Sector Alternative 1 relative to carbon neutrality timing. Note that CEQA does not require the CEQA alternatives set forth in the environmental document (which are developed pursuant to CEQA) to match another set of alternatives set forth in a policy document (which were developed for different policy reasons unrelated to CEQA compliance). The reasonable range of alternatives relevant to the CEQA analysis are those set forth in the First Draft EA. Those alternatives were developed specifically to satisfy CEQA's alternatives analysis requirements, including that they help reduce or avoid one or more of the project's environmental impacts, that they meet most of the basic project objectives, and that they be potentially feasible.

670-7: The commenter states:

"• CARB claims that Alternative A also contains an analysis on NWL Alternative 3/the Proposed Scenario. However, CARB fails to discuss any environmental or related health impacts of the land management strategies contained in NWL Alternative 3. [30]

[30] *Id*. at 256-57 Table 7-1, 260-62."

Response: Please refer to response to comment 670-6 above. As described in Section 7.E.2 and Table 7-1 of the First Draft EA, the Natural and Working Lands Actions are unchanged from the proposed 2022 Scoping Plan. Please also refer to response to comment 670-5. The purpose of the alternatives analysis is to determine whether different approaches to or variations of the project would reduce or eliminate significant project impacts, within the basic framework of the objectives, a principle that is consistent with CARB's certified regulatory program requirements. Because no changes to Natural Working Land actions are included for Alternative A, compared to the 2022 Scoping Plan, it is not necessary to discuss any environmental or related health impacts of Natural and Working Lands recommendations.

670-8: The commenter states, "ii. Alternative B

- Alternative B in the Draft EA, which CARB claims is similar to Alternative 4 in the Draft Scoping Plan, is fundamentally different. Alternative B would not meet the zero-emission goals for light-duty trucks, in contravention of both EO N-79-20 and Project Objective 5.[31]

[31] *Id*. At 263."

Response: Please refer to response to comment 670-6. Please also refer to response to comment 566-40 explaining that that Alternative B aligns with AB 32 GHG Inventory Sectors Alternative 4 in the 2022 Scoping Plan. As disclosed in the modeling assumptions for Alternative 4 in the 2022 Scoping Plan, that scenario's parameters for light-duty vehicles (LDV) are aligned with the AB 74 University of California Institute of Transportation Studies Report as it would achieve 100 percent of LDV sales being ZEV by 2040. CCR, Title 14, Section 15126.6 specifies that the range of reasonable alternatives to the project should include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. Therefore, there is no requirement that the alternatives meet all project objectives. Table 7-1 of the First Draft EA provides a comparison of alternatives that specifies the actions where Alternative B would be expected to have less impacts compared to the Scoping Plan Scenario (project).

No changes to the First Draft EA are required in response to this comment.

670-9: The commenter states:

"• In Alternative B, CARB ignores likely significant environmental and health impacts resulting from the extensive build out and operation of mechanical CCS and carbon dioxide removal facilities. We discuss these impacts in more detail in Section IV of our Sector- Specific Comments."

Response: Please refer to response to comment PH-1 and Master Response 2. Section 7.E.3 contains a discussion of the environmental impacts related to Alternative B as compared to the 2022 Scoping Plan. This discussion includes the following text in the second paragraph on page 264, of the First Draft EA, regarding increased potential for environmental impacts relating to greater reliance on carbon dioxide removal technologies:

> Implementation of Draft EA Alternative B would increase the rate of deployment of low-carbon fuels, mechanical carbon dioxide removal and CCS, and manure management actions. Relative to the proposed project, increased feedstock cultivation associated with increased low-carbon fuel actions would increase impacts related to conversion of agricultural and forest land to other uses, potential for soil erosion, potential to generate polluted runoff associated with farm management practices (e.g., sediment, nutrients, pathogens, pesticides, metals, and salts), and noise associated with new facilities. In addition, increased implementation of mechanical carbon dioxide removal and CCS actions would increase the potential for new facilities to cause long-term aesthetic impacts, direct mortality of birds and bats through collision or capture by intake fans at direct air capture facilities, drawdown of groundwater supplies to support direct air capture facilities, and long-term effects on noise generation and quality of recreation experiences in generally undeveloped areas. Increased implementation of manure management actions would increase potential aesthetics, odor, and biological resources impacts.

The comment does not provide any specific suggestions on how the analysis should be presented differently. No changes to the First Draft EA are necessary.

670-10: The commenter states:

"• CARB claims that Alternative B contains an analysis on NWL measures contained in the Proposed Scenario. However, this is also unsupported, as CARB fails to discuss any environmental or related health impacts of the land management strategies contained in NWL Alternative 3. [32]

[32] *Id*. at 256; 263-64."

Response: Please refer to response to comment 670-5.

670-11: The commenter states, "iii. Alternative C

- CARB claims that Alternative C in the draft EA considers the Proposed Scenario's AB 32 GHG Inventory Sectors and NWL Alternative 2. 33 Contrary to CARB' s claim, Alternative C does not include any environmental impact analysis of Alternative 3 for the AB 32 GHG Inventory Sectors.

[33] *Id*. at 263."

Response: Alternative C is described in Section 7.E.4 of the First Draft EA. As noted in the title of this section, the AB 32 GHG Inventory Sector activities are unchanged from the 2022 Scoping Plan. Please refer to response to comment 670-5 for a discussion on the requirements for the alternatives analysis.

670-12: The commenter states, "iv. Other Significant Errors and Omissions in the draft EA

- Shockingly, the draft EA fails to include any environmental impact analysis of:
    - Alternatives 2 for AB 32 GHG Inventory Sectors, nor
    - Alternatives 1 and 4 for the NWL scenarios. [34]

[34] *Id*. At 256."

Response: Please refer to response to comment 670-5.

670-13: The commenter states:

"• The Proposed Scenario is not defined in the Draft EA. Given that none of the alternatives analyzed in the Draft Scoping Plan and the Draft EA are the same for the AB 32 GHG Inventory Sectors or NWL Sectors, CARB must include, in the Draft EA, the full range of reasonably foreseeable environmental impacts under the Proposed Scenario."

Response: Chapter 2 of the First Draft EA provides a summary of the proposed 2022 Scoping Plan and the recommended measures for purposes of the impact analysis. Please refer to response to comment 670-5 for a discussion related to the requirements for alternatives discussions under CEQA.

670-14: The commenter states, "In sum, CARB must revise the Draft Scoping Plan and EA so that all of the AB 32 GHG Inventory and NWL Sector Alternatives analyzed in the revised documents are the same, and that the Proposed Scenario is clearly defined. Only then can the CARB Board and the public evaluate and compare the different environmental impacts of these alternatives as mandated by CEQA."

Response: Please refer to response to comment 670-5 for a discussion related to the requirements for alternatives discussions under CEQA.

670-15: The commenter states, "B. Alternative 3 is not a reasonable alternative as it will not allow the Scoping Plan to feasibly meet most of its project objectives.

To the extent that Alternative 3 is analyzed in the Draft EA or will be analyzed in a revised draft environmental analysis, it should be rejected as it is not feasible and will not be able to meet most of the Scoping Plan's project objectives.[35] Unfortunately, as discussed in Sections II and III above, Alternative 3 will fail to meet the Scoping Plan's Project Objectives 1 and 2. Additionally, we discuss in this letter and in our Sector-Specific Comments how CARB has failed to ensure that Alternative 3 and associated measures do not disproportionately impact low-income communities (Objective 13); do not worsen air pollution and toxic air contaminant emissions (Objective 14); consider overall societal benefits, including air pollution reduction and public health benefits (Objective 15); maximize additional environmental and economic benefits (Objective 18); and consider the social costs and prioritize direct emissions reductions (Objective 20). Therefore, Alternative 3 is not a reasonable alternative and should not be considered or adopted by CARB.

[35] 17 C.C.R. § 60004.2(a)(5); 14 C.C.R. § 15126.6."

Response: The Scoping Plan Scenario, which comes from Alternative 3 identified in the Draft 2022 Scoping Plan, meets all of the EA project objectives, including the specific objectives cited by the commenter. As described in Chapter 2[96] of the 2022 Scoping Plan and Chapter 4, Section 8 of the EA, the modeling for the Scoping Plan Scenario shows achievement of the SB 32 target and 85 percent reduction in GHG emissions by 2045. The outcomes of the actions for the Scoping Plan Scenario drive the substantial GHG reductions by cutting combustion, cutting petroleum extraction and supply as demand reduces, and reducing harmful agricultural practices amplified by the implementation priorities in the plan, such as prioritizing heavy-duty ZEV deployment in regions with the highest concentrations of harmful criteria and toxic emissions. The reductions in fossil fuel combustion and the implementation priorities called for in the 2022 Scoping Plan will provide some of the greatest benefits to communities located adjacent to freeways and stationary sources, who have disproportionately high exposure to harmful pollutants. The Scoping Plan Scenario will provide important improvements in air quality throughout California, including reductions in the levels of ozone and PM2.5, as described in Chapter 3 of the Scoping Plan and in Section 3.b of the First Draft EA. These reductions in air pollution exposure result in public health

[96] See also E3. 2022. CARB Draft Scoping Plan: AB32 Source Emissions Initial Modeling Results. https://ww2.arb.ca.gov/sites/default/files/ 2022-03/SP22-Model-Results-E3-ppt.pdf

benefits from avoided incidence of harmful health impacts such as premature mortality, and additional public health analysis conducted for co-benefit areas comparing status quo to a decarbonized economy (e.g., decarbonizing the economy will lead to changes in traffic pollution, wildfire smoke, mobility and physical activity, urban greening, heat, affordable housing, food security, and economic security) lead to health improvements and increased community resilience from climate effects. Furthermore, the technical analyses described in Chapter 3 of the Scoping Plan used the most recent social cost of carbon values to estimate the cost of avoided damages, with the actions in the AB 32 GHG Inventory Sectors of the Scoping Plan Scenario avoiding economic damages of $6.5 – 23.9 billion in 2045. The monetary value of health benefits from improved air quality would also be substantial due in large part to the significant reductions in fossil fuel combustion; the modeling shows over $200 billion in estimated health benefits by reducing incidences of health impacts including asthma, heart and respiratory diseases. The economic analysis in Chapter 3 of the Scoping Plan shows the Scoping Plan Scenario achieves these significant benefits while having some of the least impacts to the economy, household income, overall costs for the transition, and jobs. The Scoping Plan Scenario also includes the emissions and sequestration from natural and working lands as part of the path to carbon neutrality, and recommends significant increases in climate smart management of California's land, relative to historical levels. Increasing climate smart management on lands will reduce GHG emissions, reduce air quality impacts from wildfire emissions, improve soil health, protect and restore lands for future generations, and provide numerous other benefits. Statutes direct balancing the state's climate strategy across many factors. The Scoping Plan Scenario is the most feasible alternative, which also delivers significant benefits with the least disruption to the economy and jobs.

No changes to the First Draft EA are required in response to this comment.

670-16: The commenter states, "C. CARB's inclusion of mechanical carbon capture and sequestration and carbon dioxide removal in all of the AB 32 GHG Inventory Sector alternatives artificially narrows the alternatives in a way that forecloses meaningful consideration of alternatives that do not contain these unnecessary and infeasible technologies

Unfortunately, three of the four proposed AB 32 GHG Inventory alternatives in the Draft Scoping Plan, and most of the alternatives included in the Draft EA, heavily rely on mechanical carbon capture and sequestration ("CCS") and carbon dioxide removal ("CDR")." This artificially narrows CARB's alternative analysis in a manner that forecloses the Board's ability to meaningfully consider alternatives that do not rely on CCS on industrial facilities such as refineries, and thus their ability to make an informed decision. [36]

Additionally, as we discuss in Section IV of our Sector-Specific comments, CCS, in particular on refineries, is not feasible. By focusing on unproven and currently infeasible technologies-to the detriment of effective alternatives that do not overzealously promote CCS and CDR-CARB fails to analyze a reasonable range of alternatives that are feasible and incorporate stronger direct emissions reduction measures to meet the Scoping Plan's project objectives.

To ensure that CARB provides a reasonable range of feasible alternatives that do not artificially narrow the Draft Scoping Plan and Draft EA' s alternatives analysis, we recommend that CARB analyze a new alternative-the Real Zero Alternative-that will meet all of the Scoping Plan's project objectives, including reducing GHG emissions to 80-92% below 1990 levels by 2045, and avoiding disproportionate harm to low-income and disadvantaged communities. The Real Zero Alternative also allows California to naturally transition internal combustion vehicles to ZEV s. See more details in Attachment A: Real Zero Alternative.

[36] CEQA Guidelines§ 15126.6(a), (f) (lead agencies must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation)."

Response: Please refer to Master Response 3 regarding the role of CCS and mechanical CDR in the carbon neutrality scenarios evaluated for the 2022 Scoping Plan.

The comment also states that the CEQA analysis fails to analyze a reasonable range of alternatives with stronger direct emissions reductions. The scenarios developed for the 2022 Scoping Plan were informed by more than 400 written comments from individuals, environmental justice organizations and industry groups, as well as feedback acquired through stakeholder meetings and workshops with Tribes. CARB staff used this feedback to design scenarios for both the AB 32 Inventory Sector and Natural and Working Lands Sector sources for modeling. Alternative 1 (in the Draft 2022 Scoping Plan) had the highest level of GHG emissions reductions from the AB 32 Inventory Sectors to achieve carbon neutrality by 2035, with minimal reliance on CCS.[97] Alternative 1 was used as the basis for Alternative A in the First Draft EA.

Please refer to the Chapter 7 of the First Draft EA for more details regarding the requirements for an alternatives analysis under CARB certified regulatory program and the specific analyses for each of the four (including No-Project) alternatives analyzed. Note, also, that a primary purpose of a CEQA alternatives analysis is to reduce or avoid significant environmental impacts that could potentially result from the proposed project, as well as considering feasibility, and meeting meet most of the basic project objectives. The alternatives analyzed in the EA were developed specifically to satisfy CEQA's alternatives analysis requirements; CEQA does not require analysis of every potential variation on an alternative. The comment appears to be addressed at policy considerations involved in evaluating alternatives, rather than CEQA alternatives considerations. The comment does not otherwise address the adequacy, accuracy, or completeness of the First Draft EA; therefore, no changes to the EA are required in response to this comment.

670-17: The commenter states, "**V. CARB fails to describe the environmental setting in low-income and disadvantaged communities.**

CARB must provide a "description of the applicable environmental and regulatory setting for the project" in its environmental analysis.[37] The purpose of the environmental setting

[97] See Draft 2022 Scoping Plan at 44; Final 2022 Scoping Plan at 65.

description is "to give the public and decision makers the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts."[38]

In addition, AB 32 requires and CARB includes as Objective 13 that the "activities undertaken to comply with [proposed GHG emission reduction] measures do not disproportionately impact low-income communities".[39] Similarly, AB 197 requires CARB to ensure that the Scoping Plan's measures "protect the state's most impacted and disadvantaged communities."[40] In light of these statutory mandates and Objective 13, the Draft EA's environmental setting discussion must describe existing environmental conditions in California's low-income and disadvantaged communities.

Unfortunately, CARB fails to describe existing physical conditions in low-income and disadvantaged communities in the Draft EA. Rather, Attachment A to the Draft EA (Environmental and Regulatory Setting) only discusses existing physical conditions and climate laws and regulations in California generally. As we discuss throughout this and our Sector-Specific Comments, the environment in which low-income and disadvantaged communities live is disproportionately polluted, and therefore are distinct from the environmental setting for California as a whole. Without explicitly including the baseline conditions facing low-income and disadvantaged communities, CARB would not be able to analyze and disclose whether the Scoping Plan's measures will result in short- and long-term impacts in these communities, in violation of CEQA, AB 32, and AB 197.

CARB must therefore revise Attachment A to the Draft EA to explicitly describe the existing environmental conditions in low-income and disadvantaged communities in California.

[37] 17 C.C.R. § 60004.2(a)(2).
[38] 14 C.C.R. § 15125(a).
[39] Cal. Health & Safety Code§ 38562(b)(2); Draft EA at 13 (Project Objective 13).
[40] Cal. Health & Safety Code § 38562.5.

Response: The comment claims CARB should have developed alternate more-specific versions of its statement of existing physical conditions for “low income and disadvantaged communities”.

CEQA provides that an EIR must “include a description of the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant.” (14 C.C.R. § 15125.)

In developing the Scoping Plan, a fundamental purpose is to achieve deep GHG reductions across the entire state. The scope of the proposed project is fundamentally statewide. CEQA does not require CARB to develop an array of differing environmental setting descriptions for an unknown number of communities in the state; the proposed project is statewide. It is also unclear how the communities referred to by the commenter would be identified or defined, even if CARB attempted to generate the requested differing environmental settings.

CEQA also provides that "[t]he description of the environmental setting shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives." (14 C.C.R. § 15125.) Developing differing environmental settings for different areas of the state would serve no informational value relating to CEQA. There is no evidence that the Scoping Plan would in any way disproportionately impact low-income or disadvantaged communities. The 2022 Scoping Plan acknowledges that historical practices have resulted in low-income communities and communities of color being disproportionately exposed to pollution burdens and corresponding health effects. Implementation of the 2022 Scoping Plan will lead to transformation across sectors by nearly eliminating fossil fuel consumption in the state and moving to clean energy, zero-emission vehicles, energy-efficient homes, sustainable agriculture, and resilient natural and working lands. The plan prioritizes working with the most impacted communities so strategies address their needs and including equity considerations to ensure the transition is affordable and accessible. The 2022 Scoping Plan also includes a new tool, the Climate Vulnerability Metric (CMV), to identify which communities will be least resilient to selected climate impacts and will therefore face disproportionate economic impacts from climate change. The CVM will enable the State to target programs and policies to build resiliency in the regions where climate impacts will be felt more acutely due to existing health and opportunity disparities leading to disproportionate economic impacts, making it a critical tool for addressing climate impacts while accounting for environmental injustices and racial inequities. CARB and the 2022 Scoping Plan strongly prioritize achieving emissions reductions and benefits for all Californians, including those living in disadvantaged communities.

The remaining aspects of the comment appear to raise social, economic, or environmental justice issues, which are not physical environmental impact topics that must be analyzed pursuant to CEQA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

670-18: The commenter states, "**VI. CARB fails to analyze the health effects that the Draft Scoping Plan would have on low-income and disadvantaged communities in the draft EA.**

The Draft EA fails to analyze the Draft Scoping Plan's impacts on human health, in particular in low-income and disadvantaged communities.

The draft EA must include "[a] discussion and consideration of environmental impacts, adverse or beneficial, and feasible mitigation measures which could minimize significant adverse impacts identified".[41] Section 15126.2(a) of the CEQA Guidelines clarifies that environmental documents shall clearly identify and describe direct and indirect significant environmental effects of the project on the environment, including "health and safety problems caused by the physical changes .... "[42] Relatedly, a project may have a significant effect on the environment if "[t]he environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly," among other criteria.[43]

As discussed above, CARB is also required, under AB 32 and AB 197, to ensure that the Scoping Plan's measures protect and not cause disproportionate impacts to low-income and

disadvantaged communities. In light of these statutory mandates, CARB must also analyze and disclose the nature and magnitude of the measure's human health impacts in low-income communities and disadvantaged communities.

CARB includes health benefit estimates from projected PM2.5 and ozone reduction under the various proposed alternatives, in its discussion on long-term air quality impacts.[44] Unfortunately, the rest of the Draft EA fails to discuss the potential human health impacts that could result from the Draft Scoping Plan's reasonably foreseeable compliance responses. Nor does CARB specifically analyze health impacts in low-income and disadvantaged communities in the Draft EA or elsewhere in the Draft Scoping Plan.

CARB must therefore analyze the health impacts of each reasonably foreseeable compliance response, in order to comply with CEQA and ensure that the Board and the public understand the short- and long-term health impacts of the Scoping Plan, in particular in low-income and disadvantaged communities.

41 17 C.C.R. § 60004.2(a)(3).
42 14 C.C.R. § 15126.2(a).
43 Cal. Pub. Res. Code§ 21083(b)(3).
44 Draft EA at 68-71.

Response: Chapter 4 of the First Draft EA contains an analysis of environmental impacts and mitigation measures associated with implementation of the 2022 Scoping Plan. Furthermore, CARB disagrees that the 2022 Scoping Plan presents potential adverse health impacts, including to low-income or disadvantaged communities. The commenter does not provide specifics regarding these claimed impacts, and no further response is necessary. The comment additionally appears to raise social and economic issues that are not required to be analyzed pursuant to CEQA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

670-19: The commenter states, "VII. CARB's public health analyses are inadequate and misleading.

We appreciate CARB staff's effort in providing preliminary public health analyses on the Draft Scoping Plan. However, the Draft Scoping Plan provides piecemeal, incomparable, and misleading analyses and therefore fails to provide critical information that the CARB Board needs to meet its legal obligation and ensure that the Final Scoping Plan minimizes negative health impacts and maximizes health benefits, particularly for low-income and disadvantaged communities.

Under AB 32, CARB shall "consider overall societal benefits, including reductions in other air pollutants ... and other benefits to the economy, environment, and public health" when adopting GHG emission reduction measures in the Scoping Plan.[45] Relatedly, under AB 197, CARB must identify: (a) the range of projected GHG emissions reductions; (b) the range of projected air pollution reductions; and (c) the cost-effectiveness, including avoided social

costs, for each proposed measure. [46] Social costs estimates must include the economic damages to public health, among other criteria. [47]

Ultimately, CARB must design GHG emission reduction measures "in a manner that is equitable, [and] seeks to minimize costs and maximize the total benefits to California []."[48] CARB must ensure that it reduces GHG emissions in a way that "benefits the state's most disadvantaged communities,"[49] and "do not disproportionately impact low-income communities".[50]

To meet the above statutory requirements, CARB must estimate how much overall air pollution reduction would be achieved under each proposed GHG emission reduction measure by 2045. CARB must also analyze both the short and long-term negative health impacts and benefits that each measure would bring, in particular in low-income and disadvantaged communities. These comprehensive public health analyses are necessary for the Board to be adequately informed so it can select the scenario or a combination of measures that would meet its statutory requirements, maximize health benefits, and minimize harm to low-income and disadvantaged communities.

Instead, CARB staff presents a partial, flawed public health analysis in the Draft Scoping Plan:

- For the proposed AB 32 GHG Inventory Sector alternatives, CARB provides an estimate of:
    - Avoided short-term negative health incidents and health benefits in monetary terms (i.e. health savings) for the months of January and July 2045, based on projected PM2.5 and ozone precursor emissions reductions under each proposed alternative. [51]
    - A voided negative health incidents for the five measures "that are represented by changes to fuel combustion," in the years 2035 and 2045.[52]
- For the NWL alternatives, an estimate of:
    - Average annual avoided negative health incidents from 2025-2045, based on projected forest, shrubland, and grassland wildfire PM2.5 emissions reductions. [53]
    - Average annual relative health savings, based on projected forest, shrubland, and grassland wildfire PM2.5 emissions reductions. [54]
- A qualitative analysis of health benefits of ''take action" scenarios versus the "no action" scenario. [55]

Unfortunately, these quantitative analyses are based on arbitrary or unsubstantiated modeling assumptions, partial data, and inconsistent methodologies-all of which lead to partial, misleading, and incomparable results. Accordingly, the Draft Scoping Plan's incomplete and inconsistent public health analyses fails to provide the information that the CARB Board needs in order to evaluate which measures and alternatives would provide the greatest health benefits to Californians, and balance health benefits with other societal costs and benefits as mandated by AB 32, SB 32, and AB 197. As we detail below, CARB staff's decision to conduct piecemeal and incomparable health analyses is arbitrary and in violation of these laws. We urge CARB staff to substantially revise the draft health analyses in order to

allow CARB to meet its statutory mandates, and to allow the Board to meaningfully compare the costs and benefits of each proposed measure and alternative.

A. CARB's Analysis on Short-term Health Savings of AB 32 GHG Inventory Sector Alternatives Is Inadequate for Meaningful Cost-Benefit Analysis, In Violation of AB 32.

CARB's preliminary health benefits and savings analyses for PM2.5 and ozone for only two months in 2045 result in extremely short-term and incomplete estimates that should not be used in CARB's analysis of the cost-effectiveness of the AB 32 GHG Inventory Sector alternatives. Yet, CARB inappropriately compares apples to oranges by weighing the estimated health savings for two months in 2045 from projected PM2.5 and ozone emissions reductions against estimated economic costs (direct costs, economic growth, and jobs) in the entire years of 2035 and 2045.[56]

CARB acknowledges that its health incident reductions and health savings estimates are episodic and do not amount to a comprehensive analysis of health benefits for the year of 2045 or over the Scoping Plan period. [57] Accordingly, CARB acknowledges that the value of short-term exposure health benefits is significantly lower than estimates of long-term exposure.

CARB has the ability to analyze long-term health benefits. CARB states that "BenMAP can be used to estimate long-term health impacts such as those occurring from annual average PM2.5 changes []."[58] CARB's decision not to analyze avoided health incidents and health savings over the Scoping Plan period or another longer period of time is arbitrary, especially given its ability to do so and its legal mandate to "maximize total benefits to California," consider overall societal benefits, social costs, and ensure the cost-effectiveness of each GHG emission reduction measure. [59] As we discussed above, it is impossible for CARB Board members to fulfill these mandates without being able to meaningfully compare the costs and benefits of the proposed alternatives and measures.

CARB's arbitrary decision to only analyze two months of data is especially irresponsible given that its sister agency, the Office of Environmental Health Hazard Assessment (OEHHA), recently used BenMAP to project long-term (2020 to 2045) health benefits of implementation of 100% electric heavy-duty vehicles by 2045.[60]

Currently, CARB estimates that 362-606 premature deaths would be avoided in January and July, 2045.[61] If CARB analyzes health benefits and in tum, health savings, over the Scoping Plan period of 2021 to 2045, it would likely project an exponential increase in health savings than its current estimates.

In sum, we strongly recommend that CARB revise its AB 32 GHG Inventory Sector Alternative health analyses to disclose health savings based on average annual health benefits from the baseline year of 2020 through 2045 so that CARB Board members and the public can truly compare health benefits against other costs and benefits.

We highlight other arbitrary, unexplained, and unsubstantiated aspects of CARB's AB 32 GHG Inventory Sector alternative health analyses:

- Inexplicably, emissions reductions, reductions in health incidents, and health savings for PM2.5 by itself are only presented for only January 2045, and are not compared to a reference scenario. [62]
- Health savings for "total health benefits" are also presented only for January and July 2045, and are not compared to a reference scenario.[63] CARB also fails to define "[t]otal health benefits."

B. CARB Fails to Adequately Analyze Health Benefits and Savings in Low-income and Disadvantaged Communities.

CARB estimates that health savings in disadvantaged communities from the AB 32 GHG Inventory Sector Alternatives range from $2.5 to $4.7 billion, based on only two months of data in January and July 2045.[64] Unfortunately, this analysis fails in several ways.

First, CARB's analysis does not allow CARB to meet its AB 32 mandate to ensure that the Scoping Plan does not disproportionately impact low-income communities. In order to analyze whether low-income communities are disproportionately impacted by the Scoping Plan's alternatives and measures, CARB should have compared health savings in low-income communities, not DACs, to higher-income communities.

Additionally, at the April 20, 2022 workshop, experts from UC Irvine also stated that they have the ability to evaluate public health impacts of GHG emissions reduction measures in disadvantaged communities. [65] Yet CARB fails to present any information on public health impacts and benefits of the measures for each disadvantaged community. Similarly, while CARB calculated health savings in DACs at a 4km x 4 km granularity, and acknowledges that the results "can then be reasonably down-scaled to the census tract level," it has failed to disclose this information in the Draft Scoping Plan. CARB must revise the Draft Scoping Plan to analyze and disclose health savings data at the census tract level.

In addition, the Integrated Transportation and Health Impacts Model (Cal-iTHIM) shows that increased physical activity from active transport and reduced vehicle miles traveled (VMT) yield significant health benefits and as a result significant health savings. The draft scoping plan fails to integrate these significant VMT health benefits into its analysis. [66]

C. CARB Fails to Conduct Pollution Reduction, Health Benefits, and Health Savings Analyses for NOx, ROG, and Other Criteria and Toxic Air Contaminants, m Violation of AB 32 and AB 197.

CARB has completely failed to conduct health analyses for nitrogen oxides (NOx) and reactive organic gases (ROG), and other criteria and toxic air contaminants. AB 32 requires CARB to "consider overall societal benefits, including reductions in other air pollutants ... and other benefits to the economy, environment, and public health". [67] Under AB 197, CARB must identify: (a) the range of projected GHG emissions reductions; (b) the range of

projected air pollution reductions; and (c) the cost-effectiveness, including avoided social costs, for each proposed measure.[68]

In the Draft Scoping Plan, CARB presents emissions reductions data for three primary pollutants, NOx, particular matter (PM), ROG, as well as two secondary pollutants, ground-level ozone and fine PM (PM2.5).[69] CARB recognizes that "both primary (emitted) and secondary (formed) pollutants are important from a public health standpoint and contribute to the incidents of air pollution-related mortality and disease within California populations". [70]

CARB estimates that NOx emissions will be reduced by 89 percent under Alternative 1 and 43 percent under Alternative 4 in 2045, compared to 2020 baseline emissions.[71] However, CARB fails to explain why it does not take the necessary next step to evaluate the avoided negative health incidents and health savings for NOx, as it does for PM2.5 and ozone. CARB fails to provide any evidence on why it has not conducted this analysis despite recognizing that primary pollutants are important contributors to air-pollution related health incidents, as discussed above. Similarly, CARB fails to analyze the public health benefits of projected ROG emissions reductions, and fails to substantiate this decision.

In Table H-38 of Appendix H, CARB also estimates emissions reduction of NOx, PM2.5, and ROG under each alternative in January and July of 2045.[72] However, CARB fails to explain whether these estimates are relative to the same 2020 baseline and 2045 Reference Scenario as used in the 2045 NOx emissions reduction estimates in Figure H-4. Without knowing this information, it is impossible to understand the relevance of the information presented in Table H-38.

Furthermore, CARB must analyze the public health impacts of reducing other criteria and toxic air contaminants, such as benzene, (a known carcinogen), and diesel particulate matter, for each alternative. CARB recognizes that it has not studied the health benefits of reducing benzene and other toxic air contaminants, which pose "known risks to public health". [73] The fact that toxic air contaminants are regulated via local rules and regulations does not excuse CARB from fulfilling its legal requirements under AB 32 and AB 197. Indeed, CARB already has emissions data on both criteria air pollutants and toxic air contaminants from existing stationary sources. [74] We urge CARB to analyze the health impacts of projected reductions for all criteria air pollutants and toxic air contaminants associated with GHG emission reduction measures.

D. CARB's Health Analysis on Select GHG Emission Reduction Measures Violates AB 197.

CARB also presents, in Appendix C (AB 197 Analysis), an analysis on relative avoided mortality and other negative health incidents for specific measures in the years 2035 and 2045. [75] As discussed above, AB 197 requires CARB to identify a range of GHGs, air pollutants, and assess the cost-effectiveness of all of the specific measures evaluated for the Draft 2022 Scoping Plan. [76]

CARB claims that it uses the criteria pollution emission reduction data in Tables C-3 to C-5 to calculate the health benefits/avoided negative health incidents (e.g., mortality, cardiac ER

visits) that are "associated with the five key measures that are represented by changes to fuel combustion."[77] CARB completely failed to analyze the health impacts of non-fuel combustion measures, such as landfill and dairy emission reduction measures. [78] However, CARB fails to explain why it limited its health benefits analysis to these five key measures, instead of all measures as required by AB 197.[79] CARB's decision to conduct this limited analysis is arbitrary, violates AB 197, and likely resulted in a gross-underestimation on the health benefits associated with each alternative. Additionally, CARB estimates the health benefits of measures related to fuel combustion only for the years 2035 and 2045.

Additionally, CARB must also analyze the health savings of each GHG emission reduction measure to comply with its mandate to assess the cost-effectiveness of each measure under AB 197. 80

CARB 's health benefits analysis of measures related to fuel combustion, based only on these "snapshot" years of 2035 and 2045, violates AB 197, and is insufficient for CARB Board and the public to understand the public health benefits and savings of each emission reduction measure. Therefore, we recommend that CARB analyze and disclose health savings for all proposed GHG emission reduction measures based on average annual health benefits from 2021 through 45.

E. Appendix G functions as a scientific literature review; it does not incorporate this information into emissions reductions strategies or foster informed decision-making by the CARB Board.

We appreciate that CARB acknowledges in Appendix G that climate-related health risks and impacts are not distributed equally in California, and that specific populations face the greatest health risks and impacts. [81] Unfortunately, CARB does not use the information provided in Appendix G (Public Health) to supplement the qualitative health analyses discussed above.

Appendix G does not analyze qualitative health impacts or benefits among the AB 32 GHG Inventory Sector alternatives and measures. [82] Instead, Appendix G adopts a completely different methodology that has no connection to the Draft Scoping Plan's scenarios or measures. Appendix G describes health impacts between "no action" and "take action" scenarios. [83] The "no action" scenario assumes "[i]f the state and other jurisdictions take no action to reduce or minimize expected impacts from future climate change". [84] The "take action" scenario "is not a specific scenario within the Draft Scoping Plan but examines the broad outcomes of actions to achieve carbon neutrality in 2045". [85] Relatedly, the ''take action" scenario alludes to "Draft Scoping Plan actions," but fails to define what these actions actually are. [86] CARB further fails to analyze in Appendix G how the Draft Scoping Plan's proposed measures would affect the health of specific communities, in particular low-income or disadvantaged communities.

In sum, the current public health analysis in Appendix G is nothing more than a literature review that does not inform CARB Board and the public on the public health tradeoffs among the alternatives. There is no clear connection between the information in Appendix G

and the specific measures proposed by CARB. To correct this oversight, CARB must integrate a robust health equity analysis in the design and prioritization of its strategies and substantially revise Appendix G to analyze health impacts according to the AB 32 GHG Inventory Sector alternatives or the proposed measures within each alternative.

[45] Cal. Health & Safety Code§ 38562(b)(2); see also Draft EA at 13 (Project Objective 15).
[46] Cal. Health & Safety Code§ 38562.7.
[47] *Id*. § 38506.
[48] *Id*. § 38562(b)(l).
[49] Senate Bill 32 § l(d) (2016).
[50] Cal. Health & Safety Code§ 38562(b)(2); see also Appendix B at 13 (Project Objective 13).
[51] See Draft Scoping Plan at 102-7; Draft Scoping Plan, Appendix H at 62-85.
[52] Draft Scoping Plan at 113-17; Draft Scoping Plan, Appendix Cat 17-25.
[53] See Draft Scoping Plan at 117-18; Draft Scoping Plan, Appendix Cat 27-28.
[54] See Draft Scoping Plan at 107-08, Appendix I.
[55] Draft Scoping Plan at 127-144; Appendix G.
[56] Draft Scoping Plan at 51-53.
[57] Draft Scoping Plan, Appendix H at 72.
[58] *Id*.
[59] Cal. Health & Safety Code§ 38562(b)(l); Cal. Health & Safety Code§ 38562(b)(2); Cal. Health & Safety Code§ 38562.7.
[60] CAL. OFFICE OF ENV'T HEALTH HAZARD ENF'T, IMPACT OF GREENHOUSE GAS EMISSIONS LIMITS WITHIN DISADVANTAGED COMMUNITIES: PROGRESS TOW ARD REDUCING INEQUITIES 11, 28-29 (Feb. 2022), available at: https://oehha.ca.gov/media/downloads/environmental-justice/impactsofghgpoliciesreport020322.pdf.
[61] See Draft Scoping Plan, Appendix Hat 79, 81, Tables H-40 and H-42. These calculations are based on avoided mortality estimates from PM2.5 emissions reductions in January and July 2045, and PM2.5 and ozone emissions reduction in July 2045.
[62] Draft Scoping Plan at 104-05, Figure 3-5; Draft Scoping Plan, Appendix Hat 79-81, Tables H-40 & H-41.
[63] Draft Scoping Plan at 106, Figure 3-6; Draft Scoping Plan, Appendix H at 85, Table H-44.
[64] Draft Scoping Plan at 106-07, Figure 3-7; see also Draft Scoping Plan, Appendix Hat 85, Table H-44.
[65] 2022 Scoping Plan Update - Initial Air Quality & Health Impacts and Economic Analyses UCI (4-20-22), Slides 8, 13, 16, available at: https://ww2.arb.ca.gov/sites/default/files/2022-04/SP22-Initial-A Q-Health-Econ-Results-ws-UCI.pdf; see also Video, "2022 Scoping Plan Update - Initial Air Quality & Health Impacts and Economic Analyses Workshop," at 4:00:20 to 4:02:37, available at https://www.youtube.com/watch?v=PtsFweUncT4.
[66] Neil Maizlish et al., Health Benefits of Strategies for Carbon Mitigation in US Transportation, 2017-2050, AM. J. PUB. HEALTH (Oct. 15, 2021), available at: https://ajph.aphapublications.org/doi/10.2105/AJPH.2021.306600.
[67] Cal. Health & Safety Code§ 38562(b)(2); see also Draft Scoping Plan, Appendix Bat 13 (Project Objective 15).

[68] Cal. Health & Safety Code§ 38562.7.
[69] Draft Scoping Plan at 102.
[70] *Id*.
[71] *Id*. at 103-104, Figure 3-4.
[72] Draft Scoping Plan, Appendix H at 73, Table H-38.
[73] Draft Scoping Plan at 102.
[74] OEHHA, supra note 59, 28-29.
[75] Draft Scoping Plan at 113-17; Draft Scoping Plan, Appendix C at 17-25.
[76] Cal. Health & Safety Code§ 38562.7.
[77] Draft Scoping Plan, Appendix C at 17-18.
[78] See Id. at 9-10 (summarizing non-combustion emission reduction measures).
[79] Cal. Health & Safety Code§ 38562.7.
[80] Cal. Health & Safety Code§ 38562.7.
[81] See Draft Scoping Plan, Appendix G at 6.
[82] The only section in Appendix G where CARB evaluates relative health impacts among proposed scenarios is in its comparison of the health impacts and savings/costs that would result from different wildfire smoke exposures based on the four proposed NWL alternatives. See Draft Scoping Plan, Appendix G at 46-48. However, this information is derived from analysis included in Appendix I. See Draft Scoping Plan, Appendix I at 100-02.
[83] Draft Scoping Plan, Appendix G at 30-31, 91.
[84] Draft Scoping Plan, Appendix G at 30.
[85] Draft Scoping Plan at 129, 140.
[86] Draft Scoping Plan, Appendix G at 31 (stating generally that "[t]aking the actions outlined in the Draft Scoping Plan will dramatically reduce fossil fuel combustion," as well as reduce heat and air pollution and wildfire smoke emissions).

Response: Chapter 4 of the First Draft EA contains an analysis of environmental impacts and mitigation measures associated with implementation of the 2022 Scoping Plan. Air quality impacts are described in Section 4.B.3, "Air Quality." The comment appears to raise social, economic, or environmental justice issues relating to how the 2022 Scoping Plan quantifies benefits across policy alternatives, which are not topics that are required to be analyzed pursuant to CEQA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

670-20: The commenter states, "B. CARB Should Not Contribute to the False Narrative that the California Environmental Quality Act ("CEQA") is a Barrier to Infill Development. Appendix D Should Require That CEQA is Necessary to Advance and Sustainable and Equitable Development.

CEJA supports the use of land use planning laws and sustainable development projects as tools to advance our state's GHG emission reduction goals. In particular, we appreciate the set of recommendations in Appendix D entitled "Equity and Other Social and Environmental Considerations are Key Elements in Addressing the Climate Crisis."[98] We agree that

comprehensive and integrated plans that center equity and guarding against displacement are crucial to advancing our state's climate, housing, and sustainable development goals.

However, we are very concerned that CARB perpetuates the misleading narrative that CEQA is a major barrier to development, most notably for infill housing. [99] This narrative has been created and perpetuated by corporate developers and industry representatives to inappropriately target CEQA, our state's most important environmental law. This narrative is problematic, disproven, and could lead to further environmental and public health harm, especially to low -income and disadvantaged communities. [100]

In Appendix D, CARB states that CEQA GHG impact analyses and mitigation measures continue to be sources of litigation and delay for projects, especially for infill housing projects in high-resource areas.[101] This narrative implicitly and errantly antagonizes CEQA as a reason for local governments' inability to reduce GHG emissions through infill development, and should be removed. Empirical data demonstrates that CEQA has not recently served as a barrier to new housing production, due to existing streamlining measures, CEQA's long-standing tiering and standardized mitigation measures, and the use of existing exemptions, where appropriate.[102] Additionally, CARB must recognize in Appendix D that: (1) CEQA litigation is often a last resort to compel local governments and developers to adopt more necessary practices that would result in greater GHG and co-pollutant emissions reduction; and (2) CEQA and CEQA litigation is necessary to protect low-income and EJ communities from projects on or near toxic or polluted areas.

Indeed, CEQA is one of the few legal tools that allows low-income and EJ communities to meet both their housing and environmental protection needs. [103] It allows a community to be notified of projects that are proposed in their neighborhoods, to share their concerns regarding such projects, and to recommend ways to improve a project so that it better serves and protects the community. CEQA also provides a mechanism for holding project proponents and agencies accountable if they insufficiently analyze potential harms against local residents and neighborhoods.[104] The current pandemic demonstrates that we must carefully analyze and reduce projects' environmental impacts to protect the most vulnerable residents throughout the State, who are extremely susceptible to such public health threats.

While CARB recommends CEQA streamlining to facilitate forms of development that may reduce GHGs, it fails to provide any data to support the notion that such streamlining will result in more infill development, let alone tangible VMT reductions or other climate benefits. As discussed, a number of recent studies undermine the false narrative that CEQA creates significant barriers to development, and instead show that CEQA results in environmentally protective and equitable planning.

In addition, CARB concludes that if a residential project has all of the attributes it lists on pages 10-11 in Appendix D (e.g., minimum 20 percent affordability for lower-income families; siting on previously developed or underutilized land), there is "generally no evidentiary support for an argument that projects with all of these attributes would present potentially significant GHG/climate change impacts under CEQA".[105] We caution CARB to remove this sweeping and unsupported statement, as local governments could rely on them, resulting in

unintended consequences, especially for already vulnerable and overburdened disadvantaged communities. For instance, if a residential development is being proposed on or near a toxic site, the project may result in significant GHG, co-pollutant, and public health impacts during excavation, build out, and/or use of it as a residence or mixed-use space.

Unfortunately, there are a number of additional claims within this section that are inaccurate and problematic, as they do not, in fact, promote equitable and sustainable development. For instance, "net-zero emissions" developments such as the FivePoint Valencia development project (formerly known as Newhall Ranch) that have been touted as climate-friendly models actually promote sprawling development[106] and are likely to produce impacts on the local ecology despite its claim of being "net-zero GHGs." This section also discusses the alleged benefits of projects subject to AB 900 (2011) and, similarly, SB 7 (2021) CEQA judicial streamlining processes," despite the fact that the purported environmental and climate benefits of such projects are unclear and dubious at best. 107 Furthermore, we continue to urge CARB to reduce or eliminate the use of market mechanisms such as cap-and-trade, including carbon offset programs.

Instead of promoting false solutions that disproportionately harm low-income residents and communities of color, CARB should revise Appendix D to present a more nuanced perspective and recognize the important role of CEQA, or eliminate its critique of CEQA altogether in this section. For further reference, CEJA recommends reviewing the Environmental & Housing Justice Platform (EHJP) for CARB's consideration. [108]

[98] Id. at 7-9.
[99] Id. at 6-7.
[100] ROSE FDN. & THE HOUSING WORKSHOP, CEQA'S ROLE IN HOUSING, ENVIRONMENTAL WSTICE, & CLIMATE CHANGE 30 (Oct. 2021), available at: https://rosefdn.org/wp-content/uploads/CEQA-Califomia_sLiving-Environmental-Law-10-25-21.pdf (concluding that CEQA has not restricted the supply of housing in California).
[101] Draft Scoping Plan, Appendix D at 7.
[102] Rose Fdn. & The Housing Workshop, supra note 99 at 41.
[103] CAL. ENV'T JUSTICE ALLIANCE, RETHINKING LOCAL CONTROL IN CALIFORNIA 8-9, 19-20 (Mar. 2020), available at: https://calgreenzones.org/report-rethinking-local-control/; ROSE FDN., CEQA: CALIFORNIA'S LIVING ENVIRONMENTAL LAW 77-79 (Oct. 2021), available at: https://rosefdn.org/wpcontent/uploads/CEQA-Califomia_s-Living-Environmental-Law-10-25-21.pd£
[104] *Id*.
[105] Draft Scoping Plan, Appendix D at 11.
[106] Emily Witt, Can Sustainable Suburbs Save Southern California?, NEW YORKER (May 3, 2022), available at: https://www.newyorker.com/news/letter-from-los-angeles/can-sustainable-suburbs-save-southem-califomia.
[107] POLICY MATTERS, REVIEW OF ENVIRONMENTAL LEADERSHIP DEVELOPMENT PROJECTS (Apr. 2019), available at: https://www.pcl.org/media/2019/09/2206-policy-matters-04.19-environ.-leadership-projects.pdf.

[108] Environmental & Housing Justice Policy Platform, Cal. Env't Justice Alliance, https://calgreenzones.org/platform-for-environmental-housing-justice/.

Response: This comment indicates concern that CEQA is cited as a barrier to infill development and that Appendix D should recognize that: "(1) CEQA litigation is often a last resort to compel local governments and developers to adopt more necessary practices that would result in greater GHG and co-pollutant emissions reduction; and (2) CEQA and CEQA litigation is necessary to protect low-income and EJ communities from projects on or near toxic or polluted areas." The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless, CARB staff notes that the discussion has been updated in Section 3 of the 2022 Scoping Plan regarding the practice of using the land use review process, which includes CEQA and litigation, to object to housing projects in high-resource areas.

The comment also indicates the project attributes approach included in Appendix D does not include data to support that the approach would result in more infill development and associated VMT reductions and other climate benefits. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Although the Local Actions Appendix seeks to remove barriers to infill development, CARB staff acknowledges that there is no guarantee that it would directly result in increased infill development. Rather, recognizing that California faces both a housing and climate crisis, Appendix D identifies the development characteristics of residential development consistent with State climate goals, recognizing the "housing crisis and the climate crisis must be confronted simultaneously, and it is possible to address the housing crisis in a manner that supports the State's GHG and regional air quality goals." No changes to the First Draft EA are required in response to this comment.

In addition, the comment recommends removing language that there is "generally no evidentiary support for an argument that projects with all of these attributes would present potentially significant GHG/climate change impacts under CEQA" as this language could lead to unintended consequences, such as incorrectly making a less-than-significant impact determination for "GHG, co-pollutant, and public health impacts during excavation, build out, and/or use of it as a residence or mixed-use space" project on or near a toxic site. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless, CARB staff notes the commenter incorrectly conflates the language referenced in the comment (GHG impact determination) as being used as the basis for making a non-GHG determination of significance (air quality and health risks). Standard CEQA practice dictates that the determination of air quality and health risk impacts (e.g., CEQA Appendix G checklist Section III, Air Quality) would not be made based on the GHG impact determination (e.g., CEQA Appendix G checklist Section VII, Greenhouse Gas Emissions). No changes to the First Draft EA are required in response to this comment.

The comment also indicates that Appendix D contains examples that do not promote equitable and sustainable development, such as Newhall Ranch, AB 900, and SB 7. The

comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. The comments are noted and are being provided to the Board members for their consideration. Nevertheless, language has been added to the last paragraph under heading "Net-Zero Threshold of Significance" in Section 3.2.2 of Appendix D to specify the Newhall and Tejon examples are low-density, sprawl-intensive, and auto-oriented development that are inconsistent with the Project Attributes but have committed to zero net additional GHG emissions through a variety of approaches consistent with Scoping Plan Appendix D (Local Actions), including funding local offsite mitigation strategies.

Please also refer to response to comment 166-5.

670-21: The commenter states, "C. Local Governments Should Prioritize A voiding and Mitigating GHG Emissions and other Pollution Impacts On-site, and Eliminate the Use of Offsets.

We appreciate CARB's statement in Appendix D that it would be inappropriate for local governments "to rely upon the State's Cap-and-Trade Regulation as a reason not to provide appropriate GHG analysis and, if needed, mitigation, for local development projects."[109] We also appreciate that CARB emphasizes that project proponents should first exhaust all on-site mitigation options before turning to local off-site mitigation options, as it is important to prioritize direct emissions reductions at the source. However, CARB contradicts this latter statement by also stating that a desired outcome of its guidance on mitigation hierarchy is to encourage project proponents and local governments to "use local, off-site mitigation options consistent with CEQA's requirements."[110] CARB should correct its error by emphasizing that project proponents must first exhaust on-site mitigation throughout Appendix D.

We appreciate CARB's guidance that lead agencies minimize the usage of CEQA "Statement of Overriding Considerations" to avoid mitigating impacts, and instead build better projects that avoid significant impacts or mitigate them on-site. However, we are severely concerned that CARB continues to promote the usage of carbon offset strategies, which have been proven to be inequitable, ineffective, and unverifiable.

Fundamentally, offsets allow harmful industry and development to pollute the same neighborhoods where they are located, and are likely to produce disproportionate harms and burdens for historically-marginalized low-income neighborhoods and Black, Indigenous, and people of color (BIPOCs). Offset projects in the form of local infrastructure may actually increase socioeconomic inequities if the investments (e.g., electric vehicle charging stations or energy efficiency retrofits) benefit higher-resourced households at the expense of lower-income BIPOC residents. In many instances, development that purports to produce environmental and climate benefits are "greenwashing" strategies that cover up sprawling growth and local damage to the environment while not, in fact, reducing GHGs. [111] In addition, "[o]ffsets are different than the cap and trade market as there is no regulatory cap ratcheting down emissions for the land development sector."[112] We discuss additional issues with Cap-and-Trade offsets in Section VIII of our Sector- Specific Comments.

Furthermore, while regional frameworks and collaborations are important for designing and implementing regional solutions for reducing emissions, such strategies should not be undertaken to advance local mitigation markets.[113] Similarly, we are wary of CARB's suggestion to create a statewide mitigation bank if it would allow developers to pay a nominal fee in order to avoid their responsibility to directly lower emissions and mitigate environmental harms on-site or locally.[114] Similar to the existing challenges with in-lieu fees for housing developments, [115] stricter standards must be established to ensure that money held in trust will be used to deliver its intended benefits, such as direct and verifiable GHG emissions and pollution reduction, as well as benefits in low-income and disadvantaged communities. If a statewide mitigation bank is created, the majority of funds should be directed to affordable housing developments in disadvantaged communities. Moreover, statewide mitigation banking should not take precedent over on-site mitigation strategies, to ensure that directly impacted communities experience the benefits of mitigation activities.

[109] Draft Scoping Plan, Appendix D at 19.
[110] *Id*. at 14.
[111] Witt, supra note 105.
[112] *Id*.
[113] Draft Scoping Plan, Appendix D at 20.
[114] *Id*.
[115] Aaron Shroyer, Determining In-Lieu Fees in Inclusionary Zoning Policies, URBAN INST. 5 (May 2020), available at: https://www.urban.org/sites/default/files/publication/102230/determining-in-lieu-fees-in-inclusionaryzoning-policies.pdf.

Response: The comment indicates that CARB should reduce or eliminate the use of carbon offset programs as CEQA mitigation, as well as claimed issues with the Cap-and-Trade program. The comment is directed toward the contents and policy aspects of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless, Appendix D discusses confusion of some CEQA practitioners with regards to using Cap-and-Trade compliance offsets as CEQA mitigation, and Section 4.2 of Appendix D clarifies that "[i]n general, the State's Cap-and-Trade Program restricts compliance offsets from being used for any purpose other than Cap-and-Trade compliance, including being used as mitigation under CEQA." With regard to including language in Appendix D prohibiting the use of carbon offsets as CEQA mitigation, this would be inconsistent with the CEQA Guidelines, which explicitly allows offsets that are not otherwise required as mitigation per Cal. Code of Regs., tit. 14, §§15126.4 (c)(3). No changes to the First Draft EA are required in response to this comment.

The comment indicates that regional frameworks and collaborations, which are important for designing and implementing regional solutions for reducing emissions, should not be undertaken to advance local mitigation markets. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless, Appendix D recognizes several barriers for local, offsite mitigation opportunities, hence the inclusion of Section 5,

Importance of Regional Collaboration, in Appendix D, which finds that "regional opportunities to mitigate GHG emissions can be more effective. In collaboration with other regional entities, local jurisdictions can leverage investments, data, best practices, and opportunities for GHG emission reductions in an equitable manner." No changes to the First Draft EA are required in response to this comment.

In addition, the comment is concerned that the creation of a statewide mitigation bank for CEQA mitigation purposes would preclude projects from including on-site or local mitigation. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless, as previously indicated in response to comment 670-20, prohibiting the use of carbon offsets as CEQA mitigation is inconsistent with the CEQA Guidelines Code of Regs., tit. 14, §§15126.4 (c)(3), which explicitly allows offsets that are not otherwise required as acceptable mitigation. To ensure on-site and local mitigation are first considered prior to the incorporation of offsets, Appendix D identifies a CEQA GHG mitigation geographic hierarchy as follows:

1. On-site design measures (within the project site);
2. Off-site GHG mitigation:
    a. Funding and/or implementing local, off-site GHG reduction projects (within the communities or neighborhoods in the vicinity of the project);
    b. Funding and/or implementing non-local, off-site GHG reduction projects;
3. Purchasing and retiring carbon offset credits:
    a. That originate in the same air basin as the project;
    b. That originate elsewhere in California;
    c. That originate elsewhere outside of California.

As indicated in Appendix D, with this hierarchy, "the community in which the project is located is prioritized to receive the environmental and economic co-benefits of the mitigation, especially the reductions in emissions of criteria air pollutants and toxic air contaminants that accompany many GHG reduction measures."

Finally, the comment indicates that funds should be directed to affordable housing development in disadvantaged communities if a statewide mitigation bank is created and that statewide mitigation banking should not take precedence over on-site mitigation strategies. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. The comments are noted and are being provided to the Board members for their consideration. Nevertheless, creation of a statewide mitigation bank is beyond the scope of the 2022 Scoping Plan. No changes to the First Draft EA are required in response to this comment.

670-22: The commenter states, "D. Appendix E Should Recognize That CEQA is Necessary for Advancing Sustainable and Equitable Communities.

We appreciate the recommendations in Appendix E that encourage the preservation of existing housing stock in order to protect residents and businesses from displacement and harmful climate impacts.[116] Similar to our comments regarding Appendix D, however, we are concerned that the recommendations in this section promote the troubling misconception that CEQA remains a significant barrier to housing development in California. Action G, in particular, encourages the state to remove "CEQA barriers to increasing density and streamlining affordable housing development, and create policy protections that preempt local voter initiatives."[117] While CEQA is frequently blamed as a major barrier to housing in our state, no credible evidence or research has been shown to support that hypothesis.[118] We recommend that CARB remove this unsupported and false narrative in Appendix E.

In addition to CARB's use of CEQA as a scapegoat for California's affordable housing concerns, we are concerned about the language in Action G that recommends preempting certain voter initiatives to remove alleged hurdles to housing development. When designed well, voter initiatives can create important solutions for healthier and more sustainable development (e.g., designating land use setbacks or buffers between incompatible uses, or creating urban growth boundaries to curb sprawl). The recommendation to preempt local voter initiatives could empower local governments to inappropriately overturn any local initiative that aims to protect public health if it could be misconstrued as a "barrier to development." Reversing local voter initiatives is undemocratic, subverts the will of local communities, and may lead to further environmental and environmental justice harms for low-income and BIPOC communities. We recommend that CARB remove this language in Appendix E.

[116] Draft Scoping Plan, Appendix Eat 28-29.
[111] *Id*.
[118] ROSE FDN., supra note 41 at ii.

Response: CARB has taken the commenter's comments regarding the intersection between CEQA and housing into consideration in considering further development of Appendix D to the 2022 Scoping Plan. The referenced discussion in Appendix E is purely advisory in nature, and expresses CARB's views regarding actions and policies that could be taken by other agencies, should they so choose. These views would not lead to any reasonably foreseeable changes that could affect the environment. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA.

The commenter indicates that CEQA is necessary for advancing sustainable and equitable communities. The commenter indicates there is a misconception that CEQA is a barrier to development. The commenter requests changes to proposed actions around CEQA in Appendix E. Appendix E recognizes barriers to affordable housing and development in locations that reduce VMT. It cites research to support the statement that CEQA "is not a

primary barrier to infill housing relative to other challenges."[98] State actions to streamline CEQA review for infill housing projects has already occurred, but there are additional opportunities to further streamline CEQA to address our housing and climate crisis. Changes to CEQA is one of a suite of objectives and actions identified in Appendix E to reduce VMT. No changes to the First Draft EA are required in response to this comment.

Additionally, the commenter notes concerns over language in Appendix E regarding preempting voter initiatives. The commenter requests changes to proposed actions in Appendix E regarding local initiatives. The commenter mentions the importance of well designed voter initiatives that can create healthier and more sustainable development. The commenter claims that preempting local voter initiatives could empower local governments to inappropriately overturn local initiatives and could impact low-income and BIPOC communities. CARB agrees that well-crafted voter initiatives can result in more sustainable development. No changes to the First Draft EA are required in response to this comment. CARB has revised the actions in this section to remove the specific reference to preemption of voter initiatives to avoid confusion between the various uses of voter initiatives and the more specific intent of the proposed action, which is to establish legal protections against obstruction tactics that prevent developments that advance State equity and climate goals.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter 678

6/22/2022	Leadership Counsel for Justice and Accountability Animal Legal Defense Fund Food & Water Watch Association of Irritated Residents Center for Food Safety

678-1: The commenter states, "Moreover, the inadequacies identified herein render the Scoping Plan's Draft Environmental Analysis ("Draft EA") deficient pursuant to the California Environmental Quality Act, Public Resources Code, section 21000, et seq.. The Draft EA fails to adequately disclose, analyze, and mitigate impacts to, among other resource areas, air

[98] O'Neill, Moira and Biber, Eric and Gualco-Nelson, Giulia and Marantz, Nicholas and Marantz, Nicholas. (September 18, 2021). Examining Entitlement in California to Inform Policy and Process: Advancing Social Equity in Housing Development Patterns. Available at SSRN: https://ssrn.com/abstract=3956250. For a further study on related themes, see also Smith-Heimer, Janet; Hitchcock, Jessica; Goodfellow, Greg. 2021. CEQA: California's Living Environmental Law. CEQA's Role in Housing, Environmental Justice & Climate Change. Available at https://rosefdn.org/wp-content/uploads/CEQA-California_s-Living-Environmental-Law-10-25-21.pdf.

quality, greenhouse gas emissions, water quality, biological resources, and agriculture and forest resources, from the Scoping Plan's incentivization of factory farm gas."

Response: The 2022 Scoping Plan itself does not include incentives for dairy biomethane. As discussed in Section 2.C.9 of the First Draft EA, solid scrape or vacuum manure management could use on-site aboveground tank or plug-flow anaerobic digestion systems to produce biogas that can be upgraded and conditioned to meet utility pipeline injection or vehicle fueling standards. Some dairy and livestock operations may transport raw or minimally processed biogas via underground pipelines or with trucks to centralized upgrading and compression facilities for injection into the common carrier natural gas pipeline network. In some cases, collected manure could be transported to centralized digesters and potentially codigested with other feedstocks (such as food waste) for increased fuel production. The First Draft EA addresses impacts to: air quality in Section 4.B.3, "Air Quality," greenhouse gas emissions in Section 4.B.8, "Greenhouse Gas Emissions," water quality in Section 4.B.10, "Hydrology and Water Quality," biological resources in Section 4.B.4, "Biological Resources," and agricultural and forestry resources in Section 4.B.2, "Agriculture and Forest Resources." Note also that overall dairy populations have been decreasing over the years, and that trend is not expected to change; refer to response to comment H210-1. The comment does not provide further details related to potential impacts. No changes to the First Draft EA are necessary.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H115

6/23/2022 Marijane Lopez-Taff, Citrus Heights Chamber of Commerce

H115-1: The commenter states, "With regular rolling blackouts and a power grid that cannot sustain the current power needs (ie Housing) how can we ensure the integrity of the power grid? (think PG&E and fires) AND

2. If new power grids are going to be built, who will pay for them, and in the meantime, how can we ensure that those power plants are from clean sources? (think dirty sources to produce "clean")"

Response: The First Draft EA assumes that expansion of electrical infrastructure would be a compliance response of the 2022 Scoping Plan. In addition, it is assumed that renewable energy infrastructure would be expanded under implementation of the 2022 Scoping Plan. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

H115-2: The commenter states, "What is the environmental plan regarding the disposal of batteries and their toxic parts? (Independent analysis shows that END OF LIFE DISPOSAL largely negates any environmental benefits) (think groundwater contamination)"

Response: The environmental impacts related to minerals mining to support increased production of batteries are described through the First Draft EA including in Section 4.B.12, "Mineral Resources," and Section 4.B.9, "Hazards and Hazardous Materials." Water-related impacts are also addressed in Section 4.B.10. CARB disagrees with the commenter's general assertion that end of life disposal largely negates any environmental benefits of the proposed project. No specific environmental issues are raised as to the adequacy of the environmental impact analysis. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H118

6/23/2022 Jeff Montejano, Building Industry Association of Southern California and Adam Wood, Building Industry Legal Defense Foundation

H118-1: The commenter states, "The Draft Scoping Plan directly contradicts the aforementioned requirements created by the California State Legislature. It further undermines locally-approved General Plan Housing Elements, regional Sustainable Communities Strategies, and projects that have already received at least one agency approval. This is accomplished through the Scoping Plan's radical expansion of CEQA liabilities that serve to effectuate land use controls and undermine existing structures of governance.

Anti-Housing Greenhouse Gas Reduction Mandate
CARB, which is not a housing agency, has for the second time (the first was the 2017 Scoping Plan) used the Scoping Plan to impose a top-down, one-size-fits-all housing mandate through the California Environmental Quality Act ("CEQA"). Specifically, (with the exception of 100% affordable housing), the Scoping Plan identifies only two types of housing that do not result in significant adverse GHG impacts requiring mitigation under CEQA:

1. Housing at 20 dwelling units/acre (2-3 stories), with 20% deed restricted affordable requirements for low-income residents, in neighborhoods located within a ½ mile of high frequency fixed-route public transit. Even pre-pandemic, public transit ridership was falling despite billions of dollars in transit service expansions. The vast majority of California (i.e. housing located 0.51 miles or further away from (mostly) bus stops)

does not have the required transit frequency, or buyers/renters with the financial capacity to subsidize in perpetuity 20% of the required low-income units.

2. "Net Zero GHG" housing, for which the Scoping Plan describes two large master planned community projects that include a fully balanced mix of new housing, employment, institutional (schools, fire stations and parks) over thousands of acres designed and entitled on previously-undeveloped land.

Neither of CARB's less-than-significant-GHG-impact housing paradigms apply to the overwhelming majority of RHNA-required, HCD-approved Housing Elements in California's cities and counties. Although the Scoping Plan acknowledges that housing is a major target of CEQA lawsuits, (and two-thirds of such lawsuits allege deficient GHG or VMT analysis or mitigation), CARB's housing prescription is either directly at odds with the local reality of absent and ineffective high frequency bus service, or (in the case of the Net Zero GHG projects) runs afoul of the 'ther major anti-housing elements of the Scoping Plan as described below.

It m'st be noted that the Scoping Plan's GHG significance thresholds for housing will create even more anti-housing CEQA lawsuits that will directly nullify the effectiveness of a decade of Legislation designed to spur more housing production designed to be distributed equitably among and within California's cities and counties."

Response: The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. Nevertheless CARB provides the following response for transparency.

Appendix D (Local Actions) of the 2022 Scoping Plan sets forth the key attributes that help meet the priority strategy of reducing VMT, as evidence shows that infill and transit-supportive development supported by other attributes listed in 2022 Scoping Plan Appendix D (Local Actions) can reduce VMT via fewer and shorter trips. Language has been added to the last paragraph under the heading "Project Attributes for Residential and Mixed-Use Projects to Qualitatively Determine Consistency with the Scoping Plan" in Section 3.2.1 of the updated Appendix D to indicate that the key project attributes discussed are only applicable to residential and mixed-use projects and that CARB will continue to explore approaches for other types of land uses.

The comment states that Appendix D's project attributes-based approach and the net-zero GHG approach suggested as potential significance pathways in Appendix D do not apply to a majority of RHNA-required, HCD-approved housing elements in California's cities and counties. While the CEQA approaches indicated in Appendix D may not be relevant to all general plan housing elements, individual residential projects undergoing CEQA review are able to utilize the Appendix D approaches.

The comment also seems to mistake CARB's guidance in Appendix D as a mandate, and indicates that CARB is "impos[ing] a top-down, one-size-fits-all housing mandate through [CEQA]" that "identifies only two types of housing that do not result in significant adverse

GHG impacts requiring mitigation…." CARB disagrees with these statements. CARB is not "imposing" anything in Appendix D. As noted in that document itself and other Scoping Plan documents, Appendix D provides guidance and information that local governments may choose to use at their discretion. Similarly, CARB is not stating in Appendix D that all but two types of housing result in significant adverse GHG impacts. The housing-related attributes set forth in Appendix D are provided to help show that certain types of housing developments are relatively certain to *not* present a potential for significant GHG impacts. This list of attributes is not provided to suggest (much less mandate) the inverse, i.e., that other types of housing development that do not possess these attributes present potentially significant GHG impacts. As noted in Appendix D, and consistent with CEQA principles generally, significance determinations are to be made by lead agencies, supported by substantial evidence.

The comment further states the 2022 Scoping Plan's GHG significance thresholds for housing will create even more anti-housing CEQA lawsuits that will directly nullify the effectiveness of a decade of legislation designed to spur more housing production that is distributed equitably among and within California's cities and counties. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the Draft EA. Nevertheless, language has been added to the second paragraph in Section 3.2 to clarify that the approaches listed in 2022 Scoping Plan Appendix D (Local Actions) are not required and do not supplant lead agencies' discretion to develop their own evidence-based approaches for determining whether a project would have a potentially significant impact on GHG emissions.

H118-3: The commenter states, "The Scoping Plan's prescription for the actual People of California is to further expand CEQA to block them from new housing in existing and new communities."

Response: The 2022 Scoping Plan does not contain elements that would alter CEQA, the State CEQA Guidelines, or the implementation of the CEQA process. The 2022 Scoping Plan is a source of science-based and policy-informed guidance and is designed to support the State's housing goals. No changes to the document are necessary.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H120

6/23/2022 Caroline Farrell

H120-1: The commenter states, "most engineered carbon capture increases air pollution, water pollution, and other harms for frontline communities, and the risks of transporting and

storing carbon dioxide include immediate death and hospitalization, spoiling aquifers, degrading soil, and increased seismicity."

Response: Please refer to response to PH-1 and Master Response 2.

H120-2: The commenter states, "A carbon dioxide pipeline ruptured in Satartia, Mississippi, hospitalizing dozens. There are no appropriate safeguards in place for the safe transportation of carbon dioxide, as the federal Pipeline and Hazardous Materials Safety Administration (PHMSA) has admitted in response to that disaster. Indeed, PHMSA recently announced that it is initiating a new rulemaking because of the vulnerability of people and communities who happen to live within a few miles of a carbon pipeline. Our existing infrastructure is inadequate to the task of safely transporting carbon dioxide, and we haven't even begun investigating what improvements are needed to do so."

Response: Please refer to response to PH-1 and Master Response 2.

H120-3: The commenter states, "CCS will increase health harms to our communities at every stage of capture, transport, utilization, and storage of CO2, compounding the existing health harms to low-income communities and communities of color, where oil infrastructure is currently placed."

Response: Please refer to response to comment PH-1 and Master Response 2.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H122

6/23/2022 Marc Hardy, Tejon Ranch Company

H122-1: The commenter states, "1. Natural and Working Lands. CARB proposes to rule out development on 90 percent of California's land by labelling it as "natural and working lands." The Plan seeks to avoid conversion of all existing forests, shrublands and grasslands, as well as a 50 percent reduction from current development conversion levels in "deserts and sparsely vegetated landscapes." Such a sweeping designation as natural and working lands suggests a dismissal of local jurisdictions' land use prerogatives, imposed at a time when local jurisdictions should be exercising their approval powers more urgently to address the present housing shortage and home affordability crisis. CARB proposes policy changes under the California Environmental Quality Act ("CEQA") that require deciding agencies (e.g., local governments) to study impacts and impose mitigation requirements when approving projects and land use plans. CARB's CEQA proposals strongly disfavor all but relatively high-density (e.g., at least 20 units/acre), central urban, mass transit-oriented development and re-development. The effect is to disfavor, prejudice, and overly burden all other types of

development, including lower density communities, redevelopment projects, and suburban development, and hinders the development of sustainable master planned communities designed to help meet the rising housing production needs of Californians. Candidly, CARB's promotion of infill-only is misguided, unpractical and non-workable."

Response: The 2022 Scoping Plan does not propose to rule out development on 90 percent of California's land. Identifying an area as a natural or working land only points out its current landscape condition (e.g., as agricultural land or public open space) and does not involve any changes to land use laws or regulations that local governments follow to determine uses of such land. The 2022 Scoping Plan would not alter CEQA, the State CEQA Guidelines, or how CEQA is implemented.

While discretionary guidance to local agencies is included in the 2022 Scoping Plan, it does not require or commit public agencies to any particular approach regarding their land use decision-making practices. It is advisory in nature, recognizing local agency discretion to consider GHG emissions as appropriate (for example, please see pg. 21 of Appendix D). As explained in Appendix D, the CEQA-related recommendations provided by CARB are "non-binding and should not be interpreted as a directive to local governments but rather as evidence-based analytical tools to assist local governments with their role as essential partners in achieving California's climate goals." The 2022 Scoping Plan also makes best efforts to provide science-based and policy-informed recommendations for local agencies to consider. Because it is advisory, how local agencies would respond to the guidance is not known, so reasonably foreseeable compliance responses or emission reductions attributed to its guidance would be speculative to predict. No changes to the document are necessary.

The comment does not identify any significant environmental issues associated with the proposed project. Nevertheless, CARB provides the following response for transparency.

CARB disagrees with the commenter's statement that "CARB's CEQA proposals strongly disfavor all but relatively high-density (e.g., at least 20 units/acre), central urban, mass transit-oriented development and re-development." CARB understands this comment to relate to Scoping Plan Appendix D (Local Actions). As explained in the May 2022 draft of Appendix D, the CEQA-related recommendations provided by CARB are precisely that: recommendations. They are "non-binding and should not be interpreted as a directive to local governments but rather as evidence-based analytical tools to assist local governments with their role as essential partners in achieving California's climate goals." As explained in the 2022 Scoping Plan and in Appendix D, improving California's development patterns toward higher density (and away from conversion of greenfield development on the state's natural and working lands) has clear, long-term climate and public health benefits. Therefore, it stands to reason that CARB favors housing development patterns that benefit both the climate and public health. However, nothing in the 2022 Scoping Plan or Appendix D in any way "rules out" other types of housing development, or affects local land use agencies' jurisdiction over such development.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter

identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H147

6/23/2022 Erin Rodriguez, Union of Concerned Scientists

H147-1: The commenter states, "**The draft plan relies too heavily on carbon dioxide removal.**

The draft scoping plan's proposed scenario (alternative 3) includes a risky overreliance on carbon dioxide removal (CDR) to achieve California's carbon neutrality goal. The proposed scenario explicitly includes 80 million metric tons (MMT) of CDR in 2045,[1] but due to incorrect modeling assumptions about emissions from natural and working lands, the proposed scenario will actually require 103 MMT of CDR in 2045 to achieve carbon neutrality.[2] This represents only a 76% reduction in emissions from 1990 levels.[3]

The reliance on CDR, particularly direct air capture (DAC), to offset 24% of California's emissions is a far too risky choice that could put the achievement of California's climate goals in jeopardy. In comparison, the IPCC's sixth assessment report examines numerous scenarios that, on average, include a much more limited role for DAC in achieving carbon neutrality and eventually net-negative emissions.[4] Globally, a pathway that is over-reliant on CDR raises the risk of a temperature overshoot scenario and all the climate impacts, some irreversible, that would come with that.

In an earlier report prepared for CARB, consultants at E3 studied three scenarios for achieving carbon neutrality in California. One of the scenarios, named the "High CDR" scenario, required 80 MMT of CDR in 2045. However, the authors of the report cautioned against pursuing this CDR-dependent scenario:

> [The High CDR] scenario represents the highest risk scenario, from a climate mitigation perspective, because it has the highest remaining direct GHG emissions, and relies on relatively untested CDR strategies which are not widely commercialized… Both the climate risks and the technology adoption and implementation risks of relying so significantly on CDR are high. Continuing to emit such a large share of gross emissions into the atmosphere through 2045 could result in an overshoot of emissions, with a risk of missing the state's climate goals if CDR options are not implemented early on. Furthermore, many CDR options rely on a significant amount of land and energy resources, rendering the implementation of CDR at scale uncertain.[5]

At present, the proposed scenario in CARB's draft scoping plan relies *even more heavily* on nascent CDR technologies, and UCS agrees that such heavy reliance on CDR technologies poses a significant risk if these technologies are not successfully implemented at scale.

UCS recognizes that limiting global temperature increase to 1.5°C above pre-industrial levels will require CDR strategies, but CDR is not a substitute for deep, absolute emissions reductions. California should pursue policies that prevent emitting industries from exploiting the expansion of CDR as a loophole that allows them to avoid making all practicable and necessary cuts in their direct and indirect emissions. In that vein, CARB's draft scoping plan should be revised to include much deeper direct reductions in emissions and a reduced role for CDR."

Response: The Scoping Plan Scenario results in at least 85% reduction in anthropogenic GHG emissions from 1990 levels as required by AB 1279. Carbon dioxide removal is needed to compensate for the remaining emissions.

Please also refer to response to comment H246-1.

H147-2: The commenter states, "**CO2 pipeline safety issues must be addressed to ensure public safety prior to large scale CCS deployment**

All of the preceding describes only the capture part of the CCS projects. Moving CO2 at the scale anticipated to suitable sequestration sites will require construction of extensive pipelines connecting CO2 sources to sequestration sites. A recent report from the Pipeline Safety Trust[11] highlights serious deficiencies in the federal regulations governing CO2 pipelines that must be addressed to allow for the safe transportation of CO2 through pipelines. Given that refinery clusters in California are close to major population centers, the risks to communities living near pipelines are substantial and must be addressed before construction of new pipelines or conversion of existing pipelines can proceed.

All of these steps would be time consuming even if all the actual work were straightforward. However, implementing CCS at oil refineries is not well-established, and unique circumstances associated with the design and layout of each specific refinery, risks to adjacent communities, and external factors including vulnerability to earthquakes and sea level rise make it unclear whether, how and at what scale the required equipment and internal plumbing can be safely integrated into complex and space constrained facilities. Even without a detailed analysis, it is clear that the share of emissions that can be safely and realistically captured is much lower than the scoping plan assumes. Much more detailed analysis is required before any projects can prudently move forward."

Response: Please refer to response to comment PH-1 and Master Response 2.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H152

6/23/2022 Greg Karras, Community Energy reSource

H152-1: The commenter states, "On 10 May 2022 the California Air Resources Board ("CARB") released the Draft 2022 Scoping Plan Update ("Draft Scoping Plan") and Draft Environmental Analysis for the proposed Draft 2022 Scoping Plan for Achieving Carbon Neutrality ("Environmental Analysis" or "EA") for public review and comment.

This technical report focuses on the adequacy of the Draft Scoping Plan and First Draft EA in addressing potential climate, air quality, and environmental health impacts associated with (1) petroleum refining for export, (2) diesel biofuel addition to combustion fuel chains, and (3) the timing of proven measures that can be used to reduce petroleum fuel chain emissions by phasing down California refining rates."

Response: The comment provides introductory remarks that the technical report focuses on the adequacy of 2022 Scoping Plan and First Draft EA in addressing potential climate, air quality, and environmental health impacts associated with petroleum refining for export, diesel biofuel addition to combustion fuel chains, and the timing of proven measures that can be used to reduce petroleum fuel chain emissions by phasing down California refining rates. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

H152-2: The commenter states, "1.3 The Draft Scoping Plan is likely to result in major greenhouse gas and co-pollutant increases associated with refining for export in communities near California refineries.

This potential for 214 Mb of additional refining for export by 2030 and 953 Mb by 2045 would emit criteria and other toxic air pollutants into communities near California refineries, pollution that would be directly linked to the greenhouse gas ("GHG")[19] combustion emissions exported with the refined fuels. Refinery criteria pollutant emission rates are directly related to refining rates at any given pollutant emission intensity. Some 50 years of State and federal emissions control effort demonstrate this direct relationship, which supports emission standards that are expressed as process rate "throughput" in refinery air permits and CARB's acknowledgment of ongoing elevated health risk in Black and Brown communities near industries like refineries.[20]

Supply-demand imbalances that drive these increased community health risks from refining for export would increase to a greater extent under the Draft Scoping Plan than its no project alternative.[21] Moreover, toxic effects of air pollutants are a function of the duration or repetition of exposure along with the inherent toxicity of the chemicals and their concentration in the air we breathe. Thus, by resulting in new and prolonged exposures to harmful air pollutant emissions associated with prolonged or increased refining for export, the Draft Scoping Plan could result in significant air quality and environmental health risk impacts.

[19] Herein, "GHG" means carbon dioxide equivalents (CO2e) at the 100-year climate forcing horizon.
[20] Draft Scoping Plan at page 15. Numeric emission limits expressed as throughput have long been applied to California refineries in Clean Air Act Title V air permits. This comment incorporates additional information regarding health risks of refining for export in part 3 herein.
[21] Compare Alternative 3, Reference Scenario in CARB AB32 GHG Inventory Sectors Modeling Data Spreadsheet (supra) for potential to induce refining for export."

Response: Please refer to Master Response 6.

Regarding air pollutant emissions, the First Draft EA in Section 3.b discusses the reasonably foreseeable longer-term operational impacts to air quality from implementation of the 2022 Scoping Plan. That section of the First Draft EA points to the air quality and public health analysis conducted for the AB 32 GHG Inventory Sectors. That analysis used an integrated modeling approach to characterize and quantify the ambient air quality and public health impacts of the Scoping Plan Scenario relative to the Reference Scenario to provide insight into the co-benefits that could be achieved from implementation of the 2022 Scoping Plan. The baseline pollutant emissions represent a highly detailed inventory that includes emissions by sector and source, which are grown and controlled to 2045 using output from the PATHWAYS model for technologies, fuels, and energy demand by AB 32 GHG Inventory Sectors. Existing sources/facilities (such as refineries) were included, though no major functional changes to existing sources were assumed given uncertainty associated with the siting and activity of novel emission sources. This means that refineries that convert from producing liquid petroleum fuels to producing renewable diesel and/or sustainable aviation fuels (SAF) were assumed to have air pollutant emission factors equivalent to prior petroleum fuel production, and renewable diesel and SAF combustion in stationary and/or mobile sources was treated the same as petroleum diesel combustion. Regardless, as explained in the 2022 Scoping Plan, carbon neutrality will be achieved "through a substantial reduction in fossil fuel dependence, while at the same time increasing deployment of efficient non-combustion technologies and distribution of clean energy which also has criteria pollutant and precursor benefits alongside reducing the exposure of sensitive receptors to TAC emissions."

As shown in the First Draft EA's air quality section, the air quality analysis modeling results show the overall reduction in fossil fuels would produce significant reductions in NOx, PM2.5, and ROG translating into ambient air quality improvement and corresponding health benefits associated with the compliance responses for the AB 32 GHG Inventory Sectors. Emissions reductions associated with reduced vehicular emissions occur throughout the state with particular prominence in urban areas due to large presence and activity of emissions sources (vehicles). Furthermore, the associated health benefits from the Scoping Plan Scenario are substantial, and will also accrue within socially and economically disadvantaged communities as identified by CalEnviroScreen, where they are most needed. As described in Chapter 3 of the 2022 Scoping Plan, about 30 percent of health benefits representing the economic value of the avoided incidence of health effects in the Scoping Plan Scenario are associated with

census tracts identified as disadvantaged communities. These benefits reach $22 billion in 2035 and $61 billion in 2045 (compared to statewide totals of $78 billion in 2035 and $199 billion in 2045). As also discussed in the First Draft EA, mitigation measures required to avoid and/or minimize impacts on air quality at the individual facility project level typically fall under local agency jurisdiction. These mitigation measures routinely encompass: requirements that proponents of new or modified facilities coordinate with State or local land use agencies to seek entitlements for development including completion of necessary environmental review requirements (e.g., CEQA) and implementation of all feasible mitigation to reduce or substantially lessen potentially significant air quality impacts of a project; compliance with all appropriate air quality permits; and compliance with applicable provisions of the federal Clean Air Act and the California Clean Air Act (e.g., New Source Review and Best Available Control Technology criteria). No changes to the First Draft EA are required in response to this comment.

Please also refer to response to comment H152-3 regarding the commenter's statements about potential refining for export.

H152-3: The commenter states, "1.4 The Draft Scoping Plan could result in major climate impacts from emission-shifting associated with refining for export in conflict with state climate law.

1.4.1 State law requires minimizing GHG emission-shifting to the extent feasible

CARB argues that despite rejecting direct refinery control measures the Draft Scoping Plan demand reduction measures would reduce GHG emissions from petroleum fuels in California. Though correct as to that limited point, CARB's analysis is incomplete; it ignores the resultant emission shifting. GHG emissions impact climate globally wherever GHG emits. Recognizing this, the California Health and Safety Code requires CARB to minimize emission shifting, which the Code defines as "a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside the state." Cal. Health & Safety Code §§ 38505 (j), 38562 (b) (8). But by rejecting feasible direct refinery control, the Draft Scoping Plan would expand an incomplete set of measures which already results in the GHG emission shift defined. This would appear to conflict with State climate law.

1.4.2 The Draft Scoping Plan could increase petroleum emissions outside the state as much or more than its demand-side measures cut petroleum emissions in state

CARB could have used the evidence described in § 1.1 and other available data to estimate the GHG emission shift that could result from its in-state fuels demand cuts without direct curbs on refining under the Draft Scoping Plan. Table 2 provides an example.

Table 2. Potential cross-border GHG emission shift due to increased refining for export that could result from Draft Scoping Plan implementation, example estimate [a]

GHG: CO2e, 100-year GWP | **Mb:** million barrels | **b:** barrel; 42 U.S. gallons
CI: carbon intensity in kg/b | **MMT:** million metric tons

Petroleum shift increments		Baseline [b]	Potential Emission Shift Increments [c]	
		2013–2019	2023–2030	2023–2045
Cross-border fuels exports				
volume	(Mb)	—	214	953
combustion CI	(kg/b)	395.5	395.5	395.5
combustion GHG	(MMT)	—	84.6	377
Crude imports refined for export				
volume	(Mb)	—	190	844
extraction CI	(kg/b)	79.14	79.14	79.14
extraction GHG	(MMT)	—	15.0	66.8
Net GHG increments	(MMT)	—	100	444

a. Estimated shift for gasoline, petroleum distillate and jet fuel only; estimates for all refined fuels may exceed values shown.
b. Baseline carbon intensity (CI) values estimated from State data for 2013–2019 in CEJA (2022) Table S1. Post-2019 data are excluded from this baseline due to anomalous conditions during COVID. Baseline volumes, from Draft Scoping Plan fuel energy modeling, which was not reported before 2015, are from 2015–2019.
c. Cumulative volume and mass emission increments from baseline: Fuel volumes are from Draft Scoping Plan fuels energy modeling and fuel energy densities in the CARB LCFS Regulation Order. Crude volumes from fuel volumes and processing volume expansion based on data in CEJA (2022) Table S1. Shift increments estimated at the 1:1 ratio shown from data discussed in §§ 1.1.3 herein, conservatively assuming no increase in the CI or in-state refinery production of crude or fuels. Figures may not add due to rounding.

As shown in § 1.2 CARB projects cumulative in-state petroleum fuels demand cuts that could result from the Draft Scoping Plan, –214 Mb by 2030 and –953 Mb by 2045, on an energy-equivalent volume basis. CARB could have applied the volumetric equivalence of petroleum fuel shifts described by State data (§§ 1.1.3) to estimate the cross-border fuels export shifts shown in Table 2. Similarly, it could have used State refinery crude input and fuels production data22 to quantify the effect of volume expansion during processing and estimate the slightly lower crude volume increments that would be imported for this refining for export,

also shown in Table 2. This is relevant because in-state crude supply has dwindled below that needed to meet in-state fuels demand alone,23 so that cross-border extraction emissions would occur from crude import increments linked to the refining-for-export increments.

Baseline fuel combustion and imported crude extraction carbon intensity ("CI") values shown in Table 2 are from State data for statewide refining from 2013–2019.24 Conservatively assuming no further increase in CI or refinery production, CARB could have applied these CI values to the emission shift volumes in Table 2. As shown in the table, these data support potential GHG emission shift increments of »100 million metric tons (MMT) by 2030 and »444 MMT by 2045.

These 100 MMT and 444 MMT GHG increments outside the state, however, do not include emissions associated with Draft Scoping Plan measures that reduce in-state petroleum fuels demand. In one important example, CARB has estimated GHG emissions associated with renewable diesel elsewhere,[25] and the Draft Scoping Plan relies upon renewable diesel for in-state petroleum fuels demand reduction to a considerable extent.[26] Had CARB considered all available data and information, it could have found that the Draft Scoping Plan petroleum demand reduction measures—alone, absent direct refinery control measures—have a reasonable potential to increase cross-border GHG emissions by substantially more than these measures would decrease in-state GHG emissions.

1.4.3 A feasible measure the Draft Scoping Plan excludes could minimize emission shifting

CARB can establish standards limiting refinery throughput rates. As explained above, this could limit in-state refining for export because oil flow through the petroleum fuel chain would be limited by the throughput of its in-state refining link. Moreover, this measure may be required to minimize GHG emission shifting and, at a minimum, that requirement further supports its feasibility.

1.5 The Environmental Assessment (EA) is factually incomplete.

Presuming that in-state petroleum refining will phase down in line with demand without any direct refinery emission control measure is an error. The First Draft EA does not identify, describe, assess, or analyze mitigation for the air quality, environmental health, or climate impacts associated with refining for export and emission-shifting that could result from the Draft Scoping Plan. A feasible measure could lessen or avoid these impacts.

[22] CEJA, Climate Pathways in an Oil State Prepared by Greg Karras. Feb 2022. See data in Table S1.
[23] *Id*.
[24] *Id*.
[25] LCFS Regulation Order, Title 17, CCR, §§ 95480–95503.
[26] Draft Scoping Plan at pages 18, 153; Draft Scoping Plan, Appendix H, at page 61."

Response: CARB staff disagrees with the substantive premise of this comment that the 2022 Scoping Plan could cause major climate impacts associated with refining for export. Please

refer to Master Response 6. See also response to comment 166-6, regarding how biomass-energy supply estimates available to produce biofuels used for the 2022 Scoping Plan modeling were constrained based on feedstock that could be economically and beneficially used to displace fossil fuels, inherent physical and/or permit limits on refineries that would restrict production, the substantial long term GHG emissions reductions expected from implementation of the Scoping Plan Scenario described in the First Draft EA, and post-plan adoption activities related to implementation of the 2022 Scoping Plan that will further examine issues related to the transportation fuel supply-demand transition.

The commenter states that CARB can establish standards limiting refinery throughput rates. To the extent the commenter is suggesting this as a project alternative, CARB responds that evaluating such an alternative is not necessary, as the 2022 Scoping Plan would not result in any potential for significant emissions impacts due to either increased petroleum production or refining, or due to increased use of petroleum products in other parts of the world. CARB disagrees with the commenter that either these refinery-based or out-of-state-consumption-based effects would occur, given that the purpose and the effect of the 2022 Scoping Plan would be to reduce petroleum consumption (and thereby to reduce demand). As such, an alternative limiting refinery throughput would not address any of the 2022 Scoping Plan's potentially significant impacts. See Master Response 6 for additional response.

Also, please refer to Master Response 6 regarding the expected air quality and public health benefits of the Scoping Plan Scenario addressed in the First Draft EA. The remainder of the comment does not raise additional significant environmental issues related to the First Draft EA. No changes to the First Draft EA are required in response to this comment.

H152-4: The commenter states, "**2 Potential emission impacts from enhanced growth of diesel biofuel that fails to replace petroleum distillate fuel**

Outcomes recorded by the State's own data disprove the hypothesis that diesel biofuel use reduces GHG emissions by replacing petroleum distillate-diesel in the combustion fuel chain. Without disclosing or addressing this evidence, the Draft Scoping Plan would expand financial and policy support to further increase diesel biofuel production and combustion in California. This action could result in significant climate, air quality, and health impacts by further shifting petroleum distillate refining to export, increasing emissions from refining for export locally and distillate fuels globally. The EA does not identify or mitigate these potential impacts.

2.1 <u>State policy has increased GHG emissions associated with distillate fuels production and combustion.</u>

2.1.1 State biofuel policy supports diesel biofuel growth financially based on a hypothesis that adding diesel biofuel to the combustion fuel chain reduces GHG emissions by replacing higher-emitting petroleum distillate (PD) fuel globally

As the Draft Scoping Plan states: "The LCFS is a key driver of market development for renewable diesel and its coproducts. While the federal renewable fuel standard (RFS) and

blenders tax credit also benefit producers, an analysis of their respective contributions to market development, and interviews with industry representatives and independent experts, point to [the] LCFS as a more important factor in market development, at least in recent years."[27]

The LCFS seeks to reduce the carbon intensity ("CI"), not the amount or mass emissions, of transportation fuels through a system of financial credits and debits in which credits are tradeable among companies that supply fuels used in California.[28] It assigns these credits and debits based on the energy equivalent "gallons" supplied, and the calculated CI of each fuel relative to a declining statewide CI standard.[29] Suppliers of California fuels deemed lower-CI than petroleum fuels can thus receive credits based on this energy equivalent gallon-for-gallon comparison. An LCFS credit was worth an average of $17 in 2012, rising to $192 in 2019.[30] Diesel biofuel ("DB")[31] suppliers received »25.4 million LCFS credits during 2011–2019.32

Apart from its success in reducing the carbon intensity of statewide fuels, however, the LCFS has not confirmed that DB reduced climate impacts of GHG emissions associated with PD by actually replacing PD. CARB suggests that DB "displaced" PD.[33] To where, it does not say. Refinery PD production increased.[34] In effect, State policy gave distillate fuel refiners LCFS credits based on the hypothesis that DB replaces PD.

2.1.2 In fact, diesel biofuel additions in California are not replacing, but adding to, petroleum distillate globally

Observed outcomes provide evidence to disprove the hypothesis that DB reduces GHG emissions by replacing PD. Adding DB to the PD refined in California added volume to the total distillate combustion fuel chain.[35] Instead of curtailing otherwise productive assets, California refiners further shifted to refining for export.[36] California PD production increased, and PD combustion increased globally.[37]

Moreover, causal mechanisms for these outcomes reflect the resistance to change of established fossil fuel systems and development paths.[38] [39] [40] [41] [42] [43] [44] [45]

2.1.3 State data document the further shift to petroleum distillate refining for export induced by diesel biofuel addition in California

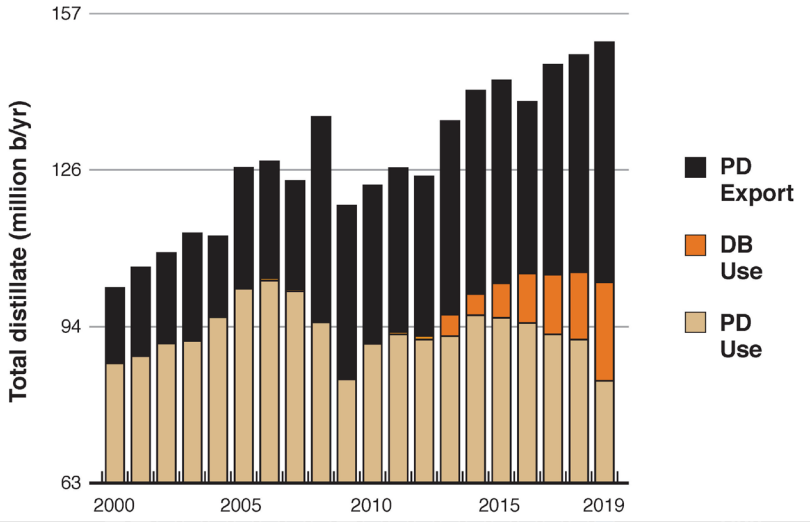
California collects, verifies and reports high quality data for in-state DB use, as well as in-state PD production and use,[46] from which statewide PD export rates are known. See §§ 1.1.3 herein. Analysis of these data demonstrates that the balance between refinery production and demand drives PD exports. Id. Direct effects of DB addition to total distillate demand in California are illustrated in Chart 1 based on these State data.

DB use (orange in Chart 1) induced a further shift from PD use here (brown) to PD export (black) from California to other states and nations. DB served increasing shares of total California distillate demand, which reached its previous three-year high during 2016–2018

compared to 2005–2007, increasing the shares of PD refined in the State that shifted to export.

Importantly, statewide refinery production of PD increased from 2010–2019 alongside DB use.[47] Partial least squares regression modeling of the State data from 2010–2019 found that DB use was a stronger factor in PD export than PD production, and both factors together explain 87 to 96 percent of the interannual change in PD export, with the 87 percent estimate due to including a potentially anomalous outlier year in that analysis.[48] PD use was the weaker factor, with effects on PD export that spanned zero (standardized coefficients, 95% confidence) when compared alongside DB use.[49] Modeling results for the 2010–2019 data are illustrated in Chart 2.

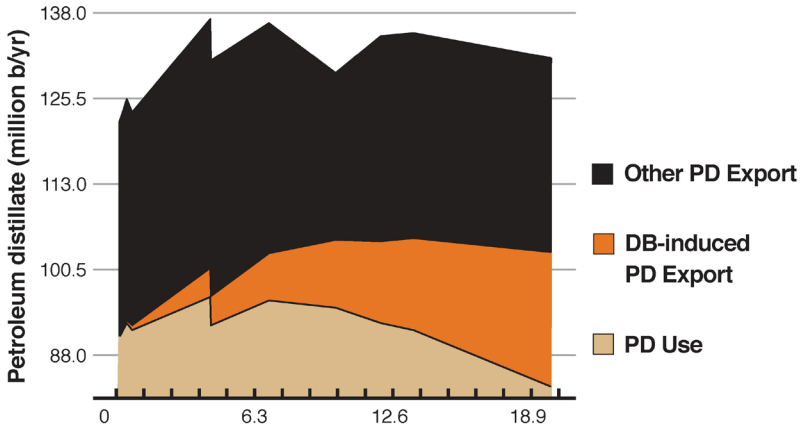
DB can account for essentially all of the PD export increment. During 2011 through 2019 as compared with 2010 rates, DB use rose by approximately 70 million barrels (Mb), PD demand rose by »15 Mb, in-state refinery production of PD rose by »84 Mb, and refinery exports of PD rose by »69 Mb.[50]



1. Diesel biofuel (DB) added to petroleum distillate (PD) in California

From CARB Fuel Activity Inventory and CEC Fuel Watch. See Exhibit 1 for data.

This PD export increment was caused by DB use that served some of the in-state demand for total distillate, so that the PD demand increment rose less than the PD production increment (84 – 15 = 69). Thus, adding the 70 Mb DB increment shifted an additional 69 Mb of PD refining to export, and each barrel of DB use increased PD export by »0.99 barrel, on a volume basis.



DB use in California (million b/yr)

2. Diesel biofuel (DB) shifts petroleum distillate (PD) refining to export

Modeling results on California data from 2010–2019 plotted against DB use. See Exhibit 2.

On an energy basis, this 70 Mb DB increment had the energy content of »67 Mb of PD,[51] and each DB barrel increased PD export by »1.03 barrel. Further accounting for interannual changes via partial least squares regression analysis of all the State distillate use and export data from 2010 through 2019 indicates that each barrel of DB addition increases PD export by 1.00 barrel.[52] Finally, the US Environmental Protection Agency estimates that each energy-weighted barrel of US biofuels changes US petroleum imports by 0.99 barrel.[53] Taken together, available evidence supports DB-induced PD exports of equivalent volume (range, 1:0.99 to 1:1.03).

Downstream impacts of this DB-induced refining for export contributed to increased PD combustion across the global fuel chain linked to California refineries. During 2011–2019 world PD consumption rose from 2010 rates by »5,870 Mb for all uses of PD and »7,860 Mb for PD use in transportation.[54] These increments exceed the 84 Mb California PD refining and 69 Mb PD export increments, indicating that DB addition here contributed to increased PD combustion globally. Moreover, it may have increased world PD use by more than the 69 Mb export increment observed. A substantial body of peer reviewed work suggests that biofuel-induced petroleum fuel exports to global markets can reduce fuel prices enough to induce further petroleum fuels refining and growth.[55 56 57 58 59 60 61]

Emissions from DB that failed to replace PD added to those from PD that was not replaced, increasing GHG emissions from the total distillate combustion fuel chain.

2.2 The Draft Scoping Plan could further increase GHG emissions associated with subsidized diesel biofuel addition to the petroleum fuel chain.

2.2.1 The Draft Scoping Plan would increase subsidized diesel biofuel addition in California

CARB asserts that its LCFS is "key driver" of renewable diesel growth.[62] The LCFS provides financial support to DB, including biodiesel and renewable diesel, via a mechanism that rewards increasing DB volume (§§ 2.1.1), and gave DB »25.4 million credits from 2011–2019[63] as per-credit values rose steeply to $192 by 2019.[64] The Draft Scoping Plan would further expand this financial support by relying on renewable diesel to a considerable extent in its selected suite of petroleum fuels demand reduction measures.[65] In its modeling for the Draft Scoping Plan, CARB projects renewable diesel use would rise from its 2015–2019 mean by a cumulative total of »5.394 exajoules,[66] or an energy-equivalent volume of »80.4 Mb,[67] during 2023–2045.[68]

2.2.2 Potential diesel biofuel use and petroleum distillate export volume increments

The DB-induced PD export effect of this 80.4 MB DB increment is readily foreseeable, as documented in §§ 2.1.3. Further, CARB could have estimated its extent. For example, CARB could use publicly reported State and federal data to estimate that each barrel of DB shifts 0.99 to 1.03 barrel of PD to export, as described in §§ 2.1.3. CARB could apply this 0.99 to 1.03 range to its modeled DB increment (80.4 Mb) to estimate a potential DB-induced PD export increment of 79.6 Mb to 82.8 Mb through 2045, as shown in Table 3.

2.2.3 Potential diesel biofuel use and petroleum distillate export emission increments

CARB estimates the full fuel chain "life cycle" carbon intensity ("CI") of both fuels in its LCFS and could have done so for its projected Scoping Plan fuel volume increments. Fuel-specific energy density and default CI values[69] indicate a CI factor of 567.3 kg CO2e/barrel PD, and CI factors of 245.0 to 353.9 kg CO2e/barrel renewable diesel, depending on whether it is derived from "residue" or "crop" oil feedstock. CARB could have used these data with the volume increments in Table 3 to estimate potential impacts that could result from the Draft Scoping Plan renewable diesel expansion. These results are shown in Table 3.

Thus, CARB could have estimated cumulative GHG emission increments, during 2023–2045 over 2015–2019 mean rates, that range from 19.7 to 26.4 MMT associated with DB addition in California, and 45.2 to 47.0 MMT associated with DB-induced PD exports from California.

Importantly, since DB fails to replace PD and DB-induced PD exports contribute to increased PD emissions globally (§§ 2.1.3), emission increments from both fuels (64.9 to 75.4 MMT) describe the potential direct contribution of DB-related effects to climate impacts.

27 Draft Scoping Plan at page 18.
28 LCFS Regulation Order, Title 17, CCR, §§ 95480–95503.
29 *Id*.
30 CARB Monthly LCFS Credit Transfer Activity Reports Accessed Jun 2022.

[31] This acronym for diesel biofuel ("DB") is used for brevity as the term is repeated for precision in the text. DB includes biodiesel and renewable diesel.
[32] CARB LCFS Quarterly Summary Report Accessed Jun 2022.
[33] *Id*.
[34] CEC supra. The CEC defines petroleum distillate as the mix of No. 1, No.2 and No. 4 diesel and fuel oils. When diesel biofuel substitutes for petroleum distillate in one location, refiners adjust processing to seek the highest-value mix of petroleum distillate component sales across their global fuel chain.
[35] Based on CARB, Fuel Activity for California's Greenhouse Gas Inventory by Sector & Activity (Fourteenth Ed.: 2000 to 2019) Jul 2021; and California Energy Commission (CEC), Refinery Inputs and Production Jun 2022 (Fuel Watch data); and Exhibit 1, appended hereto, reporting CARB and CEC data.
[36] CARB, supra; CEC, supra; Exhibit 1.
[37] CEC, supra; Exhibit 1 (reporting in-state production and world consumption data).
[38] Ha-Duong et al. Influence of socioeconomic inertia and uncertainty on optimal CO2-emission abatement Nature 390:270. Nov 1997.
[39] Unruh. Understanding carbon lock-in Energy Policy 28: 817 Mar 2000.
[40] Davis et al. Future CO2 Emissions and Climate Change from Existing Energy Infrastructure Science 329: 1330 Sep 2010.
[41] Davis and Socolow. Commitment accounting of CO2 emissions Env. Res. Letters 9. Aug 2014.
[42] Rozenberg et al. Climate constraints on the carbon intensity of economic growth Env. Res. Letters 10. Sep 2015. 43 Seto et al. Carbon Lock-in: Types, Causes, and Policy Implications Annu. Rev. Environ. Resour. 41:425. Sep 2016.
[44] Smith et al. Current fossil fuel infrastructure does not yet commit us to 1.5 °C warming Nature comm.10:101. Jan 2019.
[45] Tong et al. Committed emissions from existing energy infrastructure jeopardize 1.5 °C climate target Nature 572: 373. Jul 2019.
[46] CEC, supra; CARB, supra; Exhibit 1 appended hereto.
[47] CEC, supra; CARB, supra; Exhibit 1 appended hereto.
[48] Exhibit 2; Partial least squares regression results for data from CEC, supra and CARB, supra; appended hereto. 49 Exhibit 2; Partial least squares regression results for data from CEC, supra and CARB, supra; appended hereto. 50 CEC, supra; CARB, supra; Exhibit 1 appended hereto.
[49] Exhibit 2; Partial least squares regression results for data from CEC, supra and CARB, supra; appended hereto.
[50] CEC, supra; CARB, supra; Exhibit 1 appended hereto.
[51] Based on energy densities of 126.13 MJ/gal. biodiesel, 129.65 MJ/gal. renewable diesel, and 134.47 MJ/gal. ULSD from the LCFS Regulation Order, Title 17, CCR, §§ 95480–95503; a 34%/66% biodiesel/renewable diesel mix of in-state DB use from 2011–2019 from CARB LCFS Dashboard Figure 10 data table; and the calculations 0.34 • 126.13 MJ/gal. + 0.66 • 129.65 MJ/gal. » 128.45 MJ/gal. (DB mix) and, 128.45 MJ/gal. (DB mix) ÷ 134.47 MJ/gal. (ULSD) • 70 Mb » 67 Mb (PD energy-equivalent BD added, in Mb).
[52] Exhibit 2; Partial least squares regression results for data from CEC, supra and CARB, supra; appended hereto.

[53] USEPA Draft Regulatory Impact Analysis: RFS Annual Rules EPA-420-D-21-002. Dec 2021.
[54] Energy Information Administration (EIA) Transportation sector energy consumption by region and fuel Data table accessed Mar 2022; International Energy Agency World Production and Final Consumption of Gas/Diesel IEA Data and Statistics; Data Tables; Oil; accessed Mar 2022; and Exhibit 1, appended hereto, reporting these data.
[55] Drabik and de Gorter. Biofuel Policies and Carbon Leakage AgBioForum 14: 3. 2011.
[56] Chen and Khanna. The Market-Mediated Effects of Low Carbon Fuel Policies AgBioForum 15:1. 2012.
[57] Grafton et al. US biofuels subsidies and CO2 emissions: An empirical test for a weak and a strong green paradox Energy Policy 68: 550. Dec 2013.
[58] Bento and Klotz. Climate Policy Decisions Require Policy-Based Lifecycle Analysis Environ. Sci. Technol. 48: 5379. Apr 2014.
[59] Rajagopal et al. Multi-objective regulations on transportation fuels: Comparing renewable fuel mandates [and] emission standards Energy Economics 49: 359. Mar 2015.
[60] Hill et al. Climate consequences of low-carbon fuels: The United States Renewable Fuel Standard Energy Policy 97: 351. Aug 2016.
[61] Abdul-Manan. Lifecycle GHG emissions of palm biodiesel: Unintended market effects negate direct benefits of the Malaysian Economic Transformation Plan Energy Policy 104: 56. Jan 2017.
[62] Draft Scoping Plan at page 18.
[63] CARB LCFS Quarterly Summary Report Accessed Jun 2022.
[64] CARB Monthly LCFS Credit Transfer Activity Reports Accessed Jun 2022.
[65] Draft Scoping Plan at pages 18, 153; Draft Scoping Plan, Appendix H, at page 61.
[66] CARB AB32 GHG Inventory Sectors Modeling Data Spreadsheet May 2022. Energy Demand, in California PATHWAYS Model Outputs.
[67] Based on CARB fuel energy data from the LCFS Regulation Order, Title 17, CCR, §§ 95480–95503.
[68] The CARB projection may understate potential DB growth in California substantially. Planned renewable diesel feedstock refining capacity expansions by Phillips 66 at Rodeo (29.2 Mb/year), Marathon at Martinez (17.5 Mb/y) and AltAir at Paramount (7.8 Mb/y new capacity) suggest more rapid DB growth than CARB projects. If build as scheduled and run targeting a feasible 68.1% distillate yield on feed, these three California lipids refining projects could add some 37.2 Mb/y of renewable diesel capacity. If all three projects are built, commissioned on schedule and can overcome lipids feedstock supply limitations to operate at capacity, the growth of DB use in California by 2030 could be more than double that which CARB projects. But targets announced by refiners for projects not yet built are uncertain forecasts, and there are good reasons to limit reliance on hydrotreated lipids-based diesel biofuels.
[69] See LCFS Regulation Order, Title 17, CCR, §§ 95480–95503."

Response: Please refer to Master Response 6.

H152-5: The commenter states, "2.3 <u>The Draft Scoping Plan could result in major air quality and environmental health impacts associated with renewable diesel refining and diesel</u>

biofuel-induced petroleum distillate refining for export in communities near California refineries.

This potential for 79.6 to 82.8 Mb of additional PD refining for export through 2045 would emit criteria and other toxic air pollutants in communities near California refineries, pollution that would be directly linked to the GHG emissions exported with the refined fuels. Supply-demand imbalances that drive these increased community health risks from PD refining for export would increase to a greater extent under the Draft Scoping Plan than its no project alternative.[70] [71] BD refining impacts, and in particular the potential for extremely hydrogen-intensive renewable diesel processing to result in acute air pollutant exposures from more frequent flaring,[72] would add new risks in nearby communities. Thus, by resulting in new and prolonged exposures to harmful air pollutant emissions associated with prolonged or increased refining for export and increased biorefining, the Draft Scoping Plan could result in significant air quality and environmental health risk impacts.

[70] Compare Alternative 3, Reference Scenario in CARB *AB32 GHG Inventory Sectors Modeling Data Spreadsheet (supra)* for potential to induce refining for export.
[71] Additional support for this comment specific to refinery emission impact is provided in § 1.3 and part 3 herein.
[72] Karras. *Changing Hydrocarbons Midstream* Aug 2021. Prepared for the NRDC."

Response: Please refer to Master Response 6 and to response to comment 166-6 regarding how biomass-energy supply estimates available to produce biofuels used for the 2022 Scoping Plan modeling were constrained based on feedstock that could be economically and beneficially used to displace fossil fuels, inherent physical and/or permit limits on refineries that would restrict production, the substantial long term GHG emissions reductions expected from implementation of the Scoping Plan Scenario, and post-plan adoption activities related to implementation of the 2022 Scoping Plan that will further examine issues related to the transportation fuel supply-demand transition.

H152-6: The commenter states, "2.4 The Draft Scoping Plan could result in major climate impacts from emission shifting caused by biofuel-induced refining for export in apparent conflict with state climate law.

2.4.1 State law requires minimizing GHG emission-shifting to the extent feasible

CARB asserts that the Draft Scoping Plan DB expansion measures would reduce GHG emissions from petroleum fuels in California. Though correct as to that limited point, CARB's analysis is incomplete; it ignores the resultant emission shifting. GHG emissions impact climate globally wherever GHG emits. Recognizing this, the California Health and Safety Code requires CARB to minimize emission shifting, which the Code defines as "a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside the state." Cal. Health & Safety Code §§ 38505 (j), 38562 (b) (8). But by financing increased DB use which shifts PD to export while rejecting feasible direct control measures, the Draft Scoping Plan would result in the GHG emission shift defined. This would appear to conflict with State climate law.

2.4.2 Cross-border GHG emissions associated with petroleum distillate refining for export could exceed in-state GHG emission reduction from diesel biofuel substitution

GHG emissions from DB that fails to replace PD and from that PD would contribute to global climate impacts. However, the Draft Scoping Plan limits its focus to emissions in California alone. It subtracts emissions associated with PD (which would in fact be exported) from emissions associated with DB used in-state to find emission reductions within the State. Results in Table 3 indicate a potential incremental GHG emission reduction within the state ranging from 16.8 (45.2 – 28.4 = 16.8) to 27.3 (47.0 – 19.7 = 27.3) MMT. PD emissions from the DB-induced PD export increments, however, would exceed this in-state reduction at 45.2 to 47.0 MMT (Table 3). Thus, the smaller GHG emission reduction within the state would be offset by the larger GHG emission increase outside the state.

2.4.3 Feasible measures the Draft Scoping Plan excludes could minimize emission shifting

CARB can establish direct emission control standards expressed as throughput limits to each refinery in California. This measure has proven feasible when implemented on an air quality and environmental health basis and can effectively limit refining for export. See §§ 1.1.1 and § 1.3. Moreover, this measure may be required to minimize GHG emission shifting and, at a minimum, that requirement further supports its feasibility. This measure is further discussed in §§ 1.4.3.

CARB also can establish a numeric cap on statewide DB usage. A lipids-derived DB cap has been suggested by the State's expert advisors on transportation measures to achieve its climate goals,[73] and could lessen or avoid new air quality and climate impacts associated with DB fuel chain emissions and those from DB-induced refining for export. This measure also could support lower-emitting and more scalable non-combustion freight and shipping alternatives.

2.5 The Environmental Assessment (EA) is factually incomplete.

Presuming that diesel biofuel replaces petroleum distillate fuel, when it does not, represents a fatal error in the Draft Scoping Plan and the EA. The EA does not identify, describe, assess, or analyze feasible mitigation for air quality, environmental health, or climate impacts associated with refining and burning more total distillate that could result from the Draft Scoping Plan.

[73] Brown et al. *Driving California's Transportation Emissions to Zero* Apr 2021. UC Office of the President, ITS reports. See pages 392–396."

Response: Please refer to Master Response 6.

H152-7: The commenter states, "**3 Potential impacts from delayed refining phase down on the feasibility of climate stabilization pathways**

Putting off transition impacts by delaying direct refining phase down measures CARB can take now to transition from oil, the Draft Scoping Plan would lead to a vicious cycle: Cumulative emissions increase faster while time left for cutting them shortens. This forces deeper cuts faster to our climate goal. That increases the severity of transition impacts, reinforcing the vicious cycle. Delay, then, can be a dead-end path to climate disaster. Analysis of high-quality data demonstrates that the Draft Scoping Plan phase down delay could breach clearly foreseeable feasibility tipping points. Major impacts that could result from its rejection of "maximum feasible" measures include conflict with State climate law, prolonged toxic health impacts near refineries, and total cumulative emissions that far exceed the State GHG emissions goal. The Draft Scoping Plan and EA obscure these impacts through a series of errors and omissions.

3.1 The Draft Scoping Plan obscures potential impacts of delayed refinery phase down.

3.1.1 Delayed refining cuts make emissions targets less feasible to achieve

This point is simple and crucial. Suppose one sector in the statewide economy emits 50 percent of total statewide emissions and all other sectors emit the other 50 percent. When we need total emissions to be cut 25 percent, if the super-emitter delays its cuts, all the other sectors must cut their emissions by 50 percent to make the cut. That makes the total cut less feasible than it would be if all sectors did their share. When we need total emissions cut 50 percent, if the super-emitter still delays its cuts, all other sectors must cut their emissions by 100 percent (go to zero) to make the cut. That makes the needed cut much less feasible.

In fact, the petroleum fuel chain linked to California refineries emits up to 65 percent of total GHG linked to all activities in California.[74] Moreover, accounting for the emission shifting enabled by an absence of direct refinery GHG emission standards, which allowed export refining as in-state petroleum demand began to decline, sustained cuts in those refining-linked petroleum fuel chain emissions were, in fact, delayed.[75] The Draft Scoping Plan omits these facts.

3.1.2 The Draft Scoping Plan does not quantify and report any path to the State's direct emissions targets that is known to be feasible based on measures proven in practice

State climate emission reduction targets, expressed in shorthand as –40% by 2030 and –80% by 2050, are direct emission reduction goals, which "carbon neutrality" measures such as industrial or biological carbon sequestration are explicitly meant to supplement but not to replace.[76] The State's "carbon neutrality goal is layered on top of the state's existing commitments to reduce greenhouse gas emissions 40% below 1990 levels by 2030 ... and 80% below 1990 levels by 2050."[77] This distinction is important because CARB climate plans and measures are required to achieve the "maximum feasible" GHG emission reductions,[78] and carbon-capture-sequestration has not been proven feasible at the necessary scale.[79]

In essence, State policy calls on CARB to refrain from delaying feasible measures to meet State GHG emission targets in favor of unproven carbon neutrality measures that may not prove feasible and in any case are to be "layered on top" after the State emission targets are met. But that is not what the Draft Scoping Plan does. None of its scenarios include direct refinery phase-down standards. All of them lump proven direct measures and unproven carbon capture measures together, conflate the emission reduction target and carbon neutrality goal analyses, or both. It does not quantify and report any path to the direct emission reduction targets that is known to be feasible based on measures that are proven in practice.

3.1.3 The Draft Scoping Plan obscures climate impacts of delay through failure to disclose and compare cumulative emissions from its scenarios over time

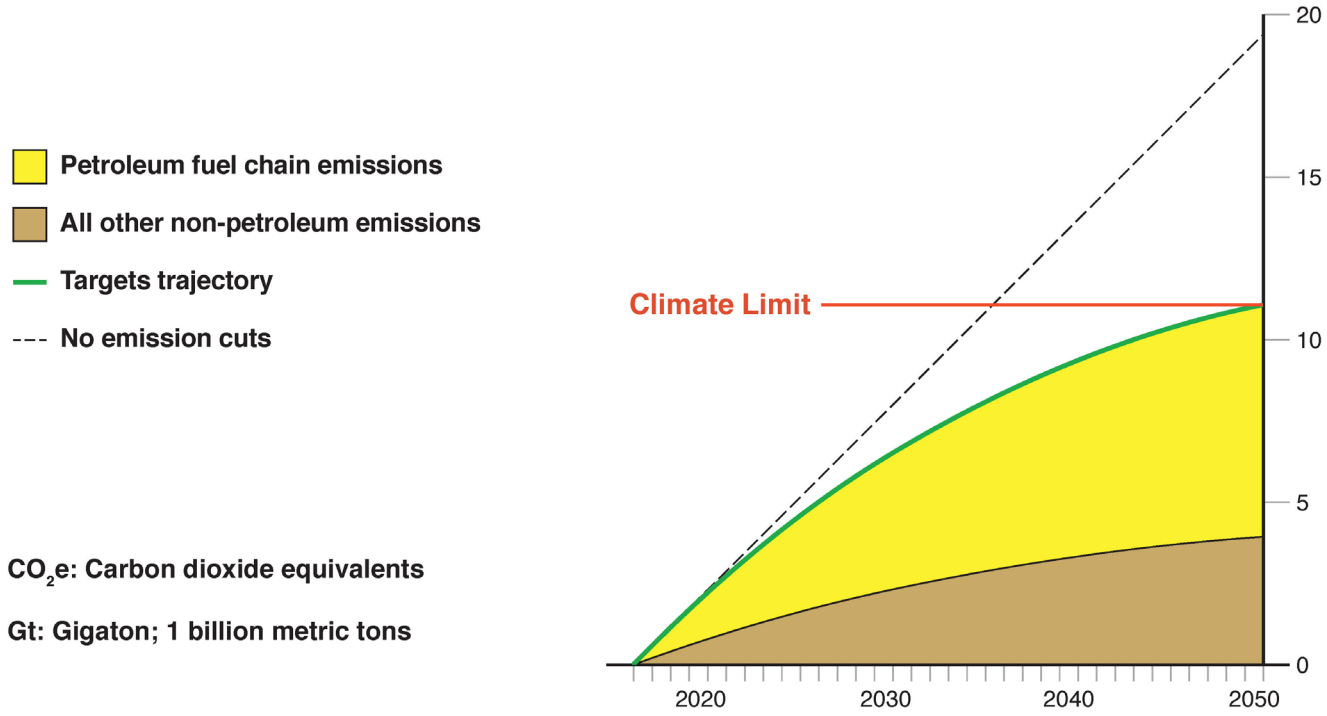
Emitted CO2 accumulates in the upper atmosphere, where it contributes to climate-forcing "greenhouse" impacts on the climate system for hundreds of years. Cumulative emission over time is a direct metric for climate effects of the Draft Scoping Plan. Annual emission snapshots are not. However, the Draft Scoping Plan presents analysis focused on snapshots of annual emission rates. This obscures climate impacts that could result from the Draft Scoping Plan.

First it obscures impacts of delayed emission cuts on climate. For example, the Draft Scoping Plan (Alternative 3) delays GHG emission cuts from replacing fossil fuels in vehicles, power plants and industry compared with Alternative 1. It presents Alternative 3 as resulting in equivalent GHG emission cuts to Alternative 1 between 2020 and 2045 (–355 MMT), based on its comparison of annual emissions between those two years.[80] Adding up the data for all years from 2020 through 2045, however, cumulative GHG emissions from the Draft Scoping Plan exceed those from Alternative 1 by »1,520 MMT, or »26 percent.[81] Sole focus on the annual emissions obscures a 1,520 MMT climate impact of delay that cumulative analysis reveals.

Second, focusing solely on annual emissions obscures impacts of delayed emission cuts on the feasibility of climate stabilization. In the example above it missed 1,520 MMT of cumulative emissions that are more feasible to prevent than to suck out of the air after the GHG emits. Both limiting the accumulation of GHG emissions to a climate-forcing impact of 1.5 to 2 °C global heating, and the feasibility of measures which could do that, have a timing component. Their timing and feasibility are interdependent. Quantifying this interdependence has been a central problem in CARB climate planning. Pairing technology pathways analysis with cumulative emission trajectories analysis can solve this problem.[82] Indeed, this inclusive data analysis method appears necessary to estimate the feasibility of climate pathways accurately.

Moreover, the Draft Scoping Plan does not disclose that the State's direct emission targets were developed and timed to limit cumulative emission at the State's share of global emission that is consistent with holding climate heating below 2 °C. Its direct emission targets define this climate limit. The targets seek continuous, proportionate annual cuts in direct emissions during three periods.[83] First, back to the emission rate in 1990 by 2020, then

40 percent below the 1990 rate by 2030, then 80 percent below the 1990 rate by 2050. Now we are past 2020, statewide emissions were close to that first target, and we have reliable and accurate emissions data representative of current pre-COVID conditions from 2013–2019[84] to assess the proportionate annual cuts to the 2030 and 2050 targets. With these cuts, a certain amount of CO2e will be emitted each year through 2050. The climate limit is simply the sum total of these proportionately declining annual emissions. See Chart 3.



3. State Climate Target: Cumulative emission limit through 2050 defined by state climate targets

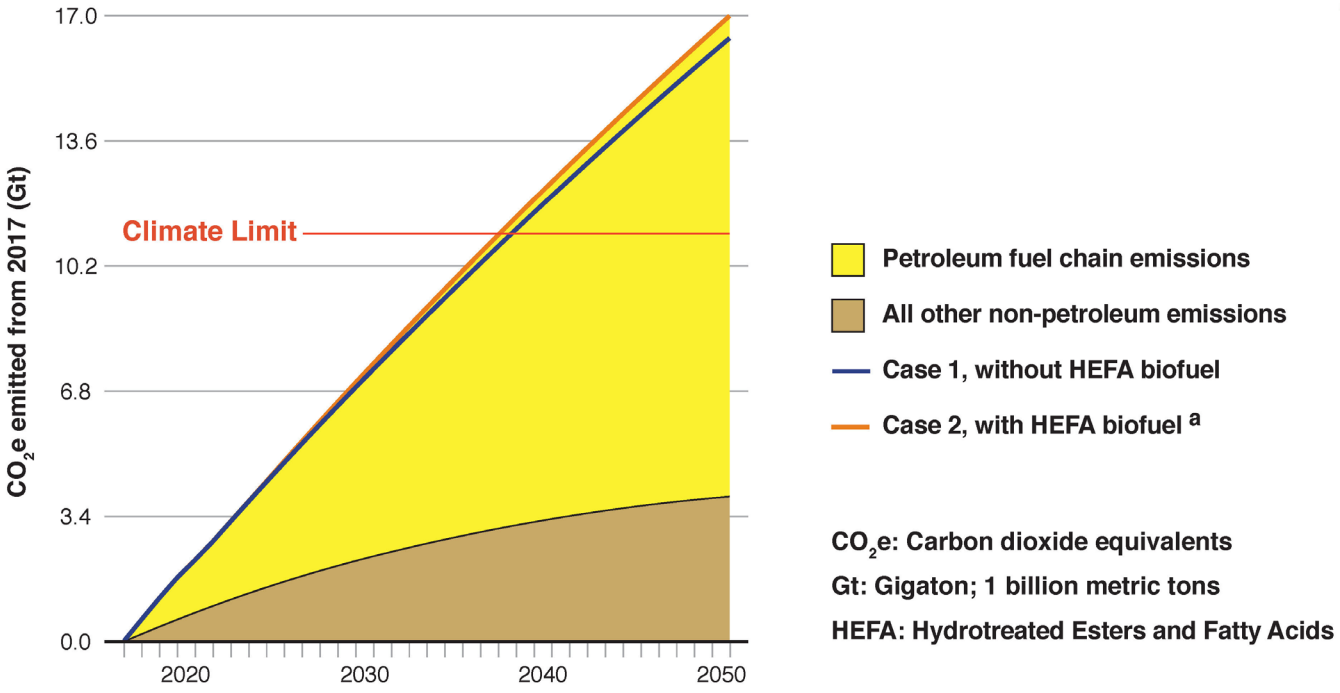
For data and details of methods see CEJA (2022) Supporting Material, esp. Table S9.

Chart 3 illustrates cumulative emission trajectories defined by State climate targets. The trajectories start with actual emissions as of 2017 based on high quality State and federal data.[85] Reduced emissions defined by the targets add to cumulative emissions in each subsequent year. The non-petroleum (brown shading), petroleum fuel chain (yellow shading), and total (green curve) trajectories bend downward because of these sustained emission cuts. The climate limit (red line) is the total emissions through 2050, approximately 11.1 gigatons (Gt) or 11,100 MMT. This cumulative emission limit is consistent with State's share of global emission reductions for a 67 percent chance of holding global heating to between 1.5 and 2.0 °C.[86]

3.2 Even if all other, non-petroleum emissions are cut to their share of the State direct emissions reduction goal, this goal cannot be achieved without petroleum refining rate cuts.

To assess potential climate impacts, CEJA compared cumulative emissions from the petroleum fuel chain linked to California refineries with the climate limit, along pathways without crude rate reductions. Uncut petroleum emissions would build up more than in the climate limit trajectory illustrated in Chart 3. But how much more? CARB did not say.

Chart 4 illustrates the potential for climate impacts from the petroleum fuel chain alone, by showing emissions associated with all other, non-petroleum activities statewide as they would appear if cuts to their share of the climate limit will be sustained along the entire path from 2017 through 2050. The "all other, non-petroleum" trajectory in Chart 4 is the same as its climate limit trajectory as illustrated in Chart 3 above (brown shading in both charts).



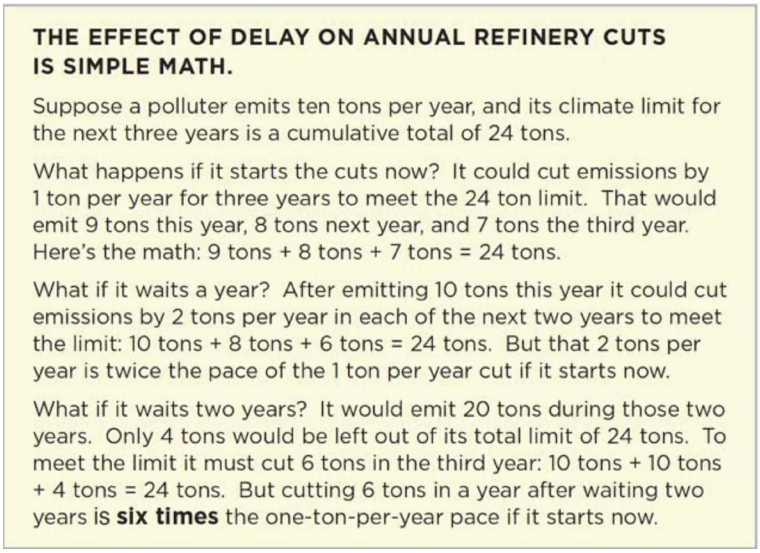
4. Cumulative emission along petroleum fuel chain pathways without refinery crude rate cuts.

Assumes all other non-petroleum emissions are cut to their share of the climate limit. (a) Without refinery crude rate cuts, Case 2 includes only crude-to-biofuel refinery conversions which would not reduce capacity to maintain current refining rates on all climate pathways. For data and details of methods see CEJA (2022) Supporting Material, tables S11, S12.1

Uncut petroleum fuel chain emissions without crude rate cuts (yellow shading) drive a dramatic buildup of total cumulative emissions (rising blue and orange curves) to exceed the climate limit (red horizontal line) by a wide margin before 2050. Pathways without crude rate cuts exceed the climate limit trajectory by 13 to 16 percent in 2030, irreversibly exceed the

2050 climate limit by 2038, and exceed the limit by 5,300 to 5,900 MMT, or 48 to 53 percent, by 2050.[87] That vast accumulation of climate forcing GHG would contribute to global climate heating significantly.

This climate protection failure would occur despite cutting all other non-petroleum emissions to their share of the climate limit. See Chart 4. It would occur despite falling in-state demand for petroleum fuels. See §§ 1 and 2 herein. Ongoing refiner efforts to protect their otherwise stranded assets and seek returns to scale by increasing refining for export across the global fuel chain in response to decreasing in-state demand would be among its proximate causes. Id. A root cause would be State failure, despite clearly foreseeable and significant local and global impacts of this emission shifting, to directly control and phase down petroleum refining in-state. By rejecting this measure the Draft Scoping Plan could result in this climate protection failure.



THE EFFECT OF DELAY ON ANNUAL REFINERY CUTS IS SIMPLE MATH.

Suppose a polluter emits ten tons per year, and its climate limit for the next three years is a cumulative total of 24 tons.

What happens if it starts the cuts now? It could cut emissions by 1 ton per year for three years to meet the 24 ton limit. That would emit 9 tons this year, 8 tons next year, and 7 tons the third year. Here's the math: 9 tons + 8 tons + 7 tons = 24 tons.

What if it waits a year? After emitting 10 tons this year it could cut emissions by 2 tons per year in each of the next two years to meet the limit: 10 tons + 8 tons + 6 tons = 24 tons. But that 2 tons per year is twice the pace of the 1 ton per year cut if it starts now.

What if it waits two years? It would emit 20 tons during those two years. Only 4 tons would be left out of its total limit of 24 tons. To meet the limit it must cut 6 tons in the third year: 10 tons + 10 tons + 4 tons = 24 tons. But cutting 6 tons in a year after waiting two years is **six times** the one-ton-per-year pace if it starts now.

Box: CBE (2020)

74 CEJA, Climate Pathways in an Oil State Prepared by Greg Karras. Feb 2022.
75 *Id*.
76 Executive Order B-55-18 to Achieve Carbon Neutrality Edmund G. Brown Sep 2018.
77 Mahone et al. Achieving Carbon Neutrality in California: PATHWAYS Scenarios Developed for the California Air Resources Board Energy and Environmental Economics. Oct 2020. See page 14.
78 See Cal. Health & Safety Code §§ 38560.5 (c), 38561 (a), (c), 38562 (a).
79 See Draft Scoping Plan comments of Julia May on behalf of the California Environmental Justice Alliance.
80 CARB AB32 GHG Inventory Sectors Modeling Data Spreadsheet (supra)
81 *Id*.
82 CBE (2020) *supra*; CEJA (2022) *supra*.
83 See CBE (2020) *supra*
84 CEJA (2022) *supra*, see Table S1.

[85] *Id*.
[86] CEJA (2022) *supra*, see tables S9, S10.
[87] CEJA (2022) *supra*, see table S11 and S12."

Response: As part of developing the 2022 Scoping Plan, CARB is required by statute to develop an actionable plan that lays out a cost-effective and technologically feasible path to ensure we meet the statewide GHG targets. In evaluating the feasibility of the scenarios (see Chapter 2 of the 2022 Scoping Plan), CARB staff considered technology readiness, costs for decarbonizing fuels and technology, and consumer adoption of new technologies or practices. The transition away from fossil fuels will require building large amounts of clean energy infrastructure, which can take a significant number of years from planning to construction, and which need to be in place before the switch to cleaner options can be made. Therefore, scenarios that rely on larger amounts of energy infrastructure build-out complemented by turnover of existing vehicles and appliances and other behavioral changes by consumers at a faster pace are inherently less feasible. Implementation of the 2022 Scoping Plan will reduce GHG emissions from AB 32 GHG Inventory source sectors 48 percent below 1990 levels by 2030, surpassing the statutory mandate of 40 percent below 1990 levels required by SB 32. The Scoping Plan Scenario results in California petroleum refining emissions of 4.5 MMTCO2e in 2045, a reduction of approximately 85 percent relative to 2022 levels that is in line with the decline in in-state finished fuel demand, which can be further reduced through application of CCS (94 percent).[99] If in-state refining is phased down to zero and the demand for the finished fuels persists, imported finished fuels may be needed to meet remaining in-state demand. The 2022 Scoping Plan Scenario results in at least 85 percent reduction in anthropogenic GHG emissions from 1990 levels by 2045, with carbon dioxide removal compensating for the remaining emissions in order to achieve net zero GHG emissions as required by AB 1279.

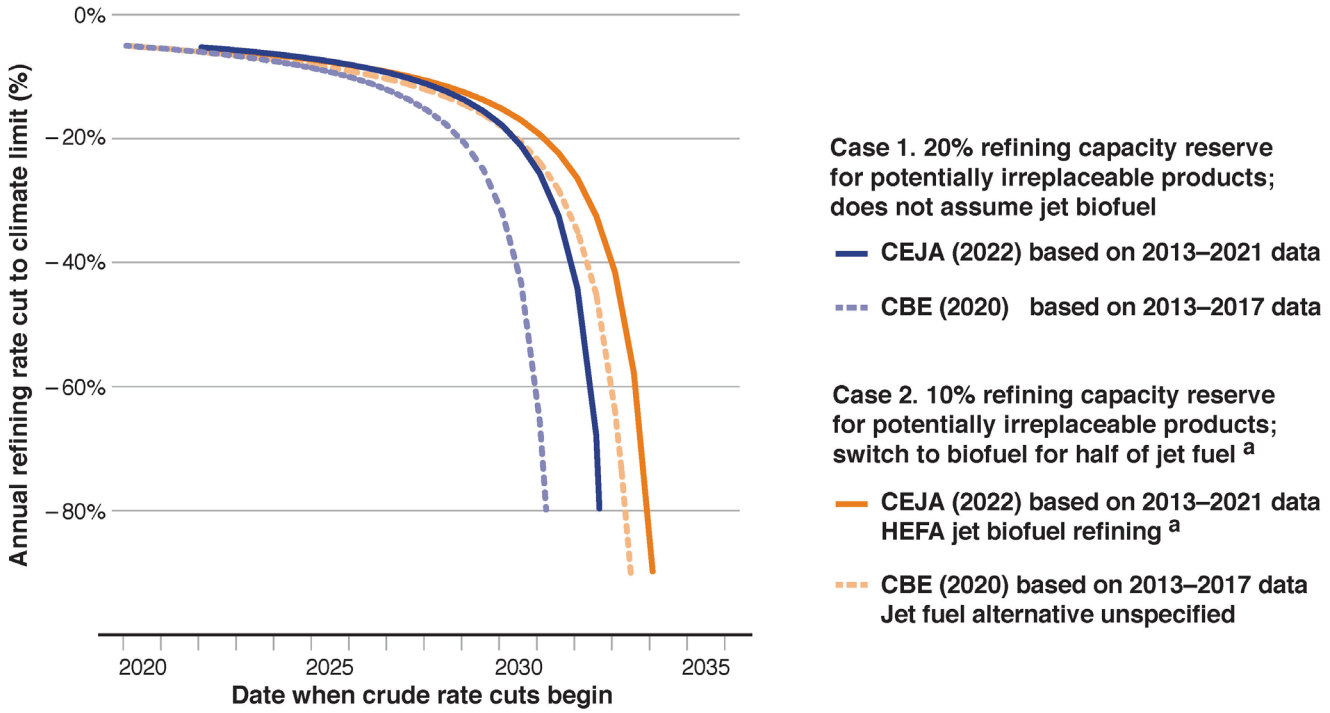
H152-8: The commenter states, "3.3 <u>By rejecting gradual implementation of direct refinery phase down measures that can be in effect before 2031, the Draft Scoping Plan could result in a significant climate impact through failure to include the "maximum feasible" measures, contrary to state climate law.</u>

Cuts to zero emissions "will not happen overnight."[88] Even with deep non-zero cuts, cumulative emission keeps rising, as shown for the "all other, non-petroleum" emissions in Chart 4. This shows waiting for emissions to approach the climate limit can delay action until it is too late.

Tipping points in the feasibility of meeting our climate limit, as measured by refining capacity lost annually along climate pathways, are different from tipping points in the climate system. Compared with the complexity and uncertainty of climate system tipping points, these feasibility tipping points are certain to occur with delay, and predictable based on simple math. See Box.

[99] This reduction in demand does not assume any need for ongoing operations to support exports to neighboring states.

Tipping points can be quantified based on available data[89] that CARB could have analyzed in its Draft Scoping Plan feasibility analysis. However, the Draft Scoping Plan fails to disclose clearly foreseeable tipping points in the feasibility of achieving State emission targets that are directly linked to the timing of refinery phase downs. Chart 5 illustrates the deeply diving downward curves of annual refining capacity losses that would be caused by delays in starting crude rate cuts along 91 pathways to the climate limit.



5. Effect of delay on annual refinery crude rate cuts to the State climate limit.

Assumes non-petroleum emission cuts to their share of the climate limit. (a) Case 2, in this report, assumes repurposing refining capacity lost along climate pathways with HEFA refining up to the 50/50 biofuel/petroleum jet fuel blending limit. HEFA: Hydrotreated esters and fatty acids; type of biofuel. For data and details of methods see CEJA (2022) Tables 11, 12.

Pathways to the climate limit that decommission refinery capacity gradually at five to seven percent per year (Chart 5, left) would be foreclosed by delaying the start date for sustained crude rate cuts in the petroleum fuel chain from left to right in the chart. Delay until 2032 (Case 1) or 2034 (Case 2) would force refining capacity losses of 80 to 90 percent in a single year to meet the climate limit (chart, right). That enormous increase in sudden statewide refinery closures, hence worsening of transition impacts, would substantially and irreversibly impair the social feasibility of meeting the State climate limit. But the tipping point would come sooner.

Tipping points for the feasibility of meeting the climate limit, after which delay drives these transition impacts over a cliff, from around 20 percent to 80 or 90 percent refinery capacity

losses per year to meet the limit, would arrive by 2031 at the latest (orange curve) and could trigger irreversible impairment of state climate limit feasibility by 2030 (blue curve).

Worse, it can take years from official proposal to actual enforcement of refinery emission cuts.[90] Refinery rulemaking to avoid the feasibility "cliff" illustrated in Chart 5 must start right away. The Draft Scoping Plan would delay direct refinery phase down measure rulemaking.

California climate law requires CARB climate measures and plans to achieve the "maximum feasible" GHG emission reductions.[91] Instead, the Draft Scoping Plan would reject planning for, and thereby foreclose via delay, a feasible measure that is needed to meet State GHG emission reduction targets and depends upon starting sooner for its feasibility. That would appear contrary to State climate law and could result in a significant climate impact.

[88] CARB itself makes this point. See Draft Scoping Plan at pages vii, 78, 152.
[89] See CEJA (2022) *supra*. Charts 3, 4 and 5 and discussions of them herein draw on exhaustive analysis of high-quality primary data from CARB and other State and federal agencies in CBE (2020) *supra* and CEJA (2022) *supra*, which updates the CBE (2020) analysis to include more recent new and revised data. The Box above is from CBE.
[90] CEJA (2022) *supra*, page 15.
[91] Cal. Health & Safety Code §§ 38560.5 (c), 38561 (a), (c), 38562 (a)."

Response: The comment appears to be directed at the 2022 Scoping Plan document, and raises policy-related concerns rather than potential adverse environmental impacts resulting from the 2022 Scoping Plan. Oil and gas demand, and associated refinery-related production and emissions, would decrease relative to the environmental setting. For more information regarding emission reductions at refineries, please refer to response to comment H152-7 regarding scenario feasibility and corresponding fossil fuel reductions from refineries, as well as the accelerated 2030 target, in the Scoping Plan Scenario. Please also refer to Master Response 6 regarding refinery production related considerations.

H152-9: The commenter states, "3.4 Significant air quality, health, and environmental justice impacts could result from the failure of the Draft Scoping Plan to include a direct refining phase down measure.

As shown throughout this report, climate, air quality and health impacts that could result from the Draft Scoping Plan are linked to increased refining for export and could be lessened or avoided by a feasible measure to phase down oil refining. This measure, facility-level direct standards expressed as refinery throughput that decline over time, was further shown to be justified on an air quality and environmental health basis, which further supports its feasibility. This subsection (3.4) incorporates §§ 1.3, 1.5, 2.3, 2.5 herein by reference and further supports that measure.

Low income Black and Brown populations in California communities that host refineries have long been shown92 to face disparately worsened exposures to harmful refinery emissions of CO2e co-pollutants, such as particulate matter, nitrogen oxides, sulfur oxides, and other criteria and toxic air pollutants. Doubling down on this toxic racism, a substantial and

potentially growing portion of that disparately severe exposure is being caused by refining for export of fuels that Californians do not need or use.[93]

The same refinery-specific direct control measures needed to reduce crude rates before our most feasible pathways to the State climate limit are foreclosed would reduce these emissions from refineries as well. These direct control measures would benefit environmental justice communities, further enhancing the feasibility of least-impact pathways to the climate limit. Conversely, further delaying them would prolong and worsen an acute social injustice in California communities that host refineries, further impairing the feasibility of delayed action pathways to the climate limit. For example, consider Table 4.

Table 4. Refining for export community emission impacts avoidable by the least-impact climate pathway starting crude rate reductions in January 2023

t (ton): metric ton **Mt (Megaton):** 1 million tons **No CCR:** no crude rate reduction

	CO_2e emitted by refining for export (Mt/y) [a]			Co-pollutant emissions from refining for export (t/y) [b]			
Year	No CRR	Climate path	Export refining	PM	NOx	SOx	Subtotal
2022	35.64	35.64	0.00	0	0	0	0
2023	35.64	33.58	2.06	129	457	263	848
2025	35.64	29.81	5.83	364	1,290	744	2,400
2030	35.64	22.13	13.51	843	3,000	1,720	5,560
2035	35.64	16.43	19.21	1,200	4,260	2,450	7,910
2040	35.64	12.20	23.44	1,460	5,200	2,990	9,650
2045	35.64	9.06	26.58	1,660	5,900	3,390	10,900
2050	35.64	7.14	28.50	1,780	6,330	3,630	11,700

PM: particulate matter; PM10 including PM2.5 **NOx:** oxides of nitrogen **SOx:** oxides of sulfur

a. CO_2e emissions from refining for export without crude rate cuts are the difference of No CRR and climate path emissions from the least-impact pathway starting CRR in Jan 2023. **b.** CO_2e co-pollutant emissions from refining for export were based on co-emission factors (e.g., t PM/Mt CO_2e) derived from state refinery emissions data. For data and details of methods see CEJA (2022) tables S11, S13. The table shows only new, post-2022, refining for export impacts. Table adapted from CEJA (2022). Figures may not add due to rounding.

Compared with the least-impact climate pathway, in which direct measures launch a gradual phase down of refining in 2023, delaying the phase-down start date could foreclose annual criteria air pollution cuts from statewide refineries of approximately 5,560 metric tons by 2030, 9,650 tons by 2040, and 11,700 tons by 2050 from refining for export alone. Table 4.[94] Applying enhanced direct throughput reduction standards to California refineries is therefore strongly supported on the basis of need, authority and obligation to cure air quality, health, and equity impacts in communities in the shadows of refinery emission stacks.

But despite the consequent climate impacts and emission shifting contrary to State climate law,[95] the Draft Scoping Plan proposes to reject this feasible, needed climate and health measure. This proposed action would arbitrarily expose disparately pollutant-burdened communities to more harmful air pollution, to which people in communities near refineries would be exposed routinely and episodically for an unnecessarily prolonged period. The Draft Scoping Plan could thus result in significant air quality and environmental health impacts.

This evidence further supports refinery-specific phase down standards for climate justice.

[92] Pastor et al. Minding the Climate Gap: What's at stake if California's climate law isn't done right and right away U. Cal. Berkeley and U. Southern California. Apr 2010.
[93] See §§ 1.1, 1.2, 1.3 and 3.2 herein.
[94] Table 4 was adapted from CEJA (2022), *supra*
[95] See §§ 1.4, 2.1, 2.2, 2.4, 3.2 and 3.3 herein."

Response: The 2022 Scoping Plan leverages traditional air quality policies to achieve both GHG and air pollutant emissions reductions and public health benefits, with a focus on significant reductions in fossil fuel combustion emissions, while minimizing the risk of abrupt impacts on Californians in terms of higher energy prices, higher technology costs, and larger employment impacts. Please see response to comment H152-2 regarding the long term beneficial operational impacts to air quality and public health reasonably foreseeable from implementation of the 2022 Scoping Plan. The remainder of the comment does not raise additional significant environmental issues related to the First Draft EA. No changes to the First Draft EA are required in response to this comment.

H152-10: The commenter states, "3.5 <u>The Environmental Assessment (EA) is factually incomplete.</u>

California's Final Scoping Plan can apply throughput standards to phase down refineries before the rising carbon flow through their combustion fuel chain overwhelms its all-source emission reduction targets, further poisons nearby Black and Brown communities, and blows through our share of cumulative global GHG emission to hold climate heating below 2 °C. This measure is feasible given the gradual refining phase down schedule that is still available now, and appears essential to ensure statewide all-source emission targets can be met. Instead, the Draft Scoping Plan would exempt refineries from this measure now, while there is still time for gradual refinery phase downs, and could thereby foreclose this now-feasible measure through delay.[96]

The EA does not identify, describe, assess, or analyze feasible mitigation for air quality, health, or climate impacts associated with foreclosing feasible refining rate reductions through delay. which could result from the Draft Scoping Plan.

[96] As stated, CARB's rationale for this oil industry exemption fails on the facts. Refiners have not phased down in line with in-state petroleum demand; they increased production on increased exports across the Pacific Rim. Diesel biofuel did not replace or reduce

petroleum distillate refining or combustion; refiners exported petroleum distillate and boosted its production. Refining is not a separate, small, or fungible part of the statewide GHG equation; it enables fuel chain carbon flow that emits more than half of total statewide GHG. There is no evidence for rejecting a proven measure like refining rate control based on the presumed cost-effectiveness of an unproven measure like carbon capture and storage; cost "effectiveness" of unproven measures cannot be known until they prove effective. It is not valid to compare climate effects of deploying different arrays of measures over time ("scenarios," "trajectories" or "pathways") based on annual emissions in their final year alone; the pathway that delays measures may cut to the same emission rate in that final year but emit much more along the way—and cumulative emissions over time, not 'blips' in any one year, drive climate heating. This list of relevant errors and omissions in the Draft Scoping Plan and EA is not necessarily exhaustive."

Response: Please refer to responses to comments H152-2, H152-3, and H152-7.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H162

6/23/2022 Irena Asmundson

H162-1: The commenter states, "Second, the report should include the impacts of embodied carbon in the carbon neutrality calculation, as California would severely undercount our carbon impacts if we continue to omit consumption but count sequestration. When working towards 1990 emissions, it was appropriate to focus purely on the emission side. But when working towards carbon neutrality, all impacts on the carbon cycle - positive and negative - need to be included. As the 5th largest economy in the world, the 40 million people in California consume much more per capita than India, which has a smaller GDP but 1.4 billion people. To identify problems that scale globally, we must include the embodied carbon of all the new electric vehicles and other goods we buy, even if they were produced elsewhere. This will make our path to carbon neutrality much more difficult, and likely makes a 2045 date more realistic. But if we are committed to the principle of leadership and doing our part, including embodied carbon is necessary."

Response: Please refer to response to comment 356-2 for a discussion about embedded carbon in products, also known as life-cycle emissions.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H163

6/23/2022 Jennifer Normoyle

H163-1: The commenter states, "The Draft 2022 Scoping Plan does not support or facilitate carbon dioxide sequestration by forests, and the need for this is more significant than ever. The current plan not only removes more carbon but also enhances our forests' flammability and puts people and property at greater risk."

Response: The 2022 Scoping Plan contains proposed forest, shrubland, and grassland management measures that would avoid catastrophic forest fire, in line with other State Programs including the California Vegetation Treatment Management Plan. The comment does not provide evidence to support comments related to carbon removal, increased forest flammability, and increased property risk, and CARB disagrees with these contentions. No further response can be provided.

H163-2: The commenter states, "Other than when performed within 100 feet of homes and structures for defensible space or for the maintenance of evacuation routes, the harms of thinning outweigh the benefits. In wildfires, only roughly 3% of the un-thinned forest burns@. In other words, most thinning only results in more greenhouse gas emissions than would be created by wildfires."

Response: The commenter does not provide a reference for their claim that "only roughly 3% of the un-thinned forest burns". The details of the NWL analysis, including wildfire consumption and emissions, are found in Appendix I. The biogeochemical model used in the analysis of forests, shrublands, and grasslands produced estimates of biomass, and therefore carbon, consumed from wildfires in each year of the simulation. The model was calibrated using flux towers, remote sensing products, relevant literature. These estimates of consumption are in line with historical data from CARBs wildfire emissions Inventory as well as existing literature that predicts climate change will increase wildfire activity. The estimates are based on biogeochemical, hydrologic, fire behavior, and fuel modeling. The literature synthesis performed by CARB staff in Appendix I concludes that certain forest management actions, such as thinning, can reduce loss of live tree carbon after subsequent fire compared to untreated sites. This is also in line with expert feedback CARB received during the NWL analysis. No changes to the First Draft EA are needed in response to this comment.

H163-3: The commenter states, "Further, the best available data indicates that fuel reduction does not reduce fire intensity and harms forest resiliency."

Response: Please refer to response to comment H163-2.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H168

6/23/2022 Susan Lessin

H168-1: The commenter states, "The preferred NWL alternative 3 calls for more forest thinning as the only forest related action. Thinning will result in more GHG emissions. Thinning removes far more carbon than if all the thinned areas burned. If there were a fire, only approximately 3% of the tree carbon burns."

Response: Please refer to response to comment H163-1.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H174

6/23/2022 Kristen Lee

H174-1: The commenter states, "Protecting large trees - even the burned ones - helps to keep carbon in the forests for years to come, while supporting natural re-growth, providing habitat for wildlife, and nurturing biodiversity.

Removing larger, older trees in post-fire "salvage" logging and clear-cutting releases carbon quickly into the atmosphere, while reducing the forest's ability to regenerate naturally. Fires only destroy a small percentage of the burned trees carbon per this recent research on forest fire impact on carbon storage in trees: https://today.oregonstate.edu/news/huge-forest-fires-don%E2%80%99t-cause-living-trees-release-much-carbon-osu-research-shows

Thinning in forests equates to logging and removes carbon quickly while not actually decreasing the chance of wildfire. Thinning and logging our forests will hurt our climate rather than helping it. We need to keep trees in the forest rather than logging them. Please see a relevant scientific opinion here: https://www.fresnobee.com/opinion/op-ed/article262634247.html"

Response: CARB disagrees with the commenter's claim that the 2022 Scoping Plans forest management and wildfire reduction related aspects would lead to a net increase in GHG. As discussed in the 2022 Scoping Plan and its appendices, CARB has determined that these actions would help the state achieve the GHG reduction goals set forth in the 2022 Scoping Plan. For NWL, the 2022 Scoping Plan is projected to achieve emissions reductions relative to the Reference Scenario as well as Alternative 1. Under Alternative 1, no forest management was implemented. The modeling projected that Alternative 1 results in increased emissions relative to the Scoping Plan Scenario, primarily due to losses from wildfire. The article noted

in the comment is subscription only and was not provided with the comment, therefore we could not evaluate it.

CARB staff would like to note that the management strategies discussed in the 2022 Scoping Plan are intended to improve forest health and resilience, including protecting the large trees as the commenter states. None of the management strategies included in the 2022 Scoping Plan exclusively target removal of large trees. Salvage logging is not a management strategy included in the 2022 Scoping Plan. While clearcutting is included, the acres of clearcutting are not increased in the 2022 Scoping Plan from the Reference Scenario. The details of the NWL analysis, including wildfire consumption and emissions, are found in Appendix I. The literature synthesis performed by CARB staff in Appendix I concludes that certain forest management actions, such as thinning, can reduce loss of live tree carbon after subsequent fire compared to untreated sites. This is also in line with expert feedback CARB received during the NWL analysis. Through the literature synthesis, CARB has relied on the best available science and conducted robust modeling that incorporated the latest science (see Appendix I for details). Indeed, the results of the NWL analysis agree with published literature as discussed in Chapter 2.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H185

6/24/2022 Noah Garcia, Advanced Energy Economy

H185-1: The commenter states, "First, AEE recommends that CARB update its Draft Scoping Plan in a manner that clearly articulates a vision for achieving 40 percent GHG emission reductions from 1990 levels by 2030 pursuant to Senate Bill (SB) 32. Prioritizing near-term GHG emission reductions using readily available technologies is foundational for achieving statutory climate goals and positioning California to achieve carbon neutrality by 2045 or earlier. However, the Scoping Plan provides a limited view of how California is expected to achieve its 2030 goal of reducing annual emissions below 259 million tons of CO2 equivalent (CO2e). Recent analysis from Energy Innovation finds that, to meet California's SB 32 goals and remain on a path to carbon neutrality by 2045, the state's annual GHG reduction rate would have to more than triple from current levels.1 Regrettably, the Draft Scoping Plan does not appear to provide detailed recommendations or a pathway for achieving this accelerated level of GHG emission reductions by 2030. Instead, the Draft Scoping Plan asserts that "non-Cap-and-Trade Program policies could potentially reduce the state's GHG emissions to 304 MMTCO2e in 2030…leaving Cap-and-Trade to potentially deliver 44 MMTCO2e that same year."[2] The Draft Scoping Plan also states CARB will assess in 2023, after the Draft Scoping Plan is finalized, whether California's cap-and-trade program needs to be updated to achieve its 2030 goals.[3]

Put simply, the Draft Scoping Plan appears to provide little information on how existing sector-based and industrial policies would reduce California's annual GHG emissions to 304 MMT CO2e in 2030, and suggests that California's signature cap-and-trade program may not currently be designed to yield the additional emissions reductions necessary to achieve SB 32 targets. To rectify this situation, AEE respectfully requests that CARB modify its Scoping Plan to clearly identify a pathway (or pathways) by which California can maximize cost-effective GHG reductions in accordance with SB 32 requirements and provide greater clarity on any potential cap-and-trade program modifications that are necessary to achieve California's 2030 climate goals. California cannot afford to wait until the next Scoping Plan cycle to address these issues, and more aggressive near-term policy action will ultimately put the state on a more sustainable path to deep decarbonization.

[2] Emphasis added. Draft Scoping Plan at 90.
[3] *Id*. at 87."

Response: Please refer to Master Response 5 regarding modeling considerations used in developing and refining the Scoping Plan's Proposed Scenario. This comment does not raise any specific environmental issues related to the First Draft EA, nor does it address the accuracy, adequacy, or completeness of the First Draft EA. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H186

6/24/2022 Katharine Larson, Southern California Public Power Authority

H186-1: The commenter states, "**b. Additional analysis is needed to understand impacts on electricity reliability and affordability**

SCPPA believes that, based on the information currently available, Alternative 3 is the least likely to create unintended consequences for grid reliability and electricity affordability while still achieving the state's clean energy and economywide decarbonization goals. As such, Alternative 3 appears to represent an implementable statewide path to carbon neutrality. SCPPA cautions, however, that these assessments are based on incomplete information. First, the draft SPU's modeling fails to account for the significant energy needs for electrolysis to produce green hydrogen and for engineered carbon removal, meaning the estimated load increase associated with Alternative 3 is likely a severe underestimate. In addition, rigorous analyses of system and local grid reliability and electricity affordability are currently missing from the draft SPU and the state's other long-term planning processes. The final SPU must acknowledge the need for these additional analyses, the importance of which is summarized below.

- Systemwide reliability analysis. As SCPPA and the JUG have explained in prior comments, the SB 100 resource portfolio underpinning Alternative 3 has not been studied for systemwide reliability impacts.[9] Understanding the impacts to system reliability is necessary because the path to carbon neutrality depends on reliable electricity sources. In addition, based on the AB 32 GHG Inventory Modeling Data Spreadsheet, the electric load in Alternative 3 would exceed the "high electrification" demand used to model the SB 100 core scenario without factoring in electricity needs for hydrogen production and engineered carbon removal. While these are currently assumed to be powered by unmodeled off-grid renewables, they should be addressed in modeling to fully assess the potential load growth associated with Alternative 3.

The question of systemwide reliability is not a hypothetical issue. In August 2020, during a West-wide extreme heat wave, the state suffered rotating blackouts.[10] Last summer, high temperatures, coupled with unreliable transmission for Northwest imports due to the Bootleg Fire, nearly destabilized the California Independent System Operator (CAISO) system. These conditions led Governor Newsom to issue an emergency proclamation that, among other orders, suspended air quality regulations on backup generators during CAISO grid warning or emergency notices.[11]

Reliability concerns persist today, even before factoring in the increased load in a high electrification scenario. Concurrent with the release of the draft SPU, leaders from the state energy agencies announced the need for potentially significant contingencies this summer during net peak hours under extreme conditions to avoid blackouts. In response, Governor Newsom proposed $5.2 billion in his revised budget for a "strategic electricity reliability reserve," which could include existing generation capacity that is scheduled to retire as well as new diesel and natural gas backup generators, among other resources.[12] At a subsequent workshop, California Energy Commission (CEC) and California Independent System Operator (CAISO) staff projected that reliability concerns during late summer net peak hours will persist at least through summer 2026.[13]

[9] See November 19, 2021 JUG comment letter; October 22, 2021 joint POU comment letter; and September 3, 2021 joint POU comment letter.
[10] Final Root Cause Analysis of Mid-August 2020 Extreme Heat Wave.
[11] July 30, 2021 Emergency Proclamation
[12] Refer to May Revise Summary, https://www.ebudget.ca.gov/2022-23/pdf/Revised/BudgetSummary/FullBudgetSummary.pdf
[13] Refer to CEC slides and CAISO slides from May 20, 2022 CEC reliability workshop."

Response: Please refer to response to comment 574-1**.** The reasonably foreseeable compliances responses and impacts associated with solar resources, hydrogen production, and CDR are described in the First Draft EA. The remainder of this comment speaks to the need to better understand electric system reliability and customer affordability challenges as the state transitions to a clean electricity grid, and does not specifically speak to the adequacy, accuracy, or completeness of the First Draft EA. No further response and no changes to First Draft EA are required.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H210

6/24/2022 Central Valley Defenders of Clean Air and Water

H210-1: The commenter states, "For these reasons, we are alarmed by what is in the Draft Scoping Plan. There is no discussion of directly regulating these dairies. Instead, CARB claims that dairy herds need to be more concentrated and that dairies will need to install 380 more digesters to meet California's methane emission goals. This is a decision being made by the state to put industry profits over our health and the health of the planet:

> The dairies only want to continue to grow their business and their money so they will want to continue growing their herd sizes to get more money. That means more contamination for my community. We are tired that you do not take us into consideration. We have the right to live with clean air and clean water. You do not understand that you are sacrificing my community for the dairy's economic benefit.
> – Minerva Contreras, Lamont
>
> They're thinking of turning cow manure into fuel. In order for them to do that and be profitable, they would need more cows. and I think that's what they're trying to do. More cows equals more nitrates and more odor sifting through our town.
> – David Rodriguez, Planada

For these reasons, we call on the Board to reject the Draft Scoping Plan's proposal to increase dairy digesters and gas from manure. In order to protect our communities and the planet, CARB must take seriously the impact that these industrial dairies have on our communities. CARB must stop supporting the concentration of dairy herds in our communities and focus on real solutions that prevent greenhouse gases and pollution from being released into our environment to begin with. We need CARB to directly regulate emissions coming from these dairies to ensure our communities are protected and, at the same time, ensure the largest source of methane in California is directly reduced to prevent the worst impacts from climate change."

Response: This comment raises environmental issues associated with anaerobic digesters at dairy operations with limited relevance to the First Draft EA. The comment asserts that the 2022 Scoping Plan insufficiently discusses regulation of dairy and livestock facilities and which could have an implied impact on the integrity of the First Draft EA. The First Draft EA analyzes the potential impacts of known reasonably foreseeable compliance responses for methane reduction, which are expected to be similar in both regulatory and non-regulatory contexts. The comment asserts that the design of the 2022 Scoping Plan will lead to herd expansion and additional resultant environmental impacts. Established facility consolidation

and animal population decline trends do not support this assertion. CARB's SB 1383 analysis discusses the industry factors and trends that show a likely continuing livestock herd population decrease into the future.[100]

The remainder of this comment does not raise significant dairy and livestock specific environmental issues related to the First Draft EA, nor does it otherwise address the accuracy, adequacy, or completeness of the First Draft EA for this sector. Therefore, no dairy and livestock specific changes to the First Draft EA are required in response to this comment. Please also refer to response to comment 177-6.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H212

6/24/2022 Frank Harris, California Municipal Utilities Association

H212-1: The commenter states, "what the California Public Utilities Commission has deemed an affordability crisis.1 Grid reliability and stability will be critical to continued growth of the economy and well-being of all Californians. Electricity reliability will also be an important factor in ongoing public support for California's decarbonization goals. As highlighted throughout the development of the Draft SPU, electrification is a key strategy for decarbonizing the state's economy. All four alternatives addressed in the Draft SPU include significant increases in electricity demand as multiple sectors of the economy decarbonize by electrifying buildings, transportation, and industrial processes and reducing reliance on fossil fuels. The success of this strategy will depend on maintaining essential public services, including reliable and affordable electric, water, and waste water services, and continuing to foster job and economic opportunities throughout the state."

Response: Please refer to response to comment 574-1

H212-2: The commenter states, "The Draft SPU specifically notes that ensuring reliability of a decarbonized grid is a critical need for the state, (see p. 224.) and acknowledges the necessity of exploring options for meeting reliability needs. However, the Draft SPU does not include a reliability assessment for any of the studied scenarios, including the proposed scenario, nor does the Draft SPU acknowledge that reliability assessments have not yet been completed for the SB 100 resources portfolios that underpin each of the four carbon neutrality alternatives. While hydroelectric generation is a valuable source of clean generation, in the face of the ongoing draught in the west, a reliability assessment is further

[100] See, e.g., CARB Analysis of Progress Toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target (March 2022) at 10-11. Available at https://ww2.arb.ca.gov/sites/default/files/2022-03/final-dairy-livestock-SB1383-analysis.pdf.

warranted. Without addressing reliability risks, the SPU cannot serve its primary function as a comprehensive, statewide roadmap to meeting our decarbonization goals."

Response: Please refer to response to comment 574-1

H212-3: The commenter states, "Like ensuring reliability, affordability of electricity must be a priority element of the SPU. The Legislative Analyst's Office (LAO) has warned that "High electric rates discourage adoption of some technologies — such as electric vehicles and electric appliances — that could be used to substantially reduce statewide GHGs."2 The LAO report also concluded that policies that result in increased cost burden on electricity consumers could stifle California's electrification and clean energy goals. An implementable path to carbon neutrality must recognize and mitigate any adverse impacts on electricity affordability and electric grid reliability; to do so, the SPU must include a comprehensive assessment of how the proposed scenario impacts both."

Response: Please refer to response to comment 574-1

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H217

6/24/2022 Madlen Saddik

H217-1: The commenter states, "For many years, California's legislature and its three most recent governors have espoused the goal of making California a global leader in achieving GHG reductions in ways that benefit rather than harm California's citizens, its businesses and its economy. California will not meet this goal if CARB continues to ignore the extra-jurisdictional implications of its regulatory actions. The Update shows that CARB continues to view its legislative directive myopically and without regard to California's relative position both nationally and worldwide.

CARB's general failure in this regard can best be understood by examining two particular shortcomings in CARB's analyses put forth in the Update. The first is the fact that the Update analysis is limited to only those activities that take place physically within California's borders (excepting only the production of electricity imported into the state for in-state consumption) when considering the GHG impacts of citizens' lives and industry throughout California. (See Update, p. 34.) Any and all other activity which is located and transpires in any other relatively GHG-intensive state or nation is ignored in CARB's analyses. **As a consequence, CARB's approach is to impose increasingly on activities and industry occurring in California in ways that cause the actors and industries to either move or keep their operations outside of California (i.e., to move or keep all such activities in other states and nations, which in most cases leads to more harmful GHG impacts).**

An example is CARB's proposed regulation of cement production within California. Whereas CARB proposes an eventual standard of GHG neutrality on such in-state cement production irrespective of the costs, CARB blindly welcomes the importation of cement into California even though it may be produced in Asia using the worst possible GHG causing production methods. From CARB's point of view, it does not matter if the cement produced in California was already the world's most GHG efficient cement. If GHG-intensive imported cement could be moved about within California to its ultimate destination by means of a GHG-free vehicle, then CARB will assume that such imported cement has no GHG associated with its production, application and consumption in California.

Because CARB ignores extra-jurisdictional GHG emissions (except from electricity production), CARB's approach is irrational in relation to the State's legitimate governmental interest in reducing GHG and its worldwide impacts. In other words, CARB has chosen to make intra-state GHG betterment the direct enemy of *global* GHG betterment – even though global climate change caused by GHG is unarguably a global problem that can best be addressed only when it is considered at a global scale."

Response: Please refer to response to comment 639-1.

H217-2: The commenter states, "First, CARB proposes policy changes under the California Environmental Quality Act ("CEQA"), which requires deciding agencies (usually local governments) to study impacts and impose mitigation requirements when approving projects and land use plans. CARB's CEQA proposals would strongly disfavor all but relatively high-density (e.g., at least 20 units per acre), central urban, mass transit-oriented development and redevelopment. The aim and effect of such policies is to disfavor, prejudice and relatively burden all other types of development (lower density communities and redevelopment projects, suburban development, "edge" development, "new towns," and the like). (See Update pp. 195-206 and Appendices D and F.). Some of CARB's recommended CEQA changes have nothing to do with air quality and GHG (i.e., within CARB's purview and relative expertise), such as CARB's proposed CEQA exemption for projects that contain at least 20% subsidized housing and meet certain labor standards. Although BizFed's members have long advocated for CEQA reform, CARB should not be championing CEQA reform that would undercut local governments' prerogatives and disfavor many reasonable types of development which are (i) needed in substantially greater quantity, (ii) most affordable, and (iii) popular with California's consumers."

Response: The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the Draft EA. Nevertheless, CARB staff notes that the 2022 Scoping Plan and Local Actions Appendix D indicates the key attributes that help to meet the goal of reducing VMT, as evidence shows that infill and transit-supportive development supported by other attributes listed in the Local Actions Appendix D can reduce VMT via less trips and shorter trip lengths. Language has been added to the last paragraph under heading "Project Attributes for Residential Projects that Reduce GHGs" in Section 3.2 of Appendix D to indicate the project attributes may not be applicable to all residential and mixed-use projects. In addition, CARB will continue to explore additional project attributes, as appropriate.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H220

6/24/2022 Karl Aldinger

H220-1: The commenter states, "This scoping plan intentionally ignores Life Cycle Assessment to avoid double counting of emissions.

This is a very dangerous methodology that allows long range, luxury cars SUVs and trucks to be called zero emissions. The very significant impact of EVs, will largely be from materials mining and production emissions.

According to Volvo's own Impact report its electric C40 Recharge still has 27 tons of emissions even if it is always charged with 100% renewable energy. But those embodied emissions occur elsewhere, so CARB has been and will continue to label EVs erroneously as zero emissions. Reducing emissions by only 54% with EVs is not what any of us expected.

That model is completely unsustainable in 2050 under zero carbon. We cannot ignore the impacts a constantly replaced EV fleet will continually demand, perpetually."

Response: Please refer to response to comment 356-4 for a discussion about embedded carbon in products, also known as life-cycle emissions.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H236

6/24/2022 Jennifer Hernandez

H236-1: The commenter states, "1. The Draft Scoping Plan includes scores of "Measures" and "Actions" which collectively comprise the Scoping Plan, each and all of which are expressly acknowledged to be the discretionary agency action by CARB that comprises the whole of the Scoping Plan "project" required to be evaluated under the California Environmental Quality Act."

Response: The comment provides a statement regarding the 2022 Scoping Plan and its measures and actions comprise the project, which is required to be evaluated under CEQA. The First Draft EA adequately addresses the whole of the action in a programmatic fashion,

including the reasonably foreseeable compliance responses associated with implementation of the 2022 Scoping Plan. No changes to the First Draft EA are required in response to this comment.

H236-2: The commenter states: "the Scoping Plan requires that Vehicle Miles Travelled ("VMT") be reduced 22% (actually revealed in Appendix C and other documents as 30%), even though CARB also mandates the transition to electric passenger vehicles (among other measures). The Scoping Plan acknowledges that all prior VMT reduction measures have failed (including the 2017 Scoping Plan's 15% reduction mandate, and VMT reduction targets established under SB 375 in regional transportation plans and sustainable communities strategies). The Scoping Plan further acknowledges that VMT continued to increase until the pandemic and has since largely rebounded to pre-pandemic levels. Although VMT reduction mandates had failed and, as the Scoping Plan also acknowledges, VMT deficiencies are a potent anti-housing tool used in two-thirds of anti-housing CEQA lawsuits, and despite the fact that CARB's files are replete with VMT mitigation fee schemes imposed under CEQA to add tens of thousands to more than a million dollars in fees for each new home or apartment located more than 0.5 miles away from a high frequency bus stop or train station, the Scoping Plan nevertheless doubles the mandated statewide VMT reduction measure from 15% to 30%."

Response: The comment provides an opinion regarding the increased VMT reduction measures suggesting that VMT reduction mandates represent an anti-housing tool used in CEQA lawsuits which increase fees for new homes located outside of transit rich areas. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the Draft EA and no further response is required. CARB strongly disagrees with these comments, which have been misleadingly levied by this commenter in multiple venues. CARB notes in particular that there is no VMT reduction mandate in the 2022 Scoping Plan; as described in the EA, the VMT-related provisions provide guidance to other state agencies with authority over land use development. Furthermore, there is no such thing as a CARB-developed "VMT mitigation fee scheme imposed under CEQA", or any other fee component in the Scoping Plan relating to VMT. No changes to the First Draft EA are required in response to this letter.

H236-3: The commenter states, "5. Housing Measures. The Scoping Plan also includes dozens of measures prescribing where and what type of housing should be built in the future, ranging from (a) expert agency conclusions that translate directly into increasing the weaponization of CEQA lawsuits against housing that does not, for example, result in a minimum 30% reduction in per capita VMT to (b) outright prohibitions of housing on "natural and working lands" and costly new restrictions on producing even housing that complies with existing and approved General Plan Housing Elements, SB 375 Sustainable Communities Strategies, local Community and Specific Plans, and actual housing projects. The Scoping Plan's anti-housing measures are the subject of a pending lawsuit on the 2017 Scoping Plan filed by our clients the Two Hundred, and each paragraph of the petition filed in that lawsuit - with all factual assertions of the racially disparate harms caused by the 2017 Scoping Plan supported by hundreds of detailed citations - are all well known by CARB, but ignored in the Scoping Plan. That pending Petition is formally submitted as a comment to the Draft 2022

Scoping Plan, and constitute additional comments on the even more radical and costly new anti-housing components VMT reduction mandate and transit-dependent higher density housing prescriptions in the Draft Scoping Plan."

Response: The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA. CARB disagrees with many of the commenter's characterizations, which are inaccurate. Commenter's petition related to the 2017 Scoping Plan update is not a comment on the 2022 Scoping Plan. The 2022 Scoping Plan does not, and cannot, mandate where, how much, and what type of housing is built in the state. The 2022 Scoping Plan neither requires any particular type of development pattern, nor establishes specific SB 375 targets, nor approves or disapproves any development project. It does not require new housing be associated with high frequency transit areas, nor does it prohibit housing in locations that lack high frequency transit options. Instead, Appendix E of the 2022 Scoping Plan describes the need for "inclusive urban, suburban, and rural communities throughout the many regions of California" (Appx. E, p. 3), and to "accelerate production of a greater diversity of housing types in climate-smart locations," referencing the Statewide Housing Plan (under the Strategy Area 4 heading). Also see Master Response 1.

California currently faces both a housing and a climate crisis, and the 2022 Scoping Plan and Appendix E describe a suite of objectives and actions that could help to address the housing crisis and the climate crisis simultaneously. Appendix E describes the need to address two of California's greatest challenges: meeting climate goals and "building more inclusive and equitable places that prioritize providing low-income and Black, Indigenous, and People of Color (BIPOC) communities all the necessary opportunities to thrive and repairing the harms caused by decades of discriminatory transportation, land use, and housing policies and practices to people of low-income and BIPOC communities" (Appx. E, p. 3). Section 2.3 and Section 2.4 of Appendix E address how moving away from transportation and land use patterns that have marginalized and divided communities would ease inequitable burdens on California's low-income and BIPOC communities and outline how reducing the need to drive can reduce financial burdens, and provide better access to opportunities and greater economic efficiency for these communities. These sections also speak to the need for shifting California's development patterns to achieve the goal of "making livable, affordable homes with multi-modal connections to jobs, services, open space, and education available to all Californians, not just the white and the wealthy" (p. E-6). Additionally, Appendix E identifies actions such as accelerating, preserving, and protecting affordable housing and delivering equitable improvements in accessibility for vulnerable communities. The 2022 Scoping Plan articulates the current state of greenhouse gas emissions data and describes the importance of careful analysis of greenhouse gas impacts, consistent with governing law. No further analysis of particular project impacts is required, as these are beyond CARB's jurisdiction, and would be entirely speculative. No changes to the Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA;

therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H246

6/24/2022 Jeanne Armstrong, Solar Energy Industries Association

H246-1: The commenter states, "Reliance on a plan which puts a high degree of faith in unproven technologies, and which fails to include the energy and land needed to power those technologies, places the state's climate goals at risk and is the antithesis of the Governor's request that those goals be accelerated. Instead of rolling the dice and hoping that direct carbon removal in the later years will be successful, CARB should instead focus on directing emissions reductions through retiring fossil fuel power plants, transitioning away from polluting fuels, replacing internal combustion engines with Zero Emission Vehicles, and building out the zero emission and distributed energy resources that will reduce emissions immediately and permanently."

Response: The 2022 Scoping Plan calls for an ambitious deployment of clean technology such as 37 times more ZEVs, 6 times more electric appliances, 1700 times more renewable hydrogen, and 4 times more installed wind and solar generation capacity. This dramatic dependence and call for clean technology and energy aligns with the commenters request.

The PATHWAYS model calculates annual energy demand by fuel type and sector and accounts for the energy needed to support carbon capture and storage (CCS) at facilities (see also response to comment 369-2). The energy required for carbon dioxide removal (CDR) via direct air capture (DAC) was assumed to be provided by off-grid solar for consistency with the carbon neutrality target. The reasonably foreseeable compliance responses associated with the project's mechanical CDR and CCS actions are provided in the First Draft EA in the second paragraph on page 21; impacts to energy from the project are discussed in the First Draft EA in first and second paragraphs on page 108. With respect to land use impacts, the First Draft EA at Section 11.a discusses new development that includes DAC and other CCS projects and discloses that environmental effects (e.g., agriculture and forestry resources, biological resources, geology and soils, hydrology and water quality) associated with land use changes would be potentially significant and therefore land use impacts would be potentially significant. Note also that Alternative A in the First Draft EA explores an alternative scenario involving nearly complete phaseout of all combustion. The remainder of this comment does not address the adequacy, accuracy, or completeness of the First Draft EA and no changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H262

6/24/2022 Muriel Strand

H262-1: The commenter states, "CEQA and I have been acquainted for about 3 decades. Hearing during today's insightful discussion that today was the deadline to comment on the CEQA analysis of the scoping plan, I have a couple of thoughts to share even though I have not looked at one word of this CEQA analysis.

Considering all the political angst surrounding CEQA processes over the years, and our history of fossil fuel addiction...

This chapter of history starts with industries using fossil fuels to facilitate various projects for profit and comfort, using them in ways that are at best inconsistent and at worse outright very harmful to the natural biological world. The results prompt various regulations attempting to rein in and compensate for the side effects of these various profitable projects, and now we are in a situation where our economy is covered with hundreds of bandaids.

So it's not surprising we have not been making much progress towards various environmental goals. To the extent that this CEQA analysis assumes we will continue with the same industrial and commercial processes as were developed with the parameter of cheap fossil fuel energy, it is not including the most effective and sensible possible choice and path of action.

Our situation is analogous to that of a fat man with a closet full of beautiful clothes, fine fabrics from every continent and fiber, exquisitely tailored and accessorized, an outfit for every occasion, etc., that this man is very very fond of. But for his health, he has slimmed down, and now his clothes are far too big. But he loves them just the same.

So he must choose between wearing his beautiful clothes that fit him like a glove, that he has devoted much time and energy to acquiring, by wearing many layers underneath, or balloons, or something like a theatrical 'fat suit.'

Or he can bite the bullet and get some new clothes."

Response: The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H263

6/24/2022 Danny Cullenward, CarbonPlan

H263-1: The commenter states, "CARB also made a fundamental modeling error in its treatment of land-sector emissions. In each of the four scenarios in the draft plan, the sum of projected 2045 emissions and carbon removal is 15 million tCO_2e per year because CARB assumed the natural and working lands (NWL) sector will be a carbon sink. In contrast, the actual draft scoping plan indicates that CARB expects the NWL sector to be a net carbon source, resulting in an average of 8 million tCO_2e per year in emissions. As a result of this error, none of the scenarios reaches net-zero emissions. All are off by about 23 million tCO_2e per year.

Some context is in order, as this issue touches on work my colleagues and I have been doing for a few years. Those who follow CarbonPlan's work know we've taken a particular interest in how to think about the permanence of forest carbon storage. For example, we recently explored options for integrating highly variable emissions from the forest sector into California's greenhouse gas inventory. So I was curious to see how the draft scoping plan, which promised to include forest emissions as well as forest carbon sequestration, would address this topic.

Although advocates have widely promoted forests' ability to store large amounts of carbon, growing threats to forest carbon permanence are challenging the viability of that strategy. Those of us who lived through the 2020 and 2021 wildfire seasons in the American West know that no one should bank on forest carbon as a justification for ongoing fossil fuel emissions, even as we double down on efforts to protect and conserve forests for their climate, environmental, and cultural values. To CARB's credit, the 2022 Scoping Plan is directed toward growing scientific evidence that forests in the American West are likely to be a net source of emissions, rather than a sink. Page 72 of the draft indicates that CARB expects emissions of about 8 million tCO_2e per year from 2025 through 2045.

But when I went to look at the technical modeling spreadsheet, I couldn't tell where these numbers were reflected — and in the course of exploring this issue, also noticed that every one of CARB's four scenarios resulted in a net 15 million tCO_2e emissions source in 2045. Shouldn't a net-zero scenario produce net-zero emissions?"

Response: This comment does not address the adequacy, accuracy, or completeness of the First Draft EA and no changes to the First Draft EA are required in response to this comment. Nevertheless, for purposes of transparency, CARB responds as follows:

The 2022 Scoping Plan includes results from two distinct modeling efforts and Proposed Scenarios from each effort: AB 32 GHG Inventory Sectors and NWL Sector. For the 2022 Scoping Plan, the PATHWAYS modeling of the AB 32 GHG Inventory Sectors was conducted prior to completion of the NWL analysis and the NWL sector was assumed to sequester 15 MMT CO2e per year in the PATHWAYS modeling (see footnote 165 in Chapter 3 of the Draft 2022 Scoping Plan). The Scoping Plan Scenario combines results from the AB 32 GHG

Inventory Sector and NWL Sector modeling such that the Scoping Plan Scenario reaches net-zero emissions.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H269

6/24/2022 Douglas Carstens

H269-1: The commenter states, "**B. Passive Conformity with the Scoping Plan Does Not Suffice to Support a Finding of No Significant Impact From a Project.**

It is of critical importance both that the Scoping Plan be clear about the role of local governments in reducing GHG emissions, and that it define with particularity what types of local actions are and are not consistent/compliant with the Scoping Plan. CARB and other state agencies, such as the Office of Planning and Research, should provide greater incentives and guidance to localities to adopt local Climate Action Plans (CAPs), and to make them as strong as possible. Appendix D observes that "[w]hile [climate action plans] have become an important avenue for climate action at the local level, 47 percent of California cities and counties have no known [climate action plan]." (Appdx. D, p. 3.) Even when local governments do adopt CAPs, those CAPs are not necessarily adequate. A draft report prepared by the University of California at San Diego's School of Global Policy and Strategy[2] examined all CAPs in San Diego County, and found that even if the current CAPs were all carried out to the letter and worked as intended, they would reduce GHGs over the state/federal reductions by only about an additional 2 MMTCO2e per year by 2035. This woefully inadequate reduction demonstrates the limits of current CAPs to meet California's climate goals.

Nor is the existence or absence of local CAPs the only problem. Some local governments attempt to use partial "consistency" with the Scoping Plan for adequate GHG impact mitigation. Our firm sees many CEQA documents that interpret CEQA Guidelines section 15064.4, subdivision (b)(3)'s provision that consistency with "a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions" may support a finding that a proposed local development project will have no significant impact on climate change to claim that projects will have no significant climate impacts because they are supposedly "consistent" with the statewide Scoping Plan. In making such findings, we regularly see EIRs that regard passive "compliance" with such Scoping Plan provisions as the state vehicle emissions standards and the Cap and Trade program – regulations and programs over which no local development project has any control and which no local development project can legally violate - as satisfying CEQA Guidelines section 15064.4. Under this reasoning, virtually any local development project could be asserted to have no significant adverse impact on

climate change, and we see that claim made for many projects that will emit large amounts of GHGs over their useful lives.

The California Supreme Court addressed this problem to some extent in *Center for Biological Diversity v. Dept. of Fish and Wildlife* (2015) 62 Cal.4th 204, 225, where our high court found that consistency of a project's GHG emissions percentage reductions over business as usual with the percentage of GHG emissions reductions required by the then-current Scoping plan was not sufficient to show no significant impact by the Newhall Ranch project on climate change. However, the arguments currently being made are different, and require a different response. The Appendix does state that "it would not be appropriate to rely upon the State's Cap-and-Trade Regulation as a reason not to provide appropriate GHG analysis and, if needed, mitigation, for local development projects" (Appdx. D, p. 19). However, CARB should go farther, and should state clearly that mere involuntary, passive compliance with state programs relied on in the Scoping Plan is not sufficient. A project must show that a project would have no significant impact on GHG emissions and the state's climate goals through full analysis of local emissions, comparison to any local climate action plan, and assessment of the project's impact on state climate goals and its contribution to cumulative climate change impacts. Mitigation must be required where there is a significant impact.

[2] "San Diego Regional Decarbonization Framework," Available at https://www.sandiegocounty.gov/content/dam/sdc/lueg/regional-decarb-frameworkfiles/RDF%20First%20Draft%20CompleteOct28.pdf; last visited 6/22/22. The study report is marked Draft, Not for Citation, so individual page numbers are not provided here."

Response: The comment indicates that CARB declines to render an opinion on the effectiveness of a particular CAP to achieve GHG reductions. The Appendix discusses various efforts that local agencies undertake to reduce GHG emissions, whether through a CAP or an alternative approach, and recognizes that CAPs, as a whole, have not achieved the level of reductions expected over time. Language has been revised in Appendix D to acknowledge CAP successes and shortcomings. The comment indicates many projects do not adequately evaluate compliance with CEQA Guidelines Section 15064.4(b)(3) for consistency with "a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions" (i.e., Scoping Plan consistency analysis) because they use consistency with state vehicle emissions standards or the Cap and Trade program as mechanism for finding a less than significant GHG impact. The comment further indicates the 2022 Scoping Plan should be updated to indicate a project must show that a project would have no significant impact on GHG emissions and the state's climate goals through full analysis of local emissions, comparison to any local climate action plan, and assessment of the project's impact on state climate goals.

CARB agrees that passive consistency with state regulatory programs is not adequate to address a project's significant GHG emissions. Language has been revised in Section 3.2 of Appendix D to help address potential use of incorrect application of compliance with regulations for determining Scoping Plan consistency. Appendix D of the 2022 Scoping Plan

notes that, in addition to the current climate crisis, California also faces a severe housing shortage and that the housing crisis and climate crisis must be faced simultaneously in a manner where housing policies must be designed to address climate and climate policies must be designed to advance housing. Consequently, Section 3.2.1, Project Attributes for Residential and Mixed-Use Projects to Qualitatively Determine Consistency with the Scoping Plan, of Appendix D identifies a qualitative approach. In addition, CARB staff notes that residential development that incorporates all of the "project attributes" identified in Section 3.2.1 of the appendix, which are critical to meeting the State's climate goals, would be clearly consistent with the State's climate and housing goals and have a less-than-significant GHG impact under CEQA and address the significant sources of project-related emissions.

H269-2: The commenter states, "**C. GHG Offsets From Unregulated Private Registries Do Not Meet Applicable Standards for Enforceability.**

As counsel for the Sierra Club, a co-plaintiff in *Golden Door, et al. v. County of San Diego* (2020) 50 Cal.App.5th 467, cited at page 18, note 56 of Appendix D, we find the Appendix's treatment of carbon offset registries deeply disturbing. The Appendix states that use of voluntary GHG offsets from "reputable" offset registries "may be appropriate" when on-site and other off-site GHG reductions have already been required. (Appdx. D, p. 17.) While the Appendix notes the Golden Door court's analysis that the offsets claimed by the project in that case were not shown to be real, additional, quantifiable, permanent, verifiable and enforceable when evaluated "using the requirements for offsets under the State's Cap-and-Trade Program as a proxy for evaluating enforceability under CEQA" (Appdx. D, note 56), the Appendix does not propose any method of ensuring that private registry credits not issued by CARB are fully enforceable.[3] The Appendix should note that registries – including reputable ones - are not subject to regulation by CARB outside of their participation in the Cap and Trade program or, as far as we are aware, by any other governmental agency. Rather, use of these registries outside the Cap and Trade program seems to rely on the honor system; their offsets cannot be presumed to be real, additional, quantifiable, permanent, verifiable and enforceable, per the Golden Door analysis. The Appendix should forthrightly acknowledge and address this critical problem.

The Appendix recommends that local agencies emphasize GHG reduction measures that are "additional", i.e., not required by any other law, regulation, or program. (Appdx. D, p.19.) While this approach is promising, there is no reason to think, nor does the Appendix attempt to show, that such credits will or could be sufficient to allow all projects with significant potential to emit significant GHGs to get to net-zero, as the Appendix advocates. Alternatively, CARB or another agency should undertake to ensure the integrity of private GHG offsets, either by regulating carbon offset registries or some other equally reliable method. The climate change situation is too dire to do otherwise.

We are also very concerned that the Appendix appears to indirectly endorse the use of offsets developed and occurring outside the United States. (Appdx. D, pp. 15, 20.) Although the Appendix makes clear the superiority of local offsets that can also reduce conventional pollutants and generate local jobs, it appears to condone the use of "international offsets." (Appdx. D, p., 15.) As difficult as it is to verify the full enforceability of offsets within California

and within the United States, we do not see, nor does the Appendix identify, any existing mechanisms that could ensure such enforceability outside the U.S. We urge CARB to make this clear, and to make clear that it is not endorsing international offsets unless clearly proven to meet the test of being real, additional, quantifiable, permanent, verifiable and enforceable.

[3] See discussion of registries at https://ww2.arb.ca.gov/news/air-resources-board-sets-stage-carbon-offset-projects; visited 6/23/22."

Response: The CEQA Guidelines explicitly allow offsets that are not otherwise required as mitigation under CEQA per Cal. Code of Regs., tit. 14, § 15126.4 (c)(3). The guidance found in Appendix D Section 4.1.3, Conditions Applicable to Carbon Offset Credits, and Section 4.2, Clarifying CEQA's Requirements for GHG Mitigation, establish the criteria for carbon offset credits used for CEQA purposes. Section 4.1.3 of Appendix D clarifies that carbon offset credits used for CEQA purposes should be "registered with a recognized and reputable carbon registry on the voluntary market". While "CARB does not review or authorize voluntary-market offset registries or protocols for use as CEQA mitigation, CARB notes that the registries approved by CARB for the Cap-and-Trade Program also serve as voluntary market credit registries, with voluntary market offsets available for CEQA mitigation purposes." This section also notes that, per SB 27 (2021), CNRA will maintain the California Carbon Sequestration and Climate Resiliency Project Registry of projects in the state that can serve as another source of local mitigation. Section 4.2 of Appendix D clarifies that CEQA requires that mitigation, including offsets, must not be otherwise required by regulation or by existing permitted CEQA projects (CEQA Guidelines §15126.4(c)(3)). Offsets consistent with both Sections 4.1.3 and 4.2 of Appendix D help to ensure the offset criteria discussed in the *Golden Door* decision are met. Language has been revised in Section 4 of Appendix D to clarify the GHG mitigation hierarchy (including geography) recommended by CARB, the use of carbon offset credits for CEQA purposes, and requirements of CEQA mitigation to further inform the use of on-site, offsite, and offsets mitigation for CEQA purposes.

H269-3: The commenter states, "**D. CEQA and the CEQA Process Are Not Responsible for Blocking Urban Infill Housing, and the Draft Scoping Plan Should Remove Language Suggesting That They Are.**

We object strongly to the Appendix's attempt to characterize CEQA and the CEQA process as blocking increased infill housing density, at pages 12-13. Blaming CEQA's requirements for California's housing shortage crisis is inaccurate and factually unsupported. Further, it is not clear why CARB chose to use the term "abusive litigation" in Appendix D, while simultaneously admitting that only about 3% of projects studied in the two reports cited by Appendix D were subject to CEQA challenges; the numbers show that such litigation is rare.[4]

The Appendix appears to base conclusions that CEQA and the consideration of GHG issues under CEQA are a significant and unwarranted barrier to the construction of new housing on research done for CARB that studied barriers to infill housing. This research does not support blaming CEQA for blocking infill housing development. The "Final Report: Examining

Entitlement in California to Inform Policy and Process"[5] ("O'Neill 2022")[6] examined data for four cities in the greater Los Angeles area. (O'Neill 2022, Exec. Summary.) The study states in its Results section that "Our work suggests that the chief regulatory contributor to California's housing crisis is local governments hindering dense housing via zoning and development approval processes", not CEQA requirements or litigation. (O'Neill 2022, p. 10.) Further, as the Appendix concedes, the O'Neill work found that only about 3% of projects in the cities studied were subject to CEQA suits (Ibid., p. 10); the Appendix also concedes that two thirds of those suits, i.e., only 2% of the projects in the studied area, raised GHG or VMT issues (Appdx. D, p. 7), hardly a flood of litigation.[7] The O'Neill 2022 paper also states that there was "no meaningful difference between rates of litigation for urban or exurban development" (O'Neill 2022, p. 10), putting the lie to any claim that CEQA suits are disproportionately aimed at blocking urban infill housing. The paper also examined whether litigation focused solely on CEQA claims or also involved other alleged illegalities; it concluded that "when litigation occurs, CEQA claims are common—but that most lawsuits (almost 3 out of 4) could proceed even if the plaintiff or petitioner could not bring a claim under CEQA." (Ibid., p. 82.) This reduces almost to vanishing point the percentage of cases that rely solely on CEQA claims.

We would also refer CARB to the study done by The Rose Foundation for Community and the Environment, CEQA: California's Living Environmental Law - CEQA's Role in Housing, Environmental Justice & Climate Change" (2021 ["CEQA: California's Living Environmental Law Report"]).[8] This study painstakingly examined CEQA litigation in various cities and counties around California, compiled data on rates of CEQA litigation and on numbers of projects in these jurisdictions, and concluded that the rate of litigation challenging projects on CEQA grounds during the period 2013 to 2019 was only 2%. (CEQA: California's Living Environmental Law Report at pp. 20-22.) The study also examines the data in the two O'Neill studies relied on in Appendix D, pointing out that:

> The key finding of the Berkeley Law Working Papers is that while streamlined CEQA review is often used for housing projects, each city also relies on other mechanisms and regulations for its review of discretionary land use entitlements, and that these non-CEQA review processes largely determine the time frame for project approvals. The researchers thus find that different, non-CEQA land use entitlement processes across the cities —or sometimes uneven interpretations of the same regulation, such as design review, within a city —are the main cause of project delay. Accordingly, the study concludes that CEQA review is not a primary obstacle to project approvals.

(CEQA: California's Living Environmental Law Report, p. 25.) The study also examined several other surveys of CEQA litigation that found very low rates of CEQA litigation. (Ibid, pp. 23-25.)[9]

In addition, the Appendix recognizes the ability of the CEQA process – including, at times, litigation – to produce excellent results for the environment. Such results include the examples of net-zero GHG emissions commitments cited by the Appendix that were the direct or indirect result of CEQA litigation, including the Newhall Ranch settlement and Tejon Ranch's Centennial Specific Plan. (Appdx. D, pp. 12-13.) These net-zero projects are now

urged by Appendix D as models that other projects can emulate. The litigation that resulted in their design was clearly not "abusive," and it is irresponsible for CARB to use such unwarranted, unsupported, and inflammatory language. Similarly, use of the derogatory term "NIMBY" (Appdx. D, p. 8) is both unprofessional and unbecoming of a state agency. We urge CARB to reexamine Appendix D's terminology and its implicit view about CEQA.

[4] Even more rare is the number of projects litigated under CEQA that were litigated on GHG or VMT issues, which was only 2% of the total (2/3 of the 3% of litigated projects [Appdx. D at p. 7).
[5] Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3956250; visited 6/22/22.
[6] Appendix D cites to two O'Neill, et al, papers; we cite to the final report.
[7] Confirming the O'Neill et al. conclusions, the study noted that "a 2016 report from BAE Economics, found low rates of ; last visited 6/24/22litigation and infrequent use of EIRs." (Ibid., p. 33.)
[8] Available at https://rosefdn.org/wp-content/uploads/CEQA-California_s-Living-Environmental-Law-10-25-21.pdf; last visited 6/24/22.
[9] "CEQA: California's Living Environmental Law" characterizes the Holland and Knight papers and their attacks on CEQA as "extreme outliers" in the literature on this subject. (op. cit., p. 27.)"

Response: The comment objects to Appendix D discussion that the commenter says inaccurately suggests that CEQA and the CEQA process may be a barrier to housing. The comment is directed toward the contents of Appendix D of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the Draft EA. The comments are noted and are being provided to the Board members for their consideration. Nevertheless, language has been updated in Section 3 of revised Appendix D to provide further context on the practice of using the land use review process, which includes CEQA and litigation, to object to housing projects.

The comment objects to the use of the term "NIMBY" (an acronym for the phrase "not in my backyard" used to refer to opposition to local development) in Appendix D. Appendix D has been revised to no longer use the term "NIMBY."

H269-4: The commenter states, "**E. Appendix D Does Not Address Curbing GHG Emissions Caused by Wildfires**

CARB has reported in "Wildfire Emissions Estimates for 2020"[10], its estimate that 106.7 million metric tonnes of carbon dioxide (MMTCO2) were released into the atmosphere during California wildfires in 2020 (a very high fire year). Despite the huge amounts of carbon dioxide released during wildfires, and despite the frightening increase in wildfires over the last decade, Appendix D does not address the subject of wildfire-caused GHG emissions and their impacts. Since the Environmental Assessment (EA) for the draft Scoping Plan recognizes that local agencies have the responsibility for requiring project-level wildfire-avoidance and mitigation measures (Appdx. B, p. 229), the Draft Scoping Plan must set out and discuss methods by which local agencies can most effectively discharge that responsibility. Such

methods should include the use of local planning and zoning powers to control human intrusion into wild areas and requirements for property management and upkeep that minimize the likelihood of fires beginning. We believe that restricting or avoiding sprawl into identified and potential wildfire high-risk areas should be included in the minimum measures that are compatible with the Scoping Plan.

[10] At p. 1. Report available at https://ww2.arb.ca.gov/wildfire-emissions; visited 6/22/22."

Response: The comment suggests that the 2022 Scoping Plan include and discuss methods by which local agencies can most effectively implement wildfire avoidance and mitigation measures, such as restricting or avoiding development in potential wildfire high risk areas. CARB notes that the 2022 Scoping Plan itself discusses wildfire trends and strategies for reducing wildfire risk as part of the natural and working lands discussion. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

H269-5: The commenter states, "**F. Zero Emissions Vehicles (ZEVs) Alone Cannot Achieve California's Climate Goals.**

The EA relies heavily on the use of EVs to achieve state GHG goals (Appdx. B, Table 4-12, p. 124 Transportation sector), despite the fact that the phase-in of restrictions on sales of non-ZEVs is not planned to reach 100% till 2035. (https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii; visited 6/20/22.) Even assuming that this program is fully successful, and that all new cars sold in CA in 2035 are ZEVs, there will still be millions of older, non-ZEV cars on the roads, in addition to cars meeting federal standards. Further, new trucks sold in California are not scheduled to be all ZEVs until 2040 (https://ww2.arb.ca.gov/resources/documents/path-zero-emission-trucks-faq; visited 6/20/22), with "the goal of achieving a zero-emission truck and bus California fleet by 2045 everywhere feasible[.]" (https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets; visited 6/20/22, emphasis added.) California will not have a fully ZEV passenger car or truck fleet until decades from now, if ever. Appendix E to the Draft Scoping Plan states:

> Even with Executive Order N-79-20 phasing out the sale of internal combustion engine (ICE) vehicles by 2035, 30 percent of light-duty vehicles on the road in 2045 will be older and still burn fuel.

(Appdx. E, p. 5, emphasis added.) Given the decades-long turnover time for the vehicle fleet, VMT reduction will be needed for many years or decades after the 2022 Scoping Plan is adopted, even if CARB's programs are fully successful. Appendix E to the draft Scoping Plan shows that "future per capita daily driving…must decline from 24.6 miles in 2019 to no more than 19.0 miles by no later than 2045 to support California's climate goals." (Appdx. E, p. 5.) However, California is now on track to increase average per capita daily driving to over 28 miles per day by 2045, roughly 50% more than is compatible with California's climate goals. (Ibid., Fig. W.[11]) Appendix D briefly recognizes that ZEVs alone cannot meet climate goals

(Appdx. D, p. 2-3), but it must do more to make clear how much local agencies need to do now and for the foreseeable future to control and reduce VMT.

In its Table 1, Priority GHG Reduction Strategies for Local Government Climate Action (Appdx. D, p. 5), Appendix D does not mention controlling or avoiding sprawl development. It does list changing zoning and plans to increase density in infill areas, and preserving natural and working lands to avoid losing their carbon sequestration. However, in cities and counties encompassing rural, lightly populated areas without extensive transit, sprawl may present the greatest danger of increased VMT through increased driving to reach more urbanized areas with their jobs and amenities. The Appendix should present evidence-based strategies that local government can use to contain such sprawl, and discuss why it is necessary to contain sprawl. California cannot electrify its way out of the need for substantial VMT reductions.

[11] Appendix E states that this is a mathematical modeling projection, "for illustrative purposes only." (Appdx. E, p. 5, note 2.) Even with this qualification, the VMT reductions needed are still daunting."

Response: The comment states that Appendix D does not mention controlling or avoiding sprawl development and should present evidence-based strategies that local government can use to contain such sprawl and discuss why it is necessary to contain sprawl. The comment is directed toward the contents of the 2022 Scoping Plan and does not raise an issue related to the adequacy, accuracy, or completeness of the Draft EA. The comments are noted and are being provided to the Board members for their consideration. Nevertheless, CARB agrees that land use development patterns are an important part of achieving the state's climate goals. The 2022 Scoping Plan and Appendix D discuss attributes that CARB staff identified as effectively helping to meet State climate goals and for lead agencies to consider how a project demonstrates consistency with the State's Scoping Plan. Appendix D helps to clarify and provide evidence that certain land use project types, including infill supported by transit at minimum densities, can reduce VMT by generating fewer vehicle trips and shorter average trip lengths. In addition, Appendix E includes strategies, such as accelerating infill development in existing transportation-efficient places and deploying strategic resources to create more transportation-efficient locations (See Section 3.4.2 of Appendix E). These elements of the Scoping Plan help local jurisdictions further consider the potential issues posed by sprawl development patterns. No changes to the First Draft EA are required in response to this comment.

H269-6: The commenter states, "**G. More Aggressive Decarbonization Measures Are Available and Should be Recommended.**

Appendix D describes some decarbonization measures that local governments can utilize to decrease their GHG emissions, including local forestry projects, creating EV charging stations, and energy retrofits of existing buildings. (Appdx. D, pp. 2-3 and 16-17.) However, the UC San Diego Decarbonization Framework study cited earlier studied building decarbonization closely. The building decarbonization measures it recommends, such a widespread deployment of rooftop solar and large-scale use of electric heating to replace

natural gas, can produce much larger GHG reductions than a project-by-project approach. The study points out that, in San Diego County, 80% of the buildings that will exist in 2050 are already built. Therefore, while tightened and energy "reach" building codes are essential to produce future buildings that will use far less energy, adoption of retrofit requirements for existing buildings are just as, or even more, vital in order to reduce the energy use of the 80% of buildings that will still be here in 2050.12 While data for other areas in California will be different from the data for the San Diego area, they are likely to be similar, and the San Diego study's recommendations are likely to be apt. The study contains a section on legal authority for local governments to carry out the measures it recommends.

[12] We also note that many EIRs we see rely on an unadopted GHG threshold from SCAQMD that would limit GHG reduction measures for residential and commercial development projects to the same 30-year lifespan that SCAQMD assumes for the industrial-type projects for which it grants permits. Not only is reliance on unadopted regulations of dubious legality, the San Diego data show that as to buildings, the supposed 30-year lifespan lacks the evidentiary support CEQA demands. See, e.g., CEQA Guidelines section 15126.4 subd. (c)."

Response: The comment indicates that more aggressive decarbonization measures are available and that retrofitting existing buildings should be included in Appendix D. Table 1 from Appendix D includes the adoption of policies and/or incentive programs implementing energy efficiency retrofits for existing buildings as a Priority GHG Reduction Strategy for the Building Decarbonization Priority Area. In addition, Section 4.1.2, Off-site GHG Mitigation of Appendix D, includes examples of approaches, including energy efficiency retrofits, as that may be used as local off-site mitigation under CEQA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H274

6/24/2022 Angela Hacker, California Climate and Energy Collaborative

H274-1: The commenter states:

"➢ Municipalities lower emissions through their role in governing land use and buildings through ordinances, zoning, general plans, permitting, and CEQA review
  - Example: All municipalities enforce the California Energy Code. Additionally, 55 local governments have adopted reach codes to support all-electric new construction; at

least two jurisdictions in California have adopted reach codes that apply to renovations of existing buildings;
- Example: In 2019, the City of Brisbane adopted an ordinance requiring most owners of local buildings 10,000 square feet or more to benchmark their buildings and report results to the city annually. Later, buildings will need to show they are high-performing or take steps to improve.
- Example: In 2020, Contra Costa County created a solar overlay zone in certain areas of the county that are well-suited for ground-mounted solar.
- Example: In June 2022, the City of San Jose approved a plan to update its Transportation Demand Management ordinance to eliminate mandatory parking minimums city- wide and ensure new developments invest in alternative transportation methods."

Response: The comment provides general suggestions and examples of how municipalities can lower emissions through regulations and CEQA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

H274-2: The commenter states, "The Scoping Plan acknowledges that "not all jurisdictions have the resources to develop a CAP that will go through the CEQA process." Perhaps more importantly, all local governments are struggling to obtain resources that will allow them to implement sufficient emission reduction strategies to reach state and local goals."

Response: The comment provides a general statement regarding the 2022 Scoping Plan's acknowledgement that not all jurisdictions have the resources to develop a CAP that will go through the CEQA process. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter H287

6/24/2022 Brian Mello, Associated General Contractors

H287-1: The commenter states, "AGC of California asserts that local government's land use authority should remain under their control. According to SB 375 that established SCS as a part of Regional Transportation Plans, projects approved consistent with SCS would receive an incentive: the environmental document prepared pursuant to CEQA would not be required to reference, describe, or discuss growth inducing impacts; or any project specific or cumulative impacts from cars and light-duty truck trips generated by the project on global

warming or the regional transportation network. SB 743 VMT regulation has undermined and reduce the value of this by eliminating the benefit promised by the second incentive. Therefore, CARB should support an exemption from the VMT regulation for projects that are consistent with an SCS.

AGC of California appreciates CARB's recognition of obstacles in Appendix D and Appendix E; specifically, CEQA, ballot-box planning (both by incentive and referendum), NIMBY opposition, and barriers to housing projects. We encourage CARB to support removing these obstacles; setting higher targets will not be effective without first removing the obstacles. Additionally, we would like to point out some specific concerns associated with Appendix E – Sustainable Communities Objectives and Action. Providing alternative transportation choices to driving is good for California if it does not prohibit road construction or removing lanes. AGC of California supports pricing strategies, as providing alternative transportation will likely require a new funding source, given that they replace SB 743 requirements on new development."

Response: The comment provides a description of the current incentives for CEQA under SB 375 and expresses support for an exemption from the VMT regulation for projects that are consistent with an SCS. Additionally, the commenter encourages CARB to support removing obstacles to housing projects, such as CEQA. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the First Draft EA and no further response is required. No changes to the First Draft EA are required in response to this comment.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

PH-1 - Dr. Catherine Garoupa: There's ample evidence that carbon capture could lead to significant environmental health and safety hazards. And again, the proposed projects are in some of our most overburdened environmental justice communities. If mitigating climate change is the goal, we have to take impacts on factors such as water, increases in solid waste that also directly affect -- directly affect the climate. In addition -- sorry, one second. In addition, the draft Scoping Plan claims that the Central Valley has an ideal geologic substrate for CO_2 sequestration. But since the substrate already has many fractures and fissures, the threat of CO_2 leakage increases. So this image on the slide is a map of Bakersfield. There is so much extractive infrastructure in the Central Valley with tens of thousands of wells, including numerous that are idle and abandoned. It is no longer geologically sound for injecting CO_2 underground. Black dots on the map represent all of the existing and inactive oil and gas extraction wells. All of these straws poked into the ground are hazards for CO_2 leakage that could create carbonic acid in groundwater. The red triangle on the map is one of Chevron's proposed CCS injection/geologic storage sites. This is particularly important as Bakersfield is not only densely populated, but because of existing oil and gas operations, it is an already immensely overburdened environmental justice community. Some of you may have heard the story of Satartia, Mississippi, where in 2020 a whole town was hit by an

invisible and acutely hazardous levels of CO_2 gas from a pipeline rupture. The CO_2 pipeline failure resulted in local eval -- evacuations and caused almost 50 people to seek medical attention. The impacts of this pipeline failure had a disparate racial impact as all of the victims of CO_2 poisoning in Satartia were African American. Even aside from the corrosion caused by CO_2, the pipelines also leak. With current pipelines in Kern County, there have already been multiple methane leaks. Methane is a high potency greenhouse gas. To speak more on this issue, I want to introduce of Bill Caram of the Pipeline Safety Trust to provide a brief overview of these risks. And then I'll have some concluding comments before moving on to the next topic.

Response: The commenter expresses concern regarding potential leakage of CO_2 from pipelines. A discussion of pipeline safety was added to the Recirculated Draft EA to address this issue. The following discussion was added to Section 9.b: Long-Term Operational-Related Effects on Hazards and Hazardous Materials (beginning in the last paragraph on page 152 of the Recirculated Draft EA) as shown below.

> Similar to natural gas pipelines, CO_2 pipelines operate at high pressure within the ambient temperature of the system. They require monitoring for leaks, and protection against overpressure, especially in populated areas (Parfomak and Folger 2008). While pipeline failure associated with fracture propagation (i.e., CO_2 that is unintentionally released causing high volumes of CO_2 to be release into an area) is recognized by the hydrocarbon industry as a potentially hazardous issue, there is uncertainty surrounding the spontaneity of CO_2 pipeline combustion or explosion due to fracture propagation (Bilio et al 2009). Depending on the state of CO_2 captured in these systems (i.e., gas or solid), the potential hazards associated with fracture propagation vary; dispersion behavior, solubility, or erosion impact of the velocity to which a leak occurs influence the physical impacts of these occurrences. According to a 2009 study, "[d]epending on the precise time during any release, supercritical CO_2 will be released to atmosphere and disperse over large distances" (Bilio et al 2009).
>
> CO_2 released from a pipeline is heavier than air, and the high-rate release from a pipe can form cold dense gas fog clouds comprised of dry ice particles and visible water vapor as the humidity in the air condenses from the extreme cooling. Such high-rate releases can produce areas of low visibility from "fog," both from dry ice particles and water condensation. The CO_2 pipeline rupture fog becomes transparent when eventually warmed by the surrounding environment. Upon warming, the CO_2 plume can flow considerable distances from the pipeline unobserved, traveling over terrain, displacing oxygen while settling or filling in low spots. Ambient CO_2 may additionally cause adverse health effects depending on its concentration in the atmosphere. For instance, concentrations exceeding 10 percent by volume may inhibit some cognitive function, and concentrations exceeding 25 percent have the potential to lead to asphyxiation. Exposure to CO_2, similar to other asphyxiants such as carbon monoxide, can in some cases lead to circulatory insufficiency, coma, and even death (Parfomak and Folger 2008). On February 22, 2020, a CO_2 pipeline operated by Denbury Gulf Coast Pipelines LLC (Denbury) ruptured in proximity to the community of Satartia,

Mississippi. The rupture followed heavy rains that resulted in a landslide, creating excessive axial strain on a pipeline weld (DOT 2022). The combination of weather and topography resulted in a slower dissipation of the gas. The pipeline was also carrying hydrogen sulfide, a flammable and toxic gas. The pipeline failed on a steep embankment, which had recently subsided. Heavy rains are believed to have led to a landslide, which created axial strain on the pipeline and resulted in a full circumferential girth weld failure. The Pipelines and Hazardous Materials Safety Administration's (PHMSA) investigation also revealed several contributing factors to the accident, including but not limited to: Denbury not addressing the risks of geohazards in its plans and procedures, underestimating the potential affected areas that could be impacted by a release in its CO2 dispersion model, and not notifying local responders to advise them of a potential failure.

Unlike hydrogen (H2), CO_2 is not flammable (i.e., it does not explode or detonate upon ignition). As such, it is not considered an issue of concern compared to conventional hydrocarbon pipelines. Nevertheless, CO_2 can cause blasts of intense pressure upon pipeline rupture. These ruptures can cause "blast like" expansion forces that dissipate quickly with distance from the pipeline, but may cause considerable damage within the pipelines' right of way.

The Secretary of Transportation has primary authority to regulate interstate CO_2 pipeline safety under the Hazardous Liquid Pipeline Act of 1979, as amended. Under the act, the Department of Transportation (DOT) regulates the design, construction, operation and maintenance, and spill response planning for CO_2 pipelines. The DOT administers pipeline regulations through the Office of Pipeline Safety (OPS) within the Pipelines and Hazardous Materials Safety Administration (PHMSA).

In May 2022, PHMSA announced it is taking steps to implement new measures to strengthen its safety oversight of CO_2 pipelines within the U.S. and protect communities from pipeline failures. These measures include a new rulemaking to update standards for CO_2 pipelines, requirements related to emergency preparedness, and response; and issuance of an updated nationwide advisory bulletin to all pipeline operators underscoring the need to plan for and mitigate risks related to land-movements and geohazards that pose risks to pipeline integrity (PHMSA 2022). PHSMA also issued an updated advisory bulletin in June 2022 to address hazardous conditions related to pipelines and recommendations to operators. The updated advisory is intended to serve as a reminder to owners and operators of gas and hazardous liquid pipelines, particularly those with facilities located onshore or in inland waters, about the serious safety-related issues that can result from earth movement and other geological hazards. Additionally, changing weather patterns due to climate change may result in heavier than normal rainfall and increased temperatures causing soil saturation and flooding or soil erosion. Either phenomenon may adversely impact the stability of soil surrounding or supporting nearby pipeline facilities (Mayberry 2022).

> At this time, recently passed SB 905 prohibits the transport of CO_2 by pipeline until such time that PHSMA updates measures to strengthen its oversight of CO2 pipeline safety. Even once that rulemaking concludes, CARB cannot rule out with certainty the potential for safety and environmental hazards due to the potential for rupture and subsequent hazardous conditions related to exposure of high concentrations of CO_2. Therefore, this impact would be potentially significant.

See the Recirculated Draft EA at pages 150-154 for additional information.

As noted above, the potential for CO2 pipelines to rupture and create hazardous conditions would be a potentially significant impact. The Draft Recirculated EA includes Mitigation Measure 9.b.4, which lists PHMSA recommendations. However, the effects on a population within close proximity to a rupture could be catastrophic and result in substantial injuries and fatalities because CO_2 is an asphyxiant that is heavier than air and can stay close to the ground after a release and move long distances. Due to this risk of rupture and under a conservative scenario, operation of CO_2 pipelines would remain significant after implementation of the mitigation measures provided in the Recirculated Draft EA.

PH-2 - Bill Caram: Virtually any plan that includes carbon capture and sequestration or direct air capture will involve transporting that captured CO_2 via pipeline. And as Catherine mentioned, residents of Satartia, Mississippi learned the hard way that they have a CO_2 pipeline in their community. When that pipeline ruptured in 2020, the escaped CO_2 caused a harrowing experience for many sending 45 -- more than 45 people to the hospital with symptoms of asphyxiation and some are still recovering from that night now two years later. In response to that event, along with the sudden increase of proposed CO_2 pipelines in connection to various carbon capture and sequestration projects, the Pipeline Safety Trust commissioned a report from an independent pipeline safety engineer to identify the safety risks and regulatory gaps posed by CO_2 pipelines. The report, which was released in March and can be found on a website, outlined the history of CO_2 pipelines and identified a number of unique safety risks posed by those pipelines, along with corresponding regulatory gaps. Congress first asked the federal pipeline safety agency, PHMSA, to regulate CO_2 pipelines in 1988 after a natural gas release of CO_2 from Lake Nyos in Cameroon, killed every oxygen breathing being within 18 miles, including 1,700 people. PHMSA responded to that mandate by tagging on and CO_2 to highly volatile liquids regulations, despite the unique properties and risks of these pipelines. CO_2pipelines are operated at very high pressure and releases lead to rapid often violent phase changes. Because CO_2 is an asphyxiant and heavier than air, it can stay close to the ground after release and move long distances, often -- often many miles. Traditional methods of determining potential impact areas around hydrocarbon pipelines are inappropriate and insufficient for CO_2 -- 2 lines, but that is exactly what the regulations call for. Denbury, the pipeline operator in Satartia, Mississippi, identified the area around its pipeline that could be impacted by a failure and many of the people hospitalized were outside of that identified area. Our report also found that CO_2 is entirely unregulated if it is transported as a gas or as a liquid. It is only regulated if it is transported as a supercritical fluid. There are no standards as to levels of various contaminants, some -- some of which are very common, corrosive and/or toxic. CO_2 acts very differently from hydrocarbons in the

pipeline and after a rupture, and the regulations are simply not up to the task of keeping communities safe. I would also like to point out that the White House Environmental Justice Advisory Council last year listed both CCS and direct air capture as projects that would not benefit a community. A study published just last month by Environmental Science and Technology based on data from EDF and Colorado State University show the disproportionate burden of pipeline dangers our most vulnerable communities bear. The study found that natural gas pipeline leaks are more prevalent in neighborhoods whose populations are predominantly low income or people of color. And there have been several similar studies with sadly similar conclusions. I encourage you all to read our report and pay special attention to our summary of findings and regulatory recommendations. I encourage you to click on the link on our page website of the test rupture of a CO_2 pipeline, so you can get a sense of a supercritical fluid failure's violent rupture. I encourage you to read Dan Zegart's harrowing article about the CO_2 pipeline in Satartia, Mississippi to start to understand the risks these pipelines will pose to our communities. And I ask you to look at ways to close these regulatory gaps before any of California's communities are asked to shoulder the burden of risk these pipelines pose. Thank you very much.

Response: Impacts related to CO_2 potentially leaking from conveyance pipelines have been added to the Recirculated Draft EA. Please refer to response to PH-1.

PH-3 - Marjaneh Moini: We're alarmed because the Scoping Plan's reliance on loopholes like carbon capture and sequestration and unrealistic expectations from direct air captures put us on the wrong path. CCS creates public health hazards at every step of the way, capture, transport, and storage. The idea that these public health hazards could be regulated is not rooted in real life experience of our frontline communities, who live in regulatory failures every day. CO_2, odorless, colorless, deadly asphyxiant that is heavier than air and can spread for miles in case of illegal pipeline -- pipeline rupture is being treated as a commodity. We're asking the Board, CTA, and the Governor to prioritize public health.

Response: Impacts related to CO_2 potentially leaking from conveyance pipelines has been added to the Recirculated Draft EA. Please refer to response to comment PH-1.

Responses to verbal comments provided during the public hearing held on June, 23, 2022 have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments given during the public hearing identified significant environmental issues related to the analysis in the First Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

C. Individual Comments and Responses on the Recirculated Draft Environmental Analysis

Comment Letter R1

9/19/2022 Gurwinder Mann

The comments provide statements related to trucks. The comments address general concerns and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R2

9/20/2022 Thomas T Becker, T. Becker Power Systems

R2-1: The commenter states "I submitted 2 comments on the original Draft 2022 Climate Change Scoping Plan. Those comments are still valid and staff must respond as required by CEQA.

I also submitted a comment on the 2022 SIP revision. Staff responded to that comments by saying my alternative was 'infeasible', even though they admit they never prepared an analysis of my alternative. Staff also stated that I did not submit enough detail to evaluate my alternative. Staff had years of documents I submitted concerning my alternative plan, and staff had my email address which they could have used to contact me with questions about my alternatives plan. Staff never contacted me.

In my two comments submitted for the Draft 2022 Climate Change Scoping Plan, I submitted alternatives to the ACC and ACCII components of the plan. If staff has any questions about my alternatives, or if staff requires more information to prepare an analysis of my alternatives, staff can contact me at tbeckerpower@gmail.com"

Response: The comment provides a follow-up to two previously submitted comment letters (Comment Letters 2 and 50). Please refer to responses to comments 2-1 and 50-1.

The commenter provides information about CARB responses received on comments submitted for the 2022 State SIP Strategy. This falls outside the scope of the proposed project which is the 2022 Scoping Plan, therefore no response is required. Additionally, CARB responds to timely submitted CEQA comments consistent with the requirements set forth under CARB's certified regulatory program, CARB is not obligated to contact the commenter to request additional information in relation to their submitted comment letter.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R3

9/22/2022 Chris Torres

The comments question the functionality and purpose of the Board. The comments address opinions not related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R4

9/22/2022 Gilbert Adjoyi

The author comments on the need for electric charging infrastructure and increased development of sources of renewable electricity over sources which emit GHGs. The comments request outreach and education set up by CARB about EVs and voices concerns about enforcement capabilities. The comments address policy aspects related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R5

9/22/2022 Kimberly McCoy

The comments focus on the reasons and ideas to lower GHG emissions from the cement industry in California. The commenter discusses efforts to lower GHG emissions from other countries and suggests that CARB consider similar efforts through a series of recommendations for carbon capture methods, outreach, education, and how to serve the disadvantaged communities who are harmed the most by these emissions. The comments address policy aspects related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R6

10/3/2022 Martin Mackerel

The comments support strict phasing out of all fossil fuel activities with a fixed date to allow smooth economic transition. The commenter does not agree with including carbon capturing methods as part of reducing GHG emissions. The comments address policy aspects related to the plan and do not raise significant environmental issues related to the analysis in the

Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R7

10/14/2022 Julie Parker, League of Women Voters

The comments support the motivation and goal of the plan, but questions the ability of the plan to succeed due to the lack of strength of the language. The commenter suggests incorporating stronger language into the plan. The comments address opinions related to the language of the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R8

10/15/2022 Carol Wuenschell

The comments support the 2022 Scoping Plan and the multitudes of methods proposed to curb GHG emissions. The comments address opinions related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R9

10/24/2022 Julie Parker, League of Women Voters

This comment letter is a duplicative submittal. Please refer to response to comment R7.

Comment Letter R10

10/24/2022 Quinn Piening, California Tow Truck

The comments express opposition to elements of the 2022 Scoping Plan. The comments address policy aspects and general concerns related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R11

10/24/2022 Jessica Wentz

The comments analyze the scope of the analysis of Appendix I, Effects of Forest Management on GHGs, and proposes additional methods to managing forests to lower emissions. The comments address policy aspects related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R12

10/24/2022 Fernandez Ignacio

The comments support increasing the production of renewable energy to help stabilize and decarbonize the states electrical grid, building electrification and increasing efforts to remove carbon from the atmosphere. The comments address opinions related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R13

10/24/2022 Charles Davidson

R13-1: The commenter states, "The California Air Resources Board (CARB) Draft 2022 Scoping Plan commits the transformation of an increasing proportion of the State's refinery capacity to advanced biofuels production, using animal fats, vegetable oils and greases, in order to make both renewable diesel and sustainable aviation fuel (SAF). There are a number of false assumptions and environmentally harmful inclusions in the CARB Draft Scoping Plan affecting carbon dioxide emissions from multiple points within the well-to-wheel greenhouse gas analysis of transportation fuels, to which the State hopes to address. My 2022 Draft Scoping Plan comment, here, addresses these multiple CO2 emissions points within the fuel pathway, from before the refinery level (i.e., agricultural/upstream), then at the refinery level (midstream) and after the refinery (upstream)…."

Response: Please refer to Master Response 6.

Comment Letter R14

10/24/2022 Jared Yoshiki, AOPA

R14-1: The comments address impacts of the 2022 Scoping Plan on the Aviation industry in California and the country. The commenter states the methods proposed for achieving the

goals set forth for reducing emissions in the aviation industry will not be possible for decades due to the technology not being available.

Response: Please refer to Master Response 6.

Comment Letter R15

10/24/2022 Jennifer Svec-Williams

The comments raise concerns over potential increased costs for building and purchases homes. Pursuant to CEQA Guidelines Section 15131, economic or social effects shall not be treated as significant effects on the environment unless they result in a physical change that may affect the environment. The comments do not raise an issue related to the adequacy, accuracy, or completeness of the Recirculated Draft EA and no further response is required. The comments are noted and are being provided to the Board members for their consideration.

Comment Letter R16

10/24/2022 Jessica Marcus, Drax

The comments express support for the 2022 Scoping Plan. The comments address opinions related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R17

10/24/2022 Amanda Parsons DeRosier, Global Clean Energy

R17-1: The commenter states, "The RDEA lists several areas as having "significant impacts" associated with the use of Alternative Low Carbon Fuels. Respectfully, the impacts listed in the RDEA do not apply to Global Clean Energy's Bakersfield Renewable Fuels Refinery or the production of our proprietary camelina feedstock. The determinations of significance for Low Carbon Fuel Alternatives outlined within this RDEA include: **Aesthetics, Agriculture and Forestry Resources, Biological Resources, Geology and Soils, Hydrology and Water Quality, Land Use Planning, Noise and Vibration, and Utilities and Service Systems**. CEQA requires a finding of significance if a project "has the potential to substantially degrade the quality of the environment." (Cal. Code Regs., tit 14, § 15065, subd.

(a).) We believe the determination of significance for Global Clean Energy's operations is inadequately addressed within the RDEA, as our impacts are less than significant in these stated areas:

Impact 1.b: Long-Term Operational-Related Effects on Aesthetics
The cultivation of our camelina feedstock, grown between traditional crop cycles on existing

farmland that is otherwise left fallow or idle, as well as the furtherance of construction on our renewable fuels refinery, located within an appropriately zoned, non-residential area not located along a scenic route, do not contribute to significant aesthetic impacts.

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

As previously noted by CARB staff, our camelina feedstock does not result in land use change as it grows between crop cycles on existing farmland that is otherwise idle or fallow. Therefore, increased cultivation and production of camelina would not result in alteration of the location and extent of existing farm footprints nor would it necessitate the expansion of agricultural land into rangeland, grassland, or forests. Further, camelina is not used for food, ensuring no displacement of food-based production on agricultural land currently used to grow row crops. As noted within the RDEA, "the development of energy crops adapted to be highly productive on lands marginal for other agricultural uses could reduce the potential impact of biofuel production on non-fuel crop production." We believe camelina falls within this category of crops and would not contribute to potential land use changes that could adversely affect agriculture and forestry resources.

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

Similar to waste products, camelina was assigned a "zero" LUC value by CARB due to its quick maturity and unique growing cycles (between crop cycles on existing farmland) that provide soil benefits similar to those of a cover crop on idle or fallow established farmland where it is grown. Camelina is not widely used as a food product, thereby not displacing food or resulting in the expansion of agricultural acreage. Furthermore, Global Clean Energy's patented camelina varieties do not require the use of pesticides or increased soil nutrients, eliminating the concern over runoff impacts. Additionally, camelina is a melliferous species that has been shown to enhance biodiversity where it is grown, providing a biological resources benefit to the land on which it is cultivated.

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

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

Camelina provides similar protection to agricultural lands as cover crops – it prevents soil erosion and adds to crop diversity on the lands where it is planted. Furthermore, camelina provides nutrient benefits to soils including reduced nitrogen leaching, increased nutrient retention in soil, and improved soil fertility.

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

Concerns are outlined within the RDEA over Agricultural nonpoint source (NPS) pollution, and its potential impacts to the water quality of rivers, lakes, and wetlands and contributions

to contamination of estuaries and groundwater. Agricultural activities that cause NPS pollution include poorly located or managed animal feeding operations; overgrazing; plowing too often or at the wrong time; and improper, excessive, or poorly timed application of pesticides, irrigation water, and fertilizer. As noted previously, the cultivation of camelina does not require pesticide use, excessive fertilizer, or irrigation water. Camelina is a low water use crop that grows on dryland (non-irrigated) farms using natural rainfall as its irrigation source. Therefore, camelina does not contribute to adverse effects on water quality.

Impact 11.b: Long -Term Operational-Related Impacts on Land Use and Planning
While Global Clean Energy's operations may require future/ongoing construction of new or modified infrastructure, these operations would occur on existing, appropriately zoned parcels not contributing to land use change. Further, our patented camelina varieties are grown in such a manner so as to not contribute to land use change. As discussed above under, "Agriculture and Forestry Resources," "Biological Resources," "Geology and Soils," and "Hydrology and Water Quality," camelina cultivation does not result in environmental effects associated with land use change that would be potentially significant as a result of implementing the increase of low carbon fuel alternatives.

Impact 13.b: Long-Term Operational-Related Effects on Noise and Vibration
Global Clean Energy's patented camelina varieties are harvested using farmers' existing equipment. Global Clean Energy's camelina oil is processed into ultra-low carbon renewable fuels at our Bakersfield Renewable Fuels Refinery – a former petroleum refinery that is being refurbished as a renewable fuels refinery. The noises and vibrations associated with the cultivation and processing of feedstock into renewable fuels would remain at the existing noise levels for present-day farming and refining operations. Furthermore, Global Clean Energy's refinery contains existing rail lines that will be used to transport the majority of feedstock from out of state. By utilizing these existing railways and rail schedules, no increase in sound or vibrations to current rail operations would be expected. There would not be a substantial increase in either noise or vibration associated with Global Clean Energy's operations.

Impact 19.a: Long-Term Operational-Related Effects on Utilities and Service Systems
Global Clean Energy's Bakersfield Renewable Fuels Refinery is in the process of installing a 10 MW solar farm on the 510-acre refinery property. This installation is expected to relieve utility demand for refinery activities and send excess energy produced onsite to the grid for community use. Further, our patented camelina feedstock grows on dryland farms and does not require increased irrigation (see above). Therefore, no increased water demand or electricity demand is associated with Global Clean Energy's operations. Furthermore, Global Clean Energy's fuels produce zero waste. Once our camelina oil is extracted, the remaining biological materials are converted into a livestock feed for use in California, reducing the need for livestock feed imports into the state.

Conclusion

As noted within the RDEA, "Continued implementation of the LCFS program will continue to send market signals that incentivize use of fuels with less potential for land conversion and associated effects on biological species." (RDEA at p. 100.) Global Clean Energy's renewable fuels production operations are vertically integrated from farm to fuel, do not contribute to land use change, and provide multiple benefits to the biological environment – from capturing carbon in the soil while camelina is grown, to producing ultra-low carbon renewable fuels to power large scale machinery, equipment, and transportation. We encourage CARB to incentivize the use of camelina-based renewable fuels and other sustainable renewable fuels as the regulatory process continues, and to encourage the incorporation of renewable fuels' sustainability benefits within AB 32 Scoping Plan procedures. We request that CARB should clarify that these significance determinations in the RDEA are not applicable to any subsequent project-level environmental review of the use of camelina feedstock."

Response: The scope of the analysis presented in the Recirculated Draft EA is discussed in Section 1.D.2, "Scope of Analysis and Assumption." As discussed there:

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

While the commenter states that environmental impacts related to Global Clean Energy's Bakersfield Renewable Fuel Refinery would not be significant with regards to several topic areas, the environmental analysis is not intended to address a single facility. Rather, it is intended to be broad to encompass the types of impacts that could occur due to implementation of the 2022 Scoping Plan. Furthermore, it is intended to be a conservative, worst-case analysis to ensure that all potentially-significant reasonably foreseeable impacts statewide are fully analyzed at this programmatic planning stage. In preparing the Recirculated Draft EA, CARB did not intend to suggest that every project-specific action would encounter the range of potentially significant impacts identified in the Recirculated Draft EA. Because the comment does not contain substantial evidence related to the significance conclusions presented in the comment, no further response can be provided. No changes to the Recirculated Draft EA are necessary.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R18

10/24/2022 Jason Pfeifle, Center for Biological Diversity

R18-1: The commenter states, "**D. CCS requires large amounts of energy, which threatens California's grid stability**

CCS requires large amounts of energy for heat and electricity that would put increased pressure on California's grid. The additional energy required to capture, transport, and inject carbon underground results in higher energy costs, greater emissions of non-CO2 air pollutants such as NOx, and increased energy demand on an already strained power grid. CARB must take these additional energy demands and risks into account when considering CCS, especially given the grid demands in recent years that have led to blackouts.[8] Adding CCS to current energy production is likely to increase the cost of energy to Californians. A recent study concluded that for a new-build gas-fired plant with CCS, the CCS could increase the cost of energy produced by up to 61 percent.[9] CARB should not be encouraging and incentivizing CCS in fossil fuel sectors that require phaseout planning and financial support for community and worker transitions. Instead, the agency must preserve new renewable and clean energy infrastructure for replacing fossil fuels and for the rapid decarbonization needed to meet California's climate goals.

Response: Please refer to response to comment R19-9.

R18-2: The commenter states, "**E. CCS increases water usage and risks polluting groundwater and air quality**

CCS projects can increase power plant water usage by 50-90%, making CCS an exceptionally risky endeavor for drought-ridden California. Water tables are already compromised in the Central Valley, which is where the majority of CCS sites are being proposed. Continuing to draw upon non-renewable water resources will further compromise the region's water infrastructure.[10] In addition, CCS may introduce saline into water tables, rendering the water unusable, thus furthering a state of climate crisis. When piped in from distant locations, water also has a significant carbon footprint,[11] whose cost should be factored into decisions regarding CCS. CCS also can sustain and even exacerbate air pollution, an issue of particular concern given that the regions where CCS projects are planned and projected are in areas of severe nonattainment for state and federal air quality standards. CARB must not rely on climate strategies that threaten air or water quality or water supplies.

Response: The Recirculated Draft EA discusses the potential adverse effects on water supply in Section 4.19, "Utilities and Service Systems." As stated in the second paragraph on page 233 of the Recirculated Draft EA, "CCS-related operations could place additional strain on existing and future water resources. Depending on variations in water security, which vary year-to-year, the water required to facilitate the transfer for CO2 into storage reservoirs could compete with other water demands within the vicinity of CCS operations. Thus, long-term operational impacts on utilities and services systems would be potentially significant." The Recirculated Draft EA further states:

> Additionally, use of CCS could place additional demand on water resources depending on the CCS technology and approach deployed, which could present additional water challenges for the state. Given the state's uncertain future regarding water security, water used for CO_2 capture and sequestering activities could result in further depleting water resources during periods of drought (Newmark et al. 2010). However, the use of fresh water can be reduced through the use of project-site and technology specific approaches identified as part of project design, project level planning, and project environmental review. Because of the adverse impacts described above, long-term operational impacts on hydrologic resources associated with mechanical carbon dioxide removal and CCS actions would be potentially significant.

Mitigation Measure 19.a is provided to reduce environmental impacts. However, because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated within the Recirculated Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts (page 238 of the Recirculated Draft EA).

With regard to potential groundwater contamination associated with CCS operation, page 167-168 of the Recirculated Draft states:

> The pressure associated with CCS could result in minor to moderate seismic events, which could cause several centimeters of shift within a fault line. While these events could not be substantial such that damage to humans or structures would occur, brine displacement could result through the formation of leaks within geologic formations. This could result in contamination of groundwater resources; however, reservoirs are often selected that exist below the groundwater tables so as to avoid contamination of these resources in the case of leakage (Newmark et al. 2010)…. Because of the adverse impacts described above, long-term operational impacts on hydrologic resources associated with mechanical carbon dioxide removal and CCS actions would be potentially significant.

Because environmental impacts addressed in the comment were included in the Recirculated Draft EA no changes to the document are necessary.

R18-3: The commenter states, "**F. CCS–even with guardrails–endangers communities**

No community in California should be a dumping ground for carbon waste or be put in harm's way by this dangerous technology. In California and elsewhere, Tribal and frontline communities that have already suffered the worst impacts of industrial pollution and environmental racism will likely face the biggest risks from CCS.

Over a dozen CCS projects have already been proposed in the San Joaquin Valley, an area that suffers from the worst air pollution in the nation, and where many residents are particularly vulnerable to pollution.[12] These CCS projects pose significant new health,

safety, and environmental risks from toxic air pollution, pipeline ruptures, and leaks from underground CO2 storage that could sicken and even kill people.[13] Many of these proposed projects are for bioenergy with CCS (known as BECCS). Bioenergy facilities in the Central Valley have had repeated air pollution violations,[14] and research shows that bioenergy facilities with CCS can emit large amounts of harmful non-CO2 air pollution.[15] In addition, seven of the newly proposed CCS sites are located over or near fault lines, increasing risk of rupturing pipes, releasing stored CO2, and contaminating water supplies.[16]

Furthermore, while the recently-passed SB 905 places a moratorium on pipelines until the federal pipeline agency, PHMSA, completes its rulemaking, it contains an exception for facilities that inject CO2 under their property. We know of at least three CCS projects that are proposing to inject under their property, and the Scoping Plan should not indirectly encourage this kind of community and worker endangerment.

The best community protection is to avoid this inherently dangerous technology altogether in California's climate plan and instead focus on rapidly phasing out the production, refining, and use of fossil fuels.

We strongly urge you to adopt a Scoping Plan that does not rely on investment in CCS for fossil fuel infrastructure. California has the technology and resources to rapidly reduce emissions at the source and transition off fossil fuels at the pace the climate crisis demands. We need you to build on your recent climate action and adopt a Scoping Plan that will continue to put California at the forefront of global climate leadership and environmental justice."

Response: Please refer to Master Responses 2, 3, and response to comment 566-15.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R19

10/24/2022 Chelsea Tu, California Environmental Justice Alliance

R19-1: The commenter states, "**1. CARB must release an updated Draft Scoping Plan along with an updated draft EA to ensure meaningful public participation.**

On September 9, CARB released the RDEA for public review and comment. The RDEA's project description section outlines anticipated changes to the CARB's Draft Scoping Plan, such as "the addition of offshore wind energy generation facilities" and "targets for carbon removal of 20 MMT in 2030 and 100 MMT in 2040, with focus on natural and working lands first".[1] CARB also provides an updated table on proposed actions for the Proposed Scenario

in Tables 2-1 and 2-2, as well as an updated summary of reasonably foreseeable compliance responses to these proposed actions.[2] Disappointedly, CARB did not release an Updated Draft Scoping Plan nor updated modeling results based on, and to concurrently accompany, these proposed changes. We recently learned that CARB will conduct a public workshop on updated modeling results for the Scoping Plan on October 28, after these comments are due.

Public participation is an essential part of the CEQA process.[3] Commenters must have sufficient information about an agency's proposed project in order to recommend alternatives or mitigation measures to reduce significant environmental impacts that could result from the project.[4]

Yet CARB's release of the RDEA without releasing an Updated Draft Scoping Plan along with updated modeling outcomes at the same time undermines meaningful and robust public participation. Without the details on the changes that CARB has made to the Draft Scoping Plan's proposed actions, the public lacks the necessary information it needs to know what CARB is actually proposing. For instance, although CARB states in the RDEA that it intends to achieve the newly proposed carbon removal targets with a "focus on natural and working lands [("NWLs")] first," this statement is not enough for the public to know what types of reasonably foreseeable responses CARB envisions to remove GHGs from NWLs.[5] It is also difficult to tell whether CARB is even serious about this priority. CARB only includes these targets in Table 2-1 on actions related to AB 32 GHG Inventory Sectors, but does not include them in Table 2-2 on actions related to NWL sectors.[6]

CARB must release an updated Draft Scoping Plan and modeling outcomes, along with an updated draft EA that analyzes the full environmental and health impacts of the proposed plan.

1 Cal. Air Res. Bd, Recirculated Draft Environmental Analysis (Sept. 9, 2022)[hereinafter RDEA] at 11, https://ww2.arb.ca.gov/sites/default/files/2022-09/2022-draft-sp-appendix-b-draft-ea-recirc.pdf.
2 RDEA at 17-19 (Table 2-1 & 2-2); RDEA at 20-40.
3 Cal. Pub. Res. Code § 21000; Cal. Code Regs. tit. 14, § 15201.
4 Cal. Code Regs. tit. 14, § 15204.
5 RDEA at 11.
6 RDEA at 18.

Response: All of the actions for the Scoping Plan Scenario as described in Chapter 2 of the Final 2022 Scoping Plan were analyzed in the Recirculated Draft EA (see also actions referenced in Tables 2-1 and 2-2 of the Recirculated Draft EA). These actions for the AB 32 GHG Inventory Sectors and natural and working lands were used to disclose the reasonably foreseeable compliance responses, and the environmental effects of these reasonably foreseeable compliance responses are evaluated in Chapter 4 of the Recirculated Draft EA.

Consistent with the public disclosure purposes of CEQA, CARB released the Recirculated Draft EA and solicited public comment on the Recirculated Draft EA as promptly as possible.

Because incorporating input and direction from public comments, the Governor, and pertinent new legislation was needed to update the many analyses supporting the plan other than the environmental analysis, it was not possible for CARB staff to complete and release an updated 2022 Scoping Plan at the precise time the Recirculated Draft EA was released. However, as noted above and in the Recirculated Draft EA, all elements of the proposed Final 2022 Scoping Plan are included and analyzed in the Recirculated Draft EA and Final EA.

R19-2: The commenter states, "**2. CARB must re-do the RDEA's alternatives analysis to match the scenarios proposed under the Draft Scoping Plan and RDEA.**

Under Title 17, Section 60004.2(a) of the California Code of Regulations, the Scoping Plan's EA must contain "[a] discussion of a reasonable range of alternatives to the proposed project [that] could feasibly attain most of the project objectives but could avoid or substantially lessen any of the identified significant impacts[]."[7] Additionally, CARB must analyze a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.[8]

Bewilderingly–and contrary to the law–the draft EA and RDEA alternatives *differ from* the scenarios in the draft Scoping Plan. This discrepancy prevents the public from having access to the necessary information to evaluate the relative environmental impacts of the proposed scenarios.[9] Despite being alerted of this error earlier in the process, CARB continues to be in violation of Section 60004.2(a)(5). Furthermore, although CARB included new proposed project objectives, project descriptions, and proposed actions, it has failed to incorporate any of these changes into its alternatives discussion in the RDEA.

In particular, CARB included three additional objectives into RDEA, Objectives 21-23, that require it to revise the alternatives analysis in order to comply with Section 60004.2(a)(5).[10] For instance, Objective 22 states that it is the goal of the Scoping Plan to describe how to equitably achieve vehicle miles traveled (VMT) reductions of 25% per capita below 1990 levels by 2030 and 30% per capita below 1990 levels by 2045.[11] Given this and other new objectives, CARB should have but completely failed to discuss whether each proposed alternative could feasibly attain them while avoiding or substantially lessening significant environmental impacts per Section 60004.2(a)(5).

Similarly, since CARB has otherwise substantially updated the project description, it must also update its alternatives analysis. CARB revised the project description section of the proposed scenario to include new information, including:

- "The addition of offshore wind generation facilities";
- Expansion of "reasonably foreseeable responses associated with Natural and Working Lands, including: land application of compost to rangelands and grasslands; reduced fertilizer use," among other responses; and
- "Targets for carbon removal of 20 MMT in 2030 and 1000 MMT in 2045, with focus on natural and working lands first."[12]

CARB included other substantive changes to the actions for the proposed scenario in Tables 2-1 and 2-2, such as the proposal that 20% of aviation fuel demand will be met by electricity or hydrogen in 2045 and offshore wind target of 20 gigawatts by 2045.[13]

The substantial changes CARB has made to the proposed scenario will most likely change the types and magnitude of environmental and health impacts of this scenario. Given these likely changes, CARB should have but fails to revise its discussion on the relative impacts of alternatives compared to the proposed alternative. In order to comply with CEQA, CARB must re-do the EA's alternatives analysis so that it compares the relative environmental impacts of Alternatives 1-4 as they are proposed in the Draft Scoping Plan and modified in the RDEA.

[7] Cal. Code Regs. tit 17, § 60004.2(a)(5) (citing Cal. Code Regs. tit. 14, § 15126.6).
[8] Cal. Code Regs. tit. 14, § 15126.6(a), (f) (lead agencies must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation).
[9] Cal. Env't Justice All. ("CEJA"), Comments on Specific Sectors and Greenhouse Gas Emission Reduction Measures in the 2022 Draft Scoping Plan (Comment 662 for Draft 2022 Climate Change Scoping Plan) (June 24, 2022), https://www.arb.ca.gov/lists/com-attach/4453-scopingplan2022-UjFQM1I5VWdRCAlt.pdf [hereinafter CEJA June 24 Cross-Sector Comments].
[10] RDEA at 283.
[11] RDEA at 15; 283.
[12] RDEA at 11.
[13] RDEA at 17-20."

Response: Please refer to response to comment 670-5.

R19-3: The commenter states, "**3. CARB must consider the Real Zero Alternative proposed by the California Environmental Justice Alliance.**

CARB erroneously states that no comments suggested an alternative comprehensive approach to meet the State's long-term GHG emission reduction goals.[14] CARB ignores the fact that CEJA has proposed the Real Zero Alternative, a comprehensive alternative to reach California's emissions reduction goals, in its June 24 comment letter.[15] CARB failed to and must analyze the Real Zero Alternative in this EA.

[14] RDEA at 281.
[15] See CEJA June 24 Cross-Sector Comments at Attachment A: Real Zero Alternative – June 2022."

Response: Please refer to response to comment 670-16, noting that Scoping Plan Alternative 1 and Recirculated Draft EA Alternative A were developed to incorporate suggestions for considering an alternative that avoids or minimizes reliance on CCS.

R19-4: The commenter states, "**4. CARB must not use carbon capture and storage ("CCS," or "CCUS") or engineered carbon dioxide removal ("CDR") on any fossil fuel infrastructure or bioenergy facilities.**

a. CARB should clarify that SB 905 and SB 1314 prohibit the use of captured CO_2 from CCS for enhanced oil recovery purposes.

We are pleased to see CARB recognize in the RDEA that SB 905 would prohibit an operator to inject CO_2 from a carbon capture, removal, or sequestration project into a Class II injection well for enhanced oil recovery ("EOR") purposes.[16] We recommend that CARB also acknowledge in the RDEA that SB 1314, also passed and signed into law in 2022, similarly prohibits EOR using captured CO_2.

The RDEA discusses the possibility of EOR in conjunction with CCS projects in existing oil fields.[17] Since SB 905 and SB 1314 are now law, CARB should remove the outdated language on the possibility of performing EOR using CCS and CDR, and clarify that such actions are prohibited per these two bills. We also recommend that CARB clarify that it will not study the environmental impacts of using CCS or engineered CDR for EOR since it is not a reasonably foreseeable compliance response to the Scoping Plan.

[16] RDEA at 152.
[17] RDEA at 152."

Response: SB 905 and SB 1314 were signed into law subsequent to the release of the Recirculated Draft EA. SB 905 and SB 1314 prohibit an operator from injecting a concentrated carbon dioxide fluid produced by a carbon dioxide capture, removal, or sequestration project into a Class II injection well for purposes of enhanced oil recovery, including the facilitation of enhanced oil recovery from another well. CARB's analysis of the environmental impacts of CCS and engineered CDR in the Recirculated Draft EA is not specific to enhanced oil recovery projects.

No changes to the Recirculated Draft EA are required in response to this comment.

R19-5: The commenter states, "**b. CCS must not be used on other fossil fuel infrastructure, including refineries and power plants, or on bioenergy facilities.**

Proposed CCS projects for California include (1) post-combustion CCS for refineries and gas-fired power plants, (2) pre-combustion CCS for IGCC power plants including BECCS plants, and (3) oxy-combustion CCS for bioenergy facilities. As our organizations have previously commented, CARB must not use CCS on any fossil fuel infrastructure, such as refineries and power plants. CCS must not be used to extend the life of California's fossil fuel infrastructure. In particular, our organizations have demonstrated the infeasibility and high costs of installing CCS technology on refineries in California.[18] CCS may only be appropriate to consider for processes and end uses that cannot be served by non-emitting alternatives.

Therefore, we are deeply concerned that CARB now proposes to rely on "dispatchable zero-carbon resources such as Allam-Cycle CCS technology," as well as categorize this technology as a renewable energy source.[19] CARB's proposal to count Allam-Cycle CCS technology as renewable energy is completely unsupported and in error. Promotional materials, scientific analyses and the technology's manufacturer itself all assert that the Allam-Cycle is a "novel natural gas power plant design that can theoretically capture 100 percent of emissions."[20] On its face, Allam-cycle is not a "zero-carbon" resource, as it does not account for methane leakage into the atmosphere during the production and transporting of natural gas to the power plant or the potential leakage of stored carbon after it has been captured.[21] Additionally, there is only one plant, a 50 MW test facility in Texas, that has currently operated using Allam-Cycle, so whether it can capture 100% of on-site emissions at a larger scale remains unknown.[22]

Furthermore, Allam-Cycle is a design for new power plants, not for modification of existing facilities. According to its manufacturer, it involves an innovative technique of "burning natural gas with pure oxygen" (oxy-combustion), fed through a high-pressure system to a new, specially-sized turbine, and equipped with both a recuperative process and a CO2 disposal method.[23] Because it is an entirely new design, it requires the construction of new, complex gas-fired power plants and cannot be retrofitted onto existing power plants.[24]

In sum, CARB should delete any reference to the Allam-Cycle in the RDEA. This CCS technology is not "zero-carbon" and its use would require the construction of new gas-fired generation in order to "theoretically" capture carbon, an unproven contention at the utility-scale.

Additionally, CARB must not use CCS on bioenergy facilities, as they pose significant environmental, public health, and climate risks and impacts. See additional discussions in Sections 5 and 6.[25]

[18] See Cal. Env't Justice All. ("CEJA"), Comments on Specific Sectors and Greenhouse Gas Emission Reduction Measures in the 2022 Draft Scoping Plan (Comment 668 for Draft 2022 Climate Change Scoping Plan) (June 24, 2022), at 20-29, https://www.arb.ca.gov/lists/com-attach/4459-scopingplan2022-UDMAY1Y9V2VQCQBk.pdf.

[19] RDEA at 20-21.

[20] David Yellen, Carbon Capture and the Allam Cycle: The future of electricity or a carbon pipe(line) dream?, Atlantic Council (May 21, 2020) [hereinafter Yellen 2020], https://www.atlanticcouncil.org/blogs/energysource/carbon-capture-and-the-allam-cycle-the-future-of-electricity-or-a-carbon-pipeline-dream/; see also NET Power, The Four Steps to Advanced Clean Energy: How NET Power Technology Works (2021)[hereinafter NET Power, The Four Steps to Advanced Clean Energy], https://netpower.com/technology/.

[21] See Raghav Chaturvedi et al., CO2 Sequestration by Allam Cycle, Senior Design Reports, University of Pennsylvania 123 (April 20, 2021), https://repository.upenn.edu/cgi/viewcontent.cgi?article=1135&context=cbe_sdr.

[22] See Yellen 2020.

[23] See NET Power, The Four Steps to Advanced Clean Energy.

[24] Karl M. Bandilla, Future Energy (Third Edition) – Improved, Sustainable and Clean Options for Our Planet. Chapter 31 – Carbon Capture and Storage, 669, 688 (2020) https://www.sciencedirect.com/science/article/pii/B9780081028865000311?via%3Dihub.

[25] This letter incorporates by reference the comment submitted by the Center for Biological Diversity to Liane M. Randolph. Ctr. for Biological Diversity, Re: Center for Biological Diversity Comments on Draft 2022 Scoping Plan Update (June 24, 2022), https://www.arb.ca.gov/lists/com-attach/4347-scopingplan2022-U2FTZwZYVTYBMVIN.pdf. Pages 24-34 refer specifically to CCS and BECCS."

Response: Please refer to response to comment R26-3 regarding Allam-Cycle CCS technology. No new gas-power plant capacity, in any form, was implemented as a modeling constraint consistent with the CARB Board direction and Governor Newsom's request.

R19-6: The commenter states, "**5. CARB must not count bioenergy carbon capture and storage ("BECCS") toward the proposed carbon removal targets.**

CARB briefly states in the RDEA that it is setting new targets for carbon removal of 20 MMT in 2030 and 100 MMT in 2040 in the revised Scoping Plan, "with focus on natural and working lands first."[26] However, as described above, the RDEA does not provide the necessary information on how CARB will achieve these ambitious carbon removal targets. This is problematic because the Draft Scoping Plan indicates that the potential for carbon dioxide removal ("CDR") is limited, equating to ~1-2 MMT CO_2e in 2030,[27] compared to the proposed target to remove 20 MMT by 2030. Furthermore, CDR that is achieved through "natural" versus "engineered" methods have significantly different risks and impacts. It is imperative that CARB in the RDEA addresses how CDR targets will be met and assess the differential impacts of natural and engineered CDR methods.

For example, CDR through "natural carbon sequestration" occurs via CO_2 uptake and storage by vegetation and soils in ecosystems and other NWLs. Key "natural" CDR methods include the protection of forests, shrublands, wetlands, and other ecosystems that act as enormous carbon storehouses that pull CO_2 out of the air, in addition to providing many other benefits such as wildlife habitat, recreation, flood and erosion control, and clean air and water.[28]

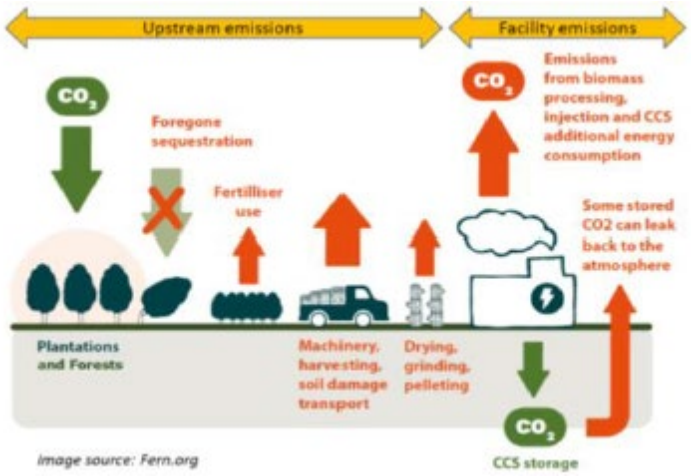
On the other hand, "engineered" CDR are CO_2 removal methods using machinery and chemicals, such as direct air capture with CCS ("DACCS") which is in its infancy, very energy-intensive, and costly. The Draft Scoping Plan also includes BECCS as a CDR method,[29] although BECCS has not proven to be carbon negative and poses significant risks to public health, safety, ecosystems, and the climate.

In particular, we caution that CARB must not count BECCS as a means of achieving CDR targets. BECCS is often incorrectly promoted as being carbon negative, meaning that proponents claim it will remove CO_2 from the atmosphere. This claim is often based on the inaccurate belief that biomass energy is carbon neutral, though this belief has been thoroughly debunked.[30] Substantial CO_2 emissions and co-pollutants are emitted throughout the BECCS lifecycle, as shown in Figure 1. Upstream emissions are released from cutting

trees and other vegetation which ends their carbon storage and sequestration; use of fertilizers and pesticides after cutting; transporting biomass in trucks; and processing biomass through chipping and drying. As detailed elsewhere in these comments, incinerating biomass is highly polluting and only some CO_2 and co-pollutants would be diverted from the smokestack through CCS, leading to a net increase in pollution, in addition to the substantial risks of leakage back to the atmosphere.

The IPCC has also concluded that BECCS is not necessary to meet the 1.5°C Paris Agreement climate target. Instead, pathways with the best chance of limiting heating to 1.5°C require a rapid phaseout of fossil fuels along with limited CDR by natural sources such as reforestation and enhanced soil remediation. These pathways make no use of CCS.[31]

Figure 1: CO_2 and co-pollutant emissions from the BECCS life cycle. *Source: Fern 2022.*



[26] RDEA at 11.

[27] Cal. Air Res. Bd, Draft 2022 Scoping Plan Update (May 10, 2022) [hereinafter Scoping Plan] at 75, https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf, .

[28] William R. Moomaw et al., Intact forests in the United States: Proforestation mitigates climate change and serves the greatest good, 2 Frontiers in Forests and Global Change 27 (2019), https://doi.org/10.3389/ffgc.2019.00027; Beverly E. Law et al., Creating strategic reserves to protect forest carbon and reduce biodiversity losses in the United States, 11 Land 721 (2022), https://doi.org/10.3390/land11050721.

[29] Scoping Plan at 75.

[30] Climate Action Network Int'l, Position: Carbon Capture, Storage, and Utilisation (January 2021), https://climatenetwork.org/resource/can-position-carbon-capture-storage-and-utilisation/; John Sterman et al., Does wood bioenergy help or harm the climate?, 78 Bulletin of the Atomic Scientists 128 (2022), https://doi.org/10.1080/00963402.2022.2062933; Fern, Six problems with BECCS (2022), https://www.fern.org/fileadmin/uploads/fern/Documents/2022/Six_problems_with_BECCS_-_2022.pdf [hereinafter Fern 2022].

[31] See Low Demand (LD) Pathway in IPCC Sixth Assessment Report at Figure 3.7 (IPCC, Climate Change 2022: Mitigation of Climate Change, Contribution of Working Group III

to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2022), doi: 10.1017/9781009157926); see also Pathway 1 in IPCC Global Warming of 1.5°C Report at 14, Figure SPM 3b (IPCC, Global Warming of 1.5°: An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (2018)).”

Response: Please refer to Master Response 3 and response to comment 566-15 regarding the role of CDR and CCS in achieving the carbon removal targets in the 2022 Scoping Plan.

Regarding differentiation of natural CDR methods, as described in Chapter 2 of the 2022 Scoping Plan, for natural and working lands (NWL), CDR includes the net increase in long term carbon stocks across various landscape types. Based on CARB’s NWL analysis, urban forests and grasslands are one of the few landscapes that are projected to increase in carbon stocks over time. Forests, shrublands, and sparsely vegetated lands are projected to decrease in carbon stocks while croplands and wetlands are projected to be a net emitter of GHGs. The impacts of the NWL management actions in the Scoping Plan Scenario are discussed in the 2022 Scoping Plan Chapters 2, 3, and 4 and in the Recirculated Draft EA. Regarding the commenter’s point related to use of fertilizers and pesticides after cutting trees, it should also be noted that fertilizer use in forests is extremely rare in California so the emissions from fertilizer production would be insignificant, and the impacts of pesticides on soil emissions is not well understood currently.

R19-7: The commenter states, “**a. CARB must evaluate air pollution impacts across the CCS lifecycle.**

CARB must evaluate air pollution impacts across the lifecycle of CCS systems, including emissions during the construction of new CCS infrastructure, the modification of existing infrastructure, and the operation and maintenance of CCS equipment. Air pollution across the CCS life cycle comes from several main sources, all of which must be evaluated: (1) the industrial facility, (2) the site of CO_2 injection, (3) upstream, and (4) CO_2 transport. At the industrial facility, CCS operations emit air pollution during the energy-intensive capture and compression of CO_2. At the site of injection, air pollution is emitted during the process of pumping the CO_2 underground for storage and other purposes. Upstream pollution comes from the extraction, processing, and transport of the additional fuel needed to power the CCS equipment, which can be considerable.

CARB must also analyze the air pollution that will be emitted from the transport of CO_2 between industrial facilities where CO_2 is captured and injection sites. CO_2 transport by trucks, rail or barge could significantly increase air pollution, especially when there are large distances between industrial facilities which are spread across the state, and injection sites which are targeted for the Central Valley. CO_2 transport by pipeline also poses significant air pollution risks due to inevitable pipeline leaks and blow-outs that would release co-injected air pollutants like hydrogen sulfide.[33]

Given the evidence presented below and real-world consequences for vulnerable communities across the state, CARB must conduct a comprehensive, rigorous analysis of the short-term and long-term impacts of CCS on air pollution and related health harms, which are likely to be substantial.

[33] Cong. Rsch Serv., *Carbon dioxide pipelines: Safety issues* (2022), https://crsreports.congress.gov/product/pdf/IN/IN11944; Pipeline Safety Trust, *Accufacts' Perspectives on the State of Federal Carbon Dioxide Transmission Pipeline Safety Regulations as it Relates to Carbon Capture, Utilization, and Sequestration within the U.S.* (2022), https://pstrust.org/wp-content/uploads/2022/03/3-23-22-Final-Accufacts-CO2-Pipeline-Report2.pdf."

Response: Please refer to response to comment R19-9.

R19-8: The commenter states, "**b. CARB must analyze the key factors that determine the types and amounts of air pollution emitted by CCS operations.**

CCS operations can emit a wide array of criteria air pollutants and hazardous air pollutants, all of which should be evaluated by CARB due to their public health harms. CARB must analyze key factors that determine the types and amounts of air pollution emitted by CCS operations, including: (1) the type of CCS (e.g., post-combustion, pre-combustion, oxy-combustion); (2) the type of facility (e.g., refinery, bioenergy power plant, gas-fired power plant, oil and gas operation, cement plant); (3) the energy penalty of CCS; (4) the percentage of facility emissions covered by CCS; (5) the pollution control equipment being proposed; and (6) the real-world performance of CCS equipment and pollution control equipment."

Response: Please refer to Master Response 3 regarding use of CCS and CDR generally and associated air pollutant emissions; response to comment R19-9 regarding the energy penalty of CCS; responses to comments R19-10 and R33-6 regarding emissions covered by CCS; and response to comment R26-5 regarding performance of CCS projects.

R19-9: The commenter states, "**c. The energy penalty of CCS is a key factor that can significantly increase air pollution at the facility, at the site of CO_2 injection, and upstream.**

CCS operations are energy-intensive because they require large amounts of energy to capture, compress, transport, and inject carbon underground. CCS uses an estimated 15% to 25% more energy to produce the same amount of power as a conventional plant, called the "energy penalty."[34] Because CCS uses more energy, CCS facilities emit more non-CO_2 air pollutants and cause higher upstream pollution from the extraction, processing, and transport of the additional fuel that is needed than non-CCS projects. This results in more fine particulate matter, NOx, SOx, ammonia, hazardous volatile organic compounds (VOCs), and other toxic pollutants that threaten the health of nearby communities. For example, a Stanford study that examined the total lifecycle costs of carbon capture from a coal plus CCS power plant, including emissions resulting from the energy penalty, found that CCS "reduces only a small fraction of carbon emissions, and it usually increases air pollution."[35]

[34] Climate Action Network Int'l, *CAN Position: Carbon Capture, Storage, and Utilisation* at 9 (2021), https://climatenetwork.org/resource/can-position-carbon-capture-storage-and-utilisation/.

[35] Taylor Kubota, *Stanford Study casts Doubt on Carbon Capture*, Stanford News, Oct. 25, 2019, https://news.stanford.edu/2019/10/25/study-casts-doubt-carbon-capture/, citing Mark Z. Jacobson, *The health and climate impacts of carbon capture and direct air capture*, 12 Energy Env't Sci. 3567 (2019), https://doi.org/10.1039/C9EE02709B."

Response: CARB agrees that energy is required to support CCS and the energy per unit of electricity produced is higher at a facility with CCS compared to one without CCS. The Scoping Plan Scenario provides an illustrative pathway to transition significant demand for petroleum fuels to alternatives, such as clean electricity. The Scoping Plan Scenario evaluates overall energy demand and, as a statewide planning effort, does not have the granularity to analyze plant-level energy demand. However, with the exception of the electricity sector, which is estimated using the RESOLVE model, energy demand associated with CCS at industrial facilities is accounted for in PATHWAYS.

The Scoping Plan Scenario's reduced statewide demand for liquid petroleum fuel or fossil-based electricity generation outweighs the increased energy associated with CCS to produce each gallon of fuel or each MWh of electricity. For example, as the number of zero-emission vehicles on California roads increases, there is reduced demand for gasoline and diesel and refineries produce lower volumes of liquid petroleum fuels. While the energy to produce each gallon of fuel increases to accommodate use of CCS, the overall reduction in energy use associated with the reduced fuel production outweighs the minor increase in energy needed to run the CCS system.[101] Similarly for the electricity sector, as electricity production from renewable wind, solar, and other non-combustion fuel technologies increase (supported by electricity stored in batteries), electricity production from fossil gas combustion-based generation decreases. Although the energy required to produce each MWh of electricity with fossil gas increases due to the parasitic load from CCS, overall, the reduction in fossil gas-combustion MWh also outweighs the increase in energy needed to run the CCS system.[102] The Scoping Plan Scenario includes a 47% reduction in demand for fossil gas for electricity generation by 2045 relative to 2022.[103] For cement or other industrial processes, the energy penalty of CCS will affect the overall energy demand to produce these goods. Shifting

[101] California's electricity grid is getting progressively cleaner as directed by Senate Bill 100 (De Leon, Chapter 312, Statutes of 2018) and Senate Bill 1020 (Laird, Chapter 361, Statutes of 2022), which establish the target to supply 100 percent of retail sales of electricity to California end-use customers with renewable and zero-carbon resources.

[102] CCS has been recognized as part of the State's climate strategy to achieve carbon neutrality through Governor Newsom's directive for CARB to establish CO2 removal and carbon capture targets of 30 MMT in 2030 and 100 MMT in 2045, as well as in newly-adopted legislation: AB 1279, which states that CARB shall work with state agencies to implement a variety of policies and strategies that enable CO2 removal and CCUS technologies in California to complement emissions reductions and achieve net zero GHG emissions and a reduction in anthropogenic GHG emissions by 85 percent by 2045; and SB 905 directs CARB to establish a Carbon Capture, Removal, Utilization, and Storage Program.

[103] See https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-PATHWAYS-data-E3.xlsx for electric sector combusted fuels.

cement production away from coal/coke towards low or zero emissions fuels, along with the use of alternative materials to reduce the carbon emissions associated with the chemical reactions required to process limestone to produce cement, are expected to offset the energy penalty to some extent. Overall, however, the GHG reduction benefits of CCS more than offset the comparatively minor energy increases needed to support use of CCS. Furthermore, it is important to consider this in the broader context that the 2022 Scoping Plan provides dramatic overall reductions in emissions across the state and its sectors.

CARB acknowledges that there will be emissions associated with injecting CO_2 in permanent geologic storage facilities and transporting CO_2. Transport emissions will decrease along with all mobile source emissions as zero-emission technologies displace vehicle and infrastructure technologies reliant on liquid petroleum fuels. Emissions associated with injection of CO_2 at permanent geologic storage facilities are not anticipated to lead to increased impacts relative to the existing environmental setting. CARB also acknowledges that there may be emissions associated with the upstream activities needed to provide electricity to support CCS operations, such as emissions associated with supplying natural gas by pipeline to existing power plants. Leaks of all types of gas associated with the gas system are expected to be reduced as gas infrastructure is reduced in line with decreases in fossil fuel demand as indicated in the Scoping Plan Scenario. CARB's oil and gas methane regulation[104] requires leak detection and repair and ambient air monitoring for underground natural gas storage facilities. Additionally, the CPUC's SB 1371 (Leno, Chapter 525, Statutes of 2014) Natural Gas Leak Abatement Program implements rules and procedures for commission-regulated pipeline facilities that are designed to mitigate leaks and corresponding methane emissions from the gas transmission and distribution system.

In accordance SB 905, CARB will develop a Carbon Capture, Removal, Utilization and Storage Program. As described in Master Response 2, a provision within SB 905 does not allow for the transport of concentrated carbon dioxide through pipelines until the conclusion of a federal carbon dioxide pipeline safety rulemaking. Therefore, at this time, only projects that do not need to transport carbon dioxide via pipeline would occur in California, particularly in the near term. However, to conservatively disclose the range of potential environmental impacts, the Recirculated Draft EA assumed all outcomes and actions reflected in the 2022 Scoping Plan are fully realized and not limited by any permitting or federal rulemaking processes on pipeline safety regulations. Additional background and next steps for CCS can be found in Chapter 4 of the 2022 Scoping Plan.

The updated air quality modeling for the Scoping Plan Scenario included in Chapter 3 of the Recirculated Draft EA, shows reductions in NOx, PM2.5, and ROG that result in significant improvements in air pollution, including reductions in concentrations of ground-level ozone and PM2.5. These reductions in pollutant exposure have significant corresponding health benefits that are shown in Section 4.3 of the Recirculated Draft EA. As described above, if the CCS-related energy emissions from the electricity sector were included, CARB staff expects it would not result in emissions in excess of the reference (please also refer to Master

[104] https://ww2.arb.ca.gov/resources/documents/oil-and-gas-regulation

Response 3 regarding the role of CCS in the 2022 Scoping Plan and air quality impacts from operation of CCS).

R19-10: The commenter states, "**d. The percentage of facility emissions covered by CCS is important.**

Industrial facilities have numerous sources of air pollution, only some of which may be covered by CCS equipment, meaning that a large percentage of facility emissions may not be covered. For example, for petroleum refineries, catalytic cracking units are often proposed for CCS retrofits, while other significant emissions sources are not (e.g., power stations, atmospheric distillation units, and steam methane reformers for hydrogen production). In addition, refineries have many smaller emissions sources such as boilers, heaters, and flares that cumulatively contribute significant emissions but which are considered infeasible or impractical to retrofit with CCS.[36] The treatment of flared gases using CCS is also considered impractical, mainly because of the uncertainty in unplanned flaring (e.g., equipment failures, blow downs, or emergency shutdowns). As noted by one recent study, "[t]here is an issue of scale and diminishing returns for carbon capture, where including more sources of emissions within the refinery in the capture system increases the energy penalty for operating the system and decreases the concentration of the CO_2 in the emissions stream. This means that each additional unit of CO_2 captured costs more, in terms of both money and energy, than its predecessor."[37]

[36] Ben Young et al., *Comparative life cycle assessment of carbon capture for petroleum refining, ammonia production and thermoelectric power generation in the United States*, 91 Int'l J. of Greenhouse Gas Control 102821 (2019), https://doi.org/10.1016/j.ijggc.2019.102821.

[37] Young et al. 2019 at 4."

Response: CARB staff agrees in concept that the percentage of covered emissions affects the total reductions at a given stationary source, such as a refinery. However, reductions resulting from CCS alone should not be viewed in isolation; the overall demand reduction associated with reductions in in-state petroleum demand from the 2022 Scoping Plan, combined with the other clean technology and fuel transitions in other sectors, provide greater corresponding reductions in GHG and local air pollutants compared to the emissions reductions at a single facility. The Scoping Plan Scenario reduces liquid petroleum fuel consumption by 94 percent between 2022 and 2045, and will result in significant improvements in air quality and associated health benefits. Please also refer to response to comment 19-9 addressing CCS energy penalty and air quality-related benefits. In addition, please refer to response to comment R33-6 addressing application of CCS to emissions units at refineries.

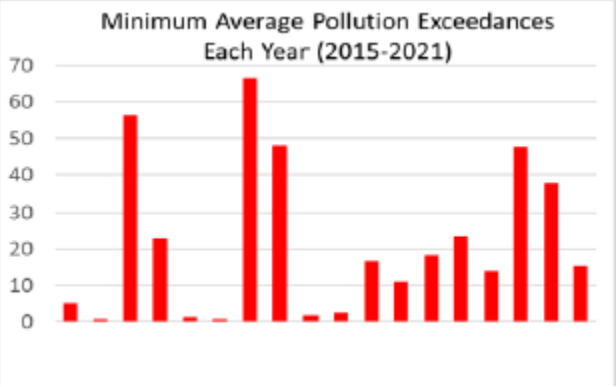
R19-11: The commenter states, "**e. CCS equipment and pollution control equipment do not perform in an idealized way in the real world, which can significantly increase air pollution.**

Pollution modeling that assumes that CCS equipment and pollution control equipment will operate according to idealized specifications ignores the reality of chronic equipment malfunctions, flaring and venting, and shutdowns that increase pollution. Real-world examples show that CCS projects have consistently over-promised and under-performed on capturing emissions.

For example, seven large-scale CCS projects have been attempted at U.S. power plants, each with hundreds of millions of dollars of government subsidies, but all of these projects were canceled before completion or shuttered due to technical problems, cost overruns, and failure to meet capture targets.[38]

In California, Public Records Act documents reveal that pollution control equipment frequently fails at bioenergy facilities, many of which are located in vulnerable communities. Data reported for 18 bioenergy facilities from 2015-2021 (Figure 2) shows that all facilities exceeded their permitted pollution levels—with many facilities having dozens of pollution exceedances each year—where a single exceedance can last hours or multiple days.[39]

Figure 2. Minimum average number of air pollution exceedances per year for 18 bioenergy facilities in California from 2015-2021. *Source: Public Records Act documents obtained by the Center for Biological Diversity.*



[38] Cong. Rsch Serv., Carbon Capture and Sequestration in the United States (2022), https://sgp.fas.org/crs/misc/R44902.pdf; for example, the utility Southern Company went $5 billion dollars over budget and three years behind schedule in building a carbon capture facility for a coal-fired power plant in Kemper County, Mississippi, before abandoning the project in 2017, after passing along many costs to its ratepayers, mostly low-income Black residents.

[39] This information is based on the records reported by biomass plants and obtained from air districts for the period of 2015-2021. The records for many plants appeared incomplete and do not provide a complete picture of excess emissions."

Response: Chapter 2 of the 2022 Scoping Plan discusses the implementation of CCS projects globally since the 1970s, with over 100 at the stages of advanced or early development and expansion to sectors beyond coal-fired plants to fossil gas, fuel production, and power plants.[105] The Scoping Plan Scenario includes CCS to address emissions from limited sectors, including electricity generation, cement facilities, and refineries to ensure anthropogenic emissions are reduced by 85 percent below 1990 levels in 2045 as required by AB 1279. Please refer to Master Response 3 and response to comment R19-9 regarding CCS-related air pollutant emissions relative to the overall air pollutant emissions reductions in the Scoping Plan Scenario.

In addition to facility energy consumption-related emissions, the commenter also raises the issue of excess emissions associated with CCS and with emission control equipment malfunctions and breakdowns. Specifically, the commenter states emission control equipment frequently fails at bioenergy facilities and provides a bar graph described as depicting annual average air pollution exceedances for 18 bioenergy facilities in California occurring between 2015 and 2021. Without an examination of the data relied on by the commenter, CARB cannot confirm what air pollutants are being labeled as exceedances in relation to permitted emission limits. If the information is based on continuous emissions monitoring data, then applicable emission limits typically include averaging times and may involve different limits and/or exemptions during startup and shutdown periods. Without this data and more specific information, CARB cannot cross-check the reason for any potential exceedances and if any notices of violation were issued by the local air districts corresponding to these potential exceedances. CARB notes that the commenter indicates "records for many plants appeared incomplete and do not provide a complete picture of excess emissions." In addition, the Recirculated Draft EA recognizes that biomass power generation does emit criteria pollutants and TACs, (see section 3 Air Quality in Chapter 4 of the Recirculated Draft EA) but notes that significant increases in the levels of these pollutants would be regulated through the local air district permitting process, including requirements for best available control technology for new and modified equipment. The comment also appears to raise policy concerns directed at the appropriateness of relying on carbon capture based technologies, rather than raising any issues of potential adverse emissions impacts beyond existing environmental conditions. However, for informational purposes, CARB responds that SB 905 directs CARB to adopt regulations to implement the Carbon Capture, Removal, Utilization, and Storage Program. SB 905 identifies specified components for projects, including meeting local air district best available control technology requirements and certain monitoring activities, among others. While it is the responsibility of industry to meet regulatory requirements, CARB and the local air districts work to ensure that regulated industries are aware of, and understand, the requirements of each regulation under their jurisdictions. The effectiveness of each regulation depends on industry compliance, and enforcement programs are designed to deter noncompliance and to ensure regulated industries that have not met regulatory requirements are brought into compliance. Furthermore, it is important to recall that the CCS component is not proposed in isolation, but rather as part of a project consisting of a broad suite of measures to dramatically reduce

[105] Global-Status-of-CCS-2021-Global-CCS-Institute-1121.pdf (globalccsinstitute.com)

GHG and air pollutant emissions across the state. There is no evidence that the 2022 Scoping Plan could actually serve to increase statewide GHG or air pollutant emissions.

R19-12: The commenter states, "**f. Studies on air pollution from CCS types proposed for California show that pollution can increase when CCS is added to industrial facilities.**

Proposed CCS projects for California include (1) post-combustion CCS for refineries and gas-fired power plants, (2) pre-combustion CCS for Integrated Gasification Combined Cycle ("IGCC") power plants, including BECCS plants, and (3) oxy-combustion CCS for bioenergy facilities. Although there are significant data gaps on air pollution from CCS, current studies indicate that pollution can increase when CCS is added to industrial facilities, as detailed below.

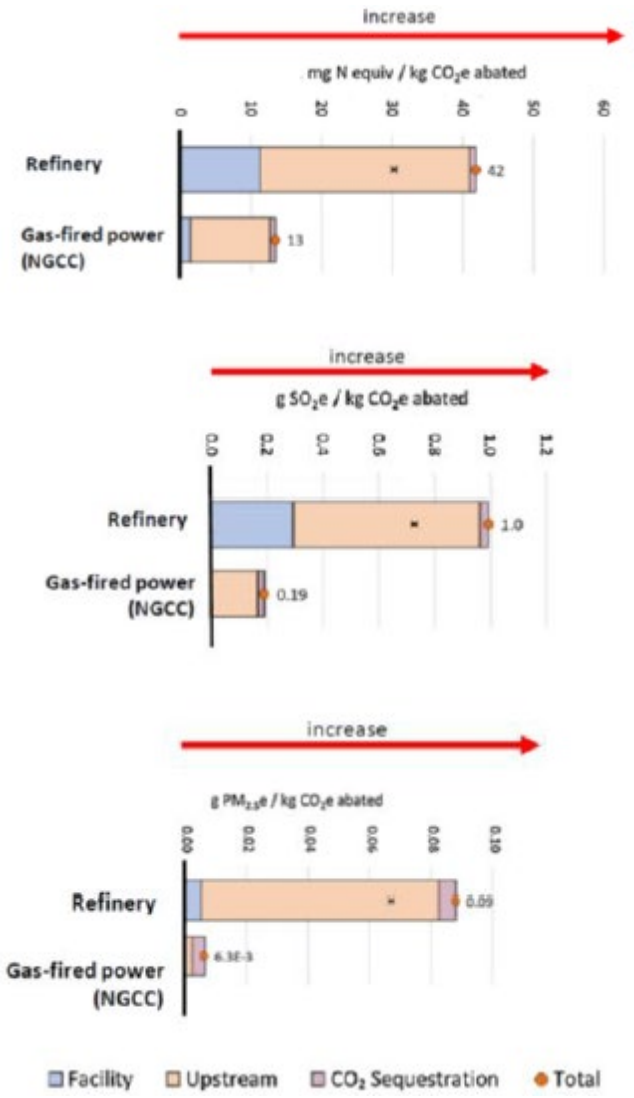
i. Post-combustion CCS on refineries and gas-fired power plants creates pollution increases.

Post-combustion CCS is being proposed in California, particularly to retrofit refineries and gas-fired power plants. A 2019 study examined the cradle-to-gate life cycle environmental impacts of amine-solvent-based post-combustion carbon capture systems on U.S. petroleum refineries and gas combined cycle power plants.40 Importantly, for refineries, the study concluded that NOx, SO_2, and fine particulate matter pollution increase at the refinery facility, upstream, and at the site of CO_2 injection when CCS is added, as shown in Figure 3 below. For gas-fired power plants, NOx increases at the facility, upstream, and at the site of CO_2 injection, while SO_2 and fine particulate matter increase upstream and at the site of CO_2 injection when CCS is added.

These increases in air pollutants occur even after factoring in the reductions in SO_2 and NOx in the flue gas that must occur before the gas is sent to the carbon capture equipment to avoid contamination of the capture solvent. For example, the study explains that NOx shows a net increase at the facility for refineries and gas-fired power plants, even though NOx is reduced in the flue gas, because of the increased NOx emissions from the combustion of fuels to operate the capture system.[41]

In addition, there are significant upstream NOx emissions from gas processing for facilities that use fossil gas to provide heat for carbon capture. The study notes that petroleum refineries with CCS have the highest life cycle impacts with NOx: "Higher NOx emissions from combustion, a smaller life cycle impact from reduced NOx scrubbing at the capture unit, and a heavy reliance on natural gas fuel result in the highest life cycle impacts at the petroleum refinery."[42] The study also highlights that ammonia air emissions can increase at post-combustion CCS facilities due to the degradation of the amine solvents.[43]

Figure 3. Changes in emissions of air pollutants for CCS facilities compared to no CCS, per kg CO_2e abated. *Source: Young et al. 2019, at Figure 3.*



ii. Pre-combustion CCS on IGCC power plants (including at BECCS plants) could increase pollution.

Pre-combustion CCS is being proposed for IGCC power plants including BECCS facilities. One review concluded that pollution from IGCC power plants with pre-combustion CCS is uncertain and not well-studied: SOx, PM, and NOx could increase or decrease with the addition of CCS.[44] A 2022 study that modeled bioenergy IGCC plants with pre-combustion CCS (i.e., Bio-IGCC-CCS) in California found that PM 2.5 and SOx emissions would increase, leading to more pollution-related health harms and mortality.[45] Specifically, the study noted that "PM2.5 emission increase (+2.5%) suggest[s] potential air quality disbenefit associated with the CCS future especially around the Bio-IGCC-CCS power plant locations." Further, "SOx emissions increase in the CCS scenario because the Bio-IGCC plants emit more SOx

than other electricity generation processes even though the accompanying CCS section removes more than half of the increased SOx."[46]

iii. Oxy-combustion CCS for bioenergy facilities have a high energy penalty and cannot be said to reduce pollution.

"Oxyfuel combustion" or "oxy-combustion" CCS is being proposed as a retrofit for several idled bioenergy facilities in the Central Valley. A review of oxyfuel combustion concluded that criteria and hazardous air pollutants have not been well studied and there is a "lack of attention to potential health effects."[47] The limited data that is available is from "pilot-scale studies that reflect only limited conditions and do not encompass the variability in conditions that would be encountered at commercial scale."[48] The study further found that air pollution control devices may not perform the same in oxy-fired systems as they do in air-fired systems, little is known about the formation of hazardous air pollutants in oxy-combustion boilers, and "[c]ombustion under oxyfuel conditions could produce emissions posing different risks than those currently being managed by the power industry."[49] On top of air pollution, these systems generate solid and liquid waste streams that may pose health and environmental hazards.

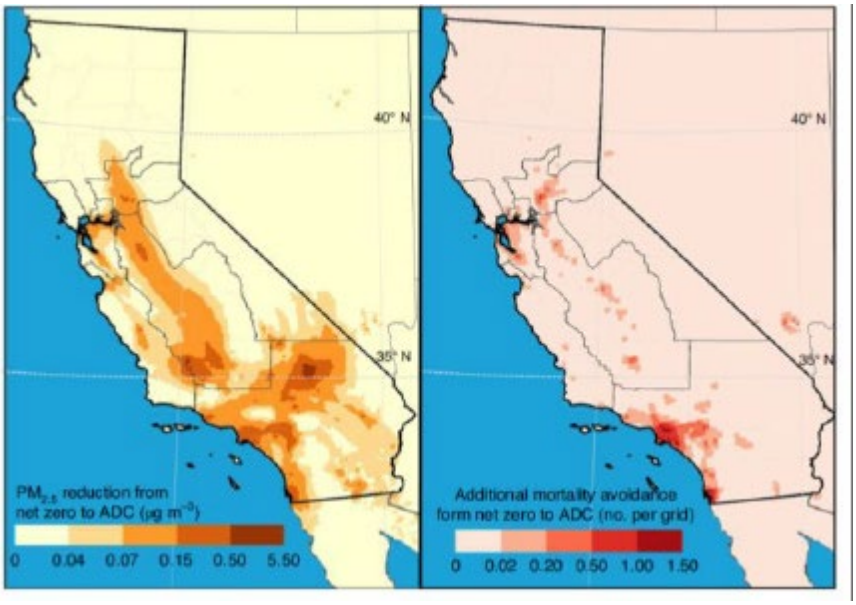
Importantly, the study also highlighted that oxyfuel combustion has a high energy penalty because large amounts of oxygen must be separated from ambient air.[50] The auxiliary power requirements for oxyfuel combustion may be almost 6 times higher than for conventional air-fired combustion. This high energy penalty could significantly increase the air pollution from oxyfuel combustion CCS.

iv. BECCS can lead to significant pollution.

As noted elsewhere, there are at least eight proposed BECCS projects in California. A 2020 study that modeled pathways to achieve net-zero emissions in California by 2050 concluded that the deployment of BECCS would lead to significant air pollution, health harms, and pollution-related mortalities in the state, even when BECCS facilities use emission control devices that meet California emission standards.[51] The study noted that "in the context of air quality co-benefits, biomass combustion emits relatively high levels of air pollutants, even though all BECCS plants in the scenario are projected to install emission control devices and will meet the emission standards in California."[52] The study concluded that BECCS "comes at a price as it would emit a considerable amount of air pollutants and reduce health co-benefits by 4 billion dollars."[53] Importantly, the study found that replacing BECCS facilities with wind and solar would significantly reduce air pollution and avoid 370 PM2.5-related mortalities, as shown in Figure 4 below.

Figure 4. Particulate matter (PM 2.5) reductions from replacing BECCS with solar and wind (left panel); pollution-related deaths avoided from replacing BECCS with solar and wind (right

panel). *Source: Wang et al. 2020, at Figure 4 (where the net zero scenario utilizes BECCS and the ADC scenario replaces BECCS with solar and wind).*



41 Young et al. 2019 at 7-8.
42 Young et al. 2019 at 7.
43 Young et al. 2019 at 7.
44 Joris Koornneef et al., The impact of CO2 capture in the power and heat sector on the emission of SO2, NOx, particulate matter, volatile organic compounds and NH3 in the European Union, 44 Atmospheric Env't 1369 (2010), https://doi.org/10.1016/j.atmosenv.2010.01.022.
45 Yin Li et al., Future emissions of particles and gases that cause regional air pollution in California under different greenhouse gas mitigation strategies, 237 Atmospheric Env't 118960 (2022), https://doi.org/10.1016/j.atmosenv.2022.118960.
46 Li et al. 2022 at 4.
47 Constance Senior et al., Emissions and risks associated with oxyfuel combustion: State of the science and critical data gaps, 63 J. of the Air & Waste Mgmt. Ass'n 832 (2013), https://doi.org/10.1080/10962247.2013.791892.
48 Senior et al. 2013 at 841.
49 Senior et al. 2013 at 832.
50 Senior et al. 2013.
51 Tianyang Wang et al., Health co-benefits of achieving sustainable net-zero greenhouse gas emissions in California, 3 Nature Sustainability 597 (2020), https://doi.org/10.1038/s41893-020-0520-y
52 Wang et al. 2020 at 600.
53 Wang et al. 2020 at 597."

Response: The Scoping Plan Scenario includes CCS to address emissions from limited sectors, including electricity generation, cement facilities, and refineries to ensure anthropogenic emissions are reduced by 85 percent below 1990 levels in 2045 as required by

AB 1279. Please refer to Master Response 3 and responses to comments 177-4, R19-9, and R19-14 regarding CCS-related air pollutant emissions relative to the overall air pollutant emissions reductions in the Scoping Plan Scenario and use of BECCS in the Scoping Plan Scenario.

R19-13: The commenter states, "**g. Water quantity and quality impacts of CCS and DAC.**

The RDEA is silent on the impacts to water use and quality from CCS and DAC.[54] This is a serious flaw and must be corrected before CARB issues the final EA.

In addition to being a costly and energy intensive process, CCS is also water intensive.[55] With the addition of CCS, power plant water usage is expected to increase by 33-90% for absolute and per net MW basis due to the additional demand for cooling and the carbon capture process itself.[56] Another study shows that carbon capture through amine absorption, a common method, would nearly double the water consumption intensity, thereby posing a potentially unsustainable strain on water resources.[57] DAC poses an additional threat to water supply because it most often uses "blue water," i.e., freshwater, so it competes with other necessary uses of water.[58]

CCS may further impact water availability through the risk of groundwater contamination. When CO_2 is pumped underground, only a small amount can be absorbed by the present water given the fact that CO_2 is only soluble in water to a limited degree.[59] What this means is that instead of water absorbing the CO2, it will be displaced by the CO_2. The displaced water will then be forced to travel either vertically or horizontally, eventually impacting overlying freshwater aquifers. Additionally, studies have uncovered several potential impacts from the injection of CO_2 underground including storage leakage, brine displacement, and pH depression.[60] Leakage of CO_2-rich fluids into groundwater also could mobilize hazardous inorganic constituents or trace metals.[61]

The RDEA cannot ignore these potentially significant impacts on water quality and quantity from promoting CCS and DAC as "solutions" to California's emissions reductions goals. Excluding this critical area of likely impacts renders the RDEA a failed informational document. CARB must issue an updated draft EA that adequately discloses and mitigates the potentially significant water use and quality impacts of CCS and DAC.

54 RDEA at 176.
55 Lorenzo Rosa et al., Hydrological limits to carbon capture and storage, 3 Nature Sustainability 658 (2020), https://doi.org/10.1038/s41893-020-0532-7.
56 EPRI, Cooling Requirements and Water Use Impacts of Advanced Coal-fired Power Plants with CO2 Capture and Storage (2011), https://www.epri.com/research/products/1024495.
57 Haibo Zhai et al., Water use at pulverized coal power plants with post-combustion carbon capture and storage, 45 Env't Sci. & Tech. 2479 (2011), dx.doi.org/10.1021/es1034443.
58 Lorenzo Rosa et al., The water footprint of carbon capture and storage technologies, 138 Renewable and Sustainable Energy Revs. 110511 (2021), https://doi.org/10.1016/j.rser.2020.110511.

[59] V. Kennedy, This sounds like an eco-friendly solution, but it's really a bad idea, Modesto Bee, July 31, 2022, https://www.modbee.com/article263904387.html#storylink=cpy.
[60] Robert L. Newmark et al., Water challenges for geologic carbon capture and sequestration, 45 Env't Mgmt. 651 (2010), https://doi.org/10.1007/s00267-010-9434-1; Elizabeth H. Keating et al., The challenge of predicting groundwater quality impacts in a CO2 leakage scenario: Results from field, laboratory, and modeling studies at a natural analog site in New Mexico, U.S.A., 4 Energy Procedia 3239 (2011), https://doi.org/10.1016/j.egypro.2011.02.242.
[61] Keating 2011."

Response: Please refer to response to comment R18-2.

R19-14: The commenter states, "**h. CARB fails to analyze the environmental impacts of BECCS.**

CARB recognizes in the RDEA that a "reasonably foreseeable consequence" of the Scoping Plan is "construction of new facilities and modifications to existing facilities," including "biomass processing and bioenergy facilities." However, CARB makes a serious omission by failing to analyze—and subsequently mitigate—the environmental and health impacts of BECCS. At the time of this letter, eight of the 13 known, proposed CCS projects are BECCS. (See Figure 5, below.)[62] For the RDEA not to include bioenergy and BECCS renders the RDEA a failed informational document that does not provide an accurate picture of either the State's current or possible future GHG emissions. And because all eight of the proposed BECCS projects are located in California's Central Valley—many adjacent to environmental justice communities—the RDEA fails its role to identify substantial adverse impacts and to recommend mitigation measures.

While CARB alludes to BECCS, this roundabout reference is simply not enough.[63] In considering the bioenergy industry broadly, CARB acknowledges that "proposed actions under this measure could also result in the siting and development of new, or the expansion of existing, regional facilities to process increased volumes of compost or biomass feedstock."[64] But the RDEA does not put these pieces together in recognition of the substantial proposed BECCS build-out in the State.

As a foundational matter, it is important to note that electricity from bioenergy is wrongly considered "clean" or "renewable." Making electricity and fuels from cutting and incinerating trees and other biomass is highly polluting for the climate, harmful to public health, damaging to wildlife and forest ecosystems, and expensive.

In particular, burning wood to generate electricity emits more CO_2 per kilowatt-hour than what is generated from fossil fuels, including coal.[65] As a result, biomass power plants are much more climate polluting than other electricity sources in California. According to CARB's own data from 2018, the GHG emissions for California's biomass facilities range from around 2,500 to over 19,000 lbs CO_2e per net MWh, and average 3,500 pounds CO_2e/MWh for non-cogeneration facilities (See Figure 6, below.)[66]

Biomass energy generation in California emits more than 1.5 times the carbon pollution compared to coal-fired power per unit of electricity—and almost four times the carbon pollution of gas-generated power.[67] (See Figure 6.) This is because incinerating trees is a remarkably inefficient way to generate electricity, resulting in high carbon emissions and high costs of production.[68] In contrast, solar and wind energy provide virtually carbon free sources of power production.

Despite the substantial carbon pollution from biomass power, proponents erroneously claim that cutting and incinerating trees is inherently "carbon neutral"—that it does not cause net GHG emissions.[69] Published scientific research has thoroughly debunked this false claim. Cutting and burning trees for bioenergy releases their stored carbon to the atmosphere, immediately increasing CO_2 emissions and ending trees' future carbon sequestration, creating a "carbon debt."[70]

BECCS takes the harms of bioenergy and adds unproven and dangerous CCS technologies. Proponents claim that these projects are carbon neutral or carbon negative, but this is false. BECCS projects have failed to show that they are carbon neutral or negative. Instead, substantial emissions are produced throughout the process—from cutting trees and other biomass with machinery to transporting the biomass in trucks to drying and processing it. On top of that, there are smokestack emissions from biomass incineration, only some of which may be diverted by CCUS. Research has concluded that BECCS can have negative impacts on the climate, food security, biodiversity, forest ecosystems, water use, and land use rights.[71] The IPCC concluded that BECCS poses risks to air quality, water, soil, resilience, livelihoods, food security, and biodiversity.[72]

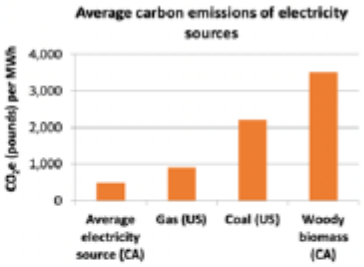
The proposed BECCS projects are not necessary to aid in California's energy generation, nor are they part of the path for the State to reduce its GHG emissions. Further, all eight proposed BECCS projects are proposed for California's Central Valley. Many of these projects would be located adjacent to or near communities already overburdened by pollution. This is the wrong direction for California, and entirely ignored in the RDEA.

Figure 5. Map of proposed carbon capture and storage projects (including BECCS) in California. Source: Center for Biological Diversity, informed by company press releases, FOIA

and PRA documents, and information provided by EPA Region 9. *Source: biologicaldiversity.org/ca_ccs_map.*

Figure 6. Biomass power plant emissions and average carbon emissions of California electricity sources. *Source: Center for Biological Diversity (see data sources in Footnotes 66 & 67).*

Biomass power plant emissions in 2018	Capacity (MW)	Total CO_2e (pounds) per net MWh
Ampersand Chowchilla Biomass Power	12.5	2,996
Burney Forest Products (BioRAM) (cogen)	31	3,768
Collins Pine Biomass Power (cogen)	12	19,120
DG Fairhaven	15	3,877
DTE Stockton Biomass Power (cogen)	50	3,298
HL Power (BioRAM)	35.5	2,980
Humboldt Sawmill Company (cogen)	32.5	5,016
Merced Power	12.5	3,220
Mt. Poso Cogeneration (cogen)	63.6	2,507
Pacific Ultrapower Chinese Station (BioRAM)	25.7	4,418
Rio Bravo Fresno Biomass Power (BioRAM)	27.8	3,150
Rio Bravo Rocklin Biomass Power (BioRAM)	27.8	3,435
Roseburg Forest Products (cogen)	13.4	4,967
SPI Anderson Biomass Power II (cogen)	30.1	4,480
SPI Burney Biomass Power (cogen)	20	4,736
SPI Lincoln Biomass Power (cogen)	19.2	5,314
SPI Quincy Biomass Power (cogen)	35.3	6,215
SPI Sonora Standard Biomass Power (cogen)	7.5	11,540
Wheelabrator Shasta Energy (BioRAM)	62.8	3,900
Woodland Biomass Power	28	3,464
Average for non-cogeneration plants		**3,515**



62 *See* Ctr. for Biological Diversity, Carbon Capture and Storage Projects, https://center.maps.arcgis.com/apps/View/index.html?appid=07a2bc0121e54b4f8893bf53eccf74ea (July 5, 2022)

63 See RDEA at 21, footnote 4: "[F]irm dispatchable resources could include Allam-Fetvedt Cycle (AFC) CCS, which burns a gaseous carbon-based fuel (e.g., natural gas, gasified solid fuels such as biomass) and pure oxygen in a combustor, along with use of recycled supercritical CO2 that is heated in the oxyfuel combustor … Some CO_2 is recycled back to the heat exchanger for heating and entering back into the combustor; the remaining high-purity CO_2 can be transported for use or subsurface storage."

64 RDEA at 31.

[65] Sterman et al. 2022.

[66] Total CO2e emissions for each facility in 2018 come from California Air Resources Board Mandatory GHG Reporting Emissions data, available at, https://ww2.arb.ca.gov/mrr-data. Data on net MWh produced by each facility in 2018 come from the California Energy Commission California Biomass and Waste-To-Energy Statistics and Data, available at https://ww2.energy.ca.gov/almanac/renewables_data/biomass/index_cms.php. Total CO_2e produced by the 9 electricity only, non-cogeneration active woody and agricultural biomass facilities with available data totaled 2,127,693 metric tons, and net MWh in 2018 from these 9 facilities totaled 1,334,346 MWh, for an average of 1.59 metric tons CO_2e per net MWh, equal to 3,515 pounds CO_2e per net MWh. The average of 3,515 pounds CO_2e per MWh includes electricity-only plants; cogeneration plants are excluded because some of their CO_2 emissions are from heat-related fuel consumption. The high CO_2e rate-per-MWh is similar for biomass facilities without cogeneration. Of note, California's Emission Performance Standards (SB 1368 (Perata 2006), codified at Division 4.1 Cal. Pub. Util. Code § 8341(a) and CPUC, "Order Instituting Rulemaking to Implement the Commission's Procurement Incentive Framework and to Examine the Integration of Greenhouse Gas Emissions Standards into Procurement Policies," at § 5, Decision 07-01-039 (Jan. 25, 2007)) sets the ceiling of GHG emissions for electricity producers at 1,100 lbs per MWh—meaning far below what biomass facilities emit. The EPS, however, in a bizarre exemption, does not require that most of the bioenergy facility's provide information on their GHG emissions in order to sell electricity.

[67] Overall average GHG Intensity of electricity generation in California comes from California Air Resources Board, 2000- 2018 Emissions Trends Report Data (2020 Edition), https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/2000_2018_ghg_inventory_trends_figures.xlsx; average CO_2 emissions per MWh for gas and coal in the United States in 2019 are from U.S. Energy Information Administration, "How much carbon dioxide is produced per kilowatt hour of U.S. electricity generation?", https://www.eia.gov/tools/faqs/faq.php?id=74&t=11.

[68] Sterman et al. 2022.

[69] Sterman et al. 2022.

[70] Sterman et al. 2022.

[71] Vera Heck et al., *Biomass-based negative emissions difficult to reconcile with planetary boundaries*, 8 Nature Climate Change 151 (2018), https://doi.org/10.1038/s41558-017-0064-y; Yoshiki Yamagata et al., *Estimating water-food-ecosystem trade-offs for the global negative emission scenario (IPCC-RCP 2.6)*, 13 Sustainability Science 301 (2018), https://doi.org/10.1007/s11625-017-0522-5.

[72] IPCC, *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (P.R. Shukla et al. eds. 2022) at 5-8, Figure 7.11."

Response: The actions for the Scoping Plan Scenario to achieve the CDR and CCS targets, as described in the project description in Chapter 2 of the Recirculated Draft EA, were modeled to include BECCS. The actions associated with BECCS, which may include activities such as

biomass feedstock collection, conversion of biomass into bioenergy[106], and subsequent CO_2 capture, transport, and storage are described in Chapter 2 of the Recirculated Draft EA in the reasonably foreseeable compliance responses associated with increasing renewable energy actions (e.g., facilities including solid-fuel biomass and biogas), low carbon fuels actions (e.g., gasification units, anaerobic facilities), expansion of electrical infrastructure actions, and mechanical CDR and CCS actions. The potential environmental impacts associated with these compliance responses are described throughout Chapter 4 of the Recirculated Draft EA.

Please refer to Master Response 3 regarding the air pollutant emissions associated with use of CCS. In addition, the Recirculated Draft EA recognizes that biomass power generation does emit criteria pollutants and TACs, (see section 3 Air Quality in Chapter 4 of the Recirculated Draft EA) but notes that significant increases in the levels of these pollutants would be regulated through the local air district permitting process, including requirements for best available control technology for new and modified equipment. However, for forest/agricultural biomass used to generate hydrogen, the Scoping Plan Scenario modeling only includes gasification technology (not direct combustion) is utilized with CCS; therefore, the associated criteria pollutants and toxic air pollutants would be lower than conventional combustion of solid biomass cited by the commenter. For example, a 2019 Gas Technology Institute study performed a site-specific engineering design study focused on how an existing woody biomass power plant can be converted to a renewable natural gas facility using gasification of woody biomass. The study showed environmental benefits including reducing criteria pollutants by about 99 percent.[107] CARB staff's biomass availability analysis identified where it was socially beneficial to mobilize forest/agricultural residues for energy use, because the local air pollutant and health impacts of the alternate fate of burning these biomass residues in place would have been higher in comparison. Therefore, the Scoping Plan Scenario proposes a technology and fuel pathway for biomass that is expected to result in less criteria and toxic air pollutant impacts than the Reference Scenario (i.e., business-as-usual if the 2022 Scoping Plan was not implemented).

Regarding the commenter's contentions about the respective carbon intensity of biomass-fueled power generation compared to coal-fueled power generation, the comment ignores the crucial broader context of carbon cycles, including the fact that coal-derived CO_2 is purely additive to global carbon levels, while agriculture or forest biomass-derived CO_2 is part of the terrestrial carbon cycle.

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[106] The application of BECCS is not limited to the use of solid organic waste biomass, and can also be paired with other sources of biogenic CO_2 (e.g., CO_2 generated by microbes during the process of fermentation and anaerobic digestion).

[107] The DTE biomass power plant in Stockton was the host site for a Gas Technology Institute engineering design study to retrofit an existing woody biomass power plant into a renewable natural gas (RNG) facility producing approximately 3 billion cubic feet of RNG annually. This RNG facility received a carbon intensity score of 17 gCO_2e/MJ. The majority of GHG emissions from the life cycle assessment were from electricity use for the woody waste gasification and syngas clean-up. https://www.gti.energy/wp-content/uploads/2019/02/Low-Carbon-Renewable-Natural-Gas-RNG-from-Wood-Wastes-Final-Report-Feb2019.pdf

R19-15: The commenter states, "**7. CARB must conduct a separate, comprehensive environmental analysis in its future rulemaking per SB 905, and require project-level environmental impact reports for potential CCS & engineered CDR projects.**

SB 905 requires CARB to create a Carbon Capture, Remove, Utilization, and Storage Program to evaluate the efficacy, safety, and viability of CCS and engineered CDR projects, as well as to ensure that these projects minimize air, water, and noise pollution, and gas leakage impacts, among others.[73] SB 905 also requires CARB to adopt a unified permit application for the construction and operation of CCS and CDR to expedite the issuance of these permits.[74]

We expect CARB to conduct a future rulemaking process on CCS and CDR that includes a comprehensive analysis of the environmental impacts of implementing these technologies. CARB must also not allow project proponents to tier from any program EA by CARB, and instead require project-level environmental impact reports for potential CCS and CDR projects. Each potential project presents a unique technological, geological, environmental, and socioeconomic context. The public and relevant agencies can only gain an accurate and full extent of the environmental and health impacts of a project, and be able to provide meaningful participation and decision-making through individual environmental review and public process.

[73] Cal. Pub. Res. Code § 39741.1.
[74] Cal. Pub. Res. Code § 39741.2."

Response: The comment relates to a future statutorily-mandated program that is not itself part of the 2022 Scoping Plan. The comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EA and does not require a written response under CARB's certified regulatory program implementing CEQA.

While not relevant to the Recirculated Draft EA prepared for the 2022 Scoping Plan, CARB notes that under the referenced statutory program, CARB's two primary tasks are to:

> (1) Perform evaluations relating to the "efficacy, safety, and viability" of CCUS and CDR technologies, and develop reporting requirements and regulations for minimizing risks from such projects;[108] and
>
> (2) Develop "regulations for a unified permit application for the construction and operation of carbon dioxide capture, removal, or sequestration projects to expedite the issuance of permits or other authorizations for the construction and operation of those projects. The unified permit application shall solicit from applicants, and direct to all relevant state agencies, all information needed to obtain permits and other authorizations from relevant state and local agencies necessary for the construction

[108] See proposed Health and Safety Code, section 39741.1(a).

> and operation of a carbon dioxide capture, removal, or sequestration project. An applicant's use of the unified permit application shall be optional."[109]

The bill also makes clear that "[t]he unified permit application developed by the state board pursuant to subdivision (a) is for the purpose of efficiency but *shall not displace the role of individual permitting agencies and shall not eliminate, abridge, or reduce the review or issuance of the individual permits covered by the application by the respective agencies.*"[110] The bill's text therefore does not shift permitting or environmental review responsibility to CARB, as the projects would remain under the jurisdiction of their existing individual permitting agencies, and are subject to existing criteria established by those agencies and by existing state law.

R19-16: The commenter states, "**8. CARB must directly reduce emissions via an explicit plan to phase out oil and gas extraction by 2035 at the latest, and analyze the environmental impacts of this action.**

CARB, in the RDEA, relies upon the assumption that oil and gas extraction will decline accordingly with a reduction in petroleum demand, without support.[75] As we discuss further below, oil and gas extraction could continue at the same or higher levels for export, even if in-state demand for petroleum decreases. In order to truly reduce petroleum production, CARB must propose a policy to phase out extraction by 2035 in an updated Draft Scoping Plan, and analyze the environmental impacts of this action.

a. CARB's assumption that demand-side reduction measures will result in oil and gas extraction reduction is unsupported.

CARB states in the RDEA that actions for the proposed AB 32 GHG Inventory Sectors include reducing oil and gas extraction operations "in-line with petroleum demand."[76] However, CARB has not provided any support for its claim that oil and gas extraction is going to decline in-line with demand.

CARB proposes to increase renewable energy actions, which they assert will decrease the use of oil and gas in California.[77] CARB also appears to assume that a decrease in oil and gas use means a reduction in oil and gas extraction in California. However, CARB does not and must provide evidence on how an increase in renewable energy actions would result in oil and gas extraction reduction.[78] CARB should also explain how much oil and gas extraction is expected to decrease as a result of an increase in renewable energy and other proposed actions. CARB's current failure to do so in the RDEA prevents informed decision-making and meaningful public participation.

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[109] Proposed Health and Safety Code, section 39741.2(a).

[110] Proposed Health and Safety Code, section 39741.2(d) (emphasis added).

b. CARB fails to consider steady exports that could perpetuate oil and gas extraction despite demand reduction efforts.

As discussed, CARB relies on market forces and an increase in renewable energy actions to theoretically reduce oil and gas extraction, without explaining how this could actually occur. Even if in-state demand is reduced, CARB ignores the fact that fossil fuel extraction could continue at current levels due to demand for exports from refineries. Indeed, exports of finished fuels remained relatively steady over the last 15 years.[79] Given this reality, CARB must not assume that oil and gas extraction will be reduced in-line with demand, and must instead propose an action to phase out extraction.

[75] RDEA at 17, 21.
[76] RDEA at 17.
[77] RDEA at 20-21; RDEA at 120 ("[R]enewable energy actions include operation of new facilities, including wind, solar thermal, solar PV, geothermal, solid-fuel biomass, biogas, solar thermal steam production, hydrogen, pumped storage, battery storage, and small hydroelectric systems. The operation of wind, solar thermal, and solar PV energy systems would occur over large acreages of land. The reduction in oil and gas extraction could result in equipment being decommissioned.").
[78] RDEA at 120.
[79] Olivier Deschenes et al., University of California, Santa Barbara, Synthesis Report: Carbon Neutrality and California's Transportation Fossil Fuel Supply Study, Fig. 24 on p. 39 (Oct. 2020), available at https://calepa.ca.gov/carbon-neutrality-studies-background. See also Communities for a Better Env't, New Climate Threat: Will Oil Refineries make California the Gas Station of the Pacific Rim (2019), https://www.cbecal.org/wp-content/uploads/2019/09/New-climate-threat%e2%80%93Will-oil-refineries-make-California-the-gas-station-of-the-Pacific-Rim.pdf ("West Coast production of finished petroleum products (black in the charts) increased by ≈ 350 million barrels from TY2007 to TY2018.3. Production exceeded demand here by TY2012, and this production excess grew to ≈ 470 million barrels by TY2018 as refiners made more fuel for export. Foreign exports of finished refined products from the West Coast (brown) grew by ≈ 390 million barrels, an increase of ≈ 49 %, from TY2007 to TY2018."

Response: The comment does not raise any potential significant environmental issues resulting from the 2022 Scoping Plan; rather, it appears to raise policy disagreements with the 2022 Scoping Plan's design, and questions the scope of the anticipated emissions reductions from the 2022 Scoping Plan.

CARB provides the following additional response for transparency: The Scoping Plan Scenario has some remaining California demand for finished fossil fuels in 2045, primarily for transportation, including sectors subject to federal jurisdiction. Therefore, it is not feasible to phase out oil and gas production fully by 2045 due to this remaining demand. In the Scoping Plan Scenario, phase down of petroleum demand through successful deployment of zero carbon fuels and non-combustion technology is estimated to reduce GHG emissions from oil and gas extraction by about 89 percent in 2045 from 2022 levels if extraction decreases in line with in-state finished fuel demand. If in-state extraction were to be phased out fully,

CARB's analysis indicates the future petroleum demand by in-state refineries would be met through increased crude imports, potentially resulting in increased activity outside California to extract and transport crude into California relative to the Scoping Plan Scenario, resulting in emissions leakage. AB 32 requires that any actions taken to reduce GHGs "minimize leakage." Please also refer to response to comment R33-4 regarding in-state petroleum demand.

R19-17: The commenter states, "**c. CARB must propose an action to phase out oil and gas extraction by 2035 at the latest, and analyze the environmental impacts of this action.**

In order to ensure California meets its GHG emission goals and minimize harm to environmental justice communities, CARB must propose a proactive policy to phase out oil and gas extraction by 2035 at the latest, as we have discussed in previous letters.[80] CARB must take leadership in directly reducing emissions from oil and gas extraction to effectively address climate change and create a safer and healthier future for California.

[80] See Cal. Env't Justice All. ("CEJA"), Comments on Specific Sectors and Greenhouse Gas Emission Reduction Measures in the 2022 Draft Scoping Plan (Comment 668 for Draft 2022 Climate Change Scoping Plan) (June 24, 2022), at 6-13, https://www.arb.ca.gov/lists/com-attach/4459-scopingplan2022-UDMAY1Y9V2VQCQBk.pdf."

Response: Please refer to response to comment R19-16.

R19-18: The commenter states, "**d. CARB must analyze the environmental and health impacts of continuing oil and gas extraction as CARB currently proposes in the RDEA.**

As discussed above, CARB proposes in the RDEA that oil and gas extraction and operations would "decline in-line with petroleum demand".[81] CARB does not and must analyze the environmental and health impacts of proposing to allow oil and gas extraction, even at theoretically reduced levels, under this Scoping Plan. CARB's analysis must consider California's high carbon intensity extraction and the disproportionate effects environmental justice communities face.

i. California's crude oil has a higher carbon intensity, bearing greater environmental and health impacts that CARB does not and must analyze.

First, CARB must analyze the environmental impacts of continuing oil and gas extraction in California in light of the high carbon intensity of the State's crude oil. CARB admits that California's crude oil is heavier on average than most other sources of crude oil.[82] According to the U.S. Energy Information Administration, California's average American Petroleum Institute gravity ("API") of 26.18 places it among the heaviest in the United States.[83] More energy-intensive techniques are required to extract heavier oil.[84] As such, California's heavy crude oil has higher GHG emissions per barrel than oil from other states.[85] Unfortunately, CARB fails to consider the GHG emissions, air pollution, and other impacts of continuing extraction on the environment as well as on communities and residential areas located within

a close radius of oil and gas wells and facilities, the majority of which are low-income communities of color.[86]

[81] RDEA at 17.
[82] Draft Scoping Plan at 82.
[83] API is a "commonly used index of the density of a crude oil or refined products." A higher API indicates that a product has a lower density and is therefore less energy intensive to extract. Tim Fitzgibbon, *API Gravity*, McKinsey Energy Insights, https://www.mckinseyenergyinsights.com/resources/refinery-reference-desk/api-gravity/ (last visited June 23, 2022); Emily Geary, *The API gravity of crude oil produced in the U.S. varies widely across states*, U.S. Energy Info. Admin. (Apr. 19, 2017) https://www.eia.gov/todayinenergy/detail.php?id=30852 ("California's oil is mostly heavy (more dense), and more than 90% has an API gravity of less than 30 degrees").
[84] Judith Lewis Mernit, *Why Does California Pump the Dirtiest Oil in the U.S.*, Yale Environment 360, Oct. 19, 2017, https://e360.yale.edu/features/why-does-green-california-pump-the-dirtiest-oil-in-the-u-s (describing how extracting and refining heavier California crude oil is less efficient than from comparable sources).
[85] *See* Judith Lewis Mernit, *Why Does California Pump the Dirtiest Oil in the U.S.*, Yale Environment 360, Oct. 19, 2017, https://e360.yale.edu/features/why-does-green-california-pump-the-dirtiest-oil-in-the-u-s (describing how extracting and refining heavier California crude oil is less efficient than from comparable sources); see also E. Allison & B. Mandler, Am. Geoscis. Inst., *Heavy Oil: Abundant but hard to work with, heavy oil has some specific environmental impacts* 11-2 (2018), https://www.americangeosciences.org/sites/default/files/AGI_PE_HeavyOil_web_final.pdf (heavy oil produced by steam injection in California's Midway Sunset field emits 725 kg CO_2 lifecycle emissions, as compared to 729- 736 kg CO_2 emissions for Canadian oil sands and 480 kg CO_2 emissions of typical light West Texas oil); *see also Center for Biological Diversity, Killer Crude: How California Produces Some of the Dirtiest, Most Dangerous Oil in the World*, June 2021, https://www.biologicaldiversity.org/programs/climate_law_institute/pdfs/June-2021-Killer-Crude-Rpt.pdf."
[86] See, e.g. John C. Fleming et. al, *Disproportionate Impacts of Oil and Gas Extraction on Already "Disadvantaged" California Communities: How State Data Reveals Underlying Environmental Injustice* (2019), https://agu.confex.com/agu/fm19/mediafile/Handout/Paper495269/19%2012%2009%20AGU%20Poster.pdf (finding that 76% of new oil and gas extraction wells are located in communities with above-average poverty rates for CA, and 67 percent are located in communities of color between 2011-2018); Jade Wolansky, *Quiet Suffocation: California Oil and Gas Production Near Communities of Color is a Public Health Crisis*, 52 U. Pac. L. Rev. 387, 399 (2021), https://scholarlycommons.pacific.edu/uoplawreview/vol52/iss2/12/ (noting that 1.8 million people, of which 92% are people of color, live within one mile of an oil or gas well)."

Response: As discussed throughout the Recirculated Draft EA, the 2022 Scoping Plan includes various actions and concepts that would, if implemented, lead to an increase in

renewable energy capacity, and a decrease in oil and gas production and refining. The impact of these actions are thoroughly discussed within the Recirculated Draft EA. The comment further states that the impacts of continuing oil and gas production and refining must also be analyzed, however, as discussed in the first paragraph on page 41 of the Recirculated Draft EA:

> CEQA states that the baseline for determining the significance of environmental impacts would normally be the existing conditions at the time the environmental review is initiated (Title 14 CCR Section 15125(a)). Therefore, significance determinations reflected in this Recirculated Draft EA are based on a comparison of the potential environmental consequences of the 2022 Scoping Plan with the regulatory setting and physical conditions in 2021 (see Attachment A). For determining whether the 2022 Scoping Plan may have a potential effect on the environment, CARB evaluated the potential physical changes to the environment resulting from the reasonably foreseeable compliance responses described in further detail in Chapter 2 of this Recirculated Draft EA. The CEQA baseline for purposes of this Recirculated Draft EA is the environmental setting during approximately July 2021, when the Notice of Preparation was released, unless noted otherwise.

Because the Recirculated Draft EA analyzed how the 2022 Scoping Plan could result in environmental impacts relative to the existing conditions, in accordance with well-established CEQA principles, no changes to the document are required.

R19-19: The commenter states, "**a. CARB's RDEA fails to analyze the environmental and health impacts of Cap-and-Trade.**

CARB, in the Draft Scoping Plan, proposes to rely on the Cap-and-Trade Program to achieve the State's 2030 GHG emissions reduction targets.[91] CARB estimates that Cap-and-Trade would be able to reduce an estimated 44 MMTCO2e of GHGs by 2030.[92] However, CARB does not explain how Cap-and-Trade will be utilized to achieve these emissions reductions.

Where CARB might provide insight into the RDEA as to how reliance on Cap-and-Trade policies would result in environmental and health impacts, particularly in environmental justice communities, CARB provides no such analysis. For instance, CARB fails to and must analyze and disclose the anticipated air pollution reductions attributed to the continued implementation of Cap-and-Trade. CARB must also research and analyze alternatives other than Cap-and-Trade that could avoid the significant environmental and health impacts that result from Cap-and-Trade.

The Office of Environmental Health Hazard Assessment ("OEHHA") published a Cap-and-Trade analysis in February of 2022 and found that GHGs and PM2.5 emissions increased in the oil refining sector while air toxics increased in the oil production sector.[93] As such, research shows that Cap-and-Trade results in disproportionate environmental and health impacts on environmental justice communities.[21]

CARB's failure to analyze the potential environmental and health impacts of Cap-and-Trade on environmental justice communities is a huge oversight that counteracts CARB's commitment to environmental justice. CARB must include an analysis of the impacts of the Cap-and-Trade program in this EA.

[91] Draft Scoping Plan at 86-91.
[92] Draft Scoping Plan at 90, Table 2-4.
[93] Off. of Env'l Health Hazard Assessment, Impact of Greenhouse Gas Emission Limits within Disadvantaged Communities: Progress Toward Reducing Inequities (2022), https://oehha.ca.gov/media/downloads/environmental-justice/impactsofghgpoliciesreport020322.pdf."

Response: This comment addresses the operation of the Cap-and-Trade Program through 2030. The Cap-and-Trade Program is not a part of the proposed project (see Chapter 2, "Project Description", of the Recirculated Draft EA). Rather, it is an established regulatory program that already exists in the environmental baseline. The 2022 Scoping Plan does not alter or change the Cap-and-Trade Program. Therefore, no further analysis is necessary.

However, CARB has chosen to respond to the comment's specific assertions regarding the environmental and health impacts of the Cap-and-Trade Program. As discussed below, current research does not support the conclusions drawn in the submitted comment.

The comment suggests that the 2022 report by the Office of Environmental Health Hazard Assessment (OEHHA) indicates that the Cap-and-Trade Program results in disproportionate negative environmental and health impacts on environmental justice communities. This is a mischaracterization of the conclusions of the report. The OEHHA report states, "In our analysis, we find that since the implementation of the Cap-and-Trade Program in 2013, the greatest reduction of GHG, PM2.5, and air toxics emissions have occurred at facilities subject to the Cap-and-Trade Program located near vulnerable communities. These communities also experience the largest share of health benefits due to reductions of PM2.5 emissions from these facilities. It is important to note that our analysis compared the change in emissions between two years (2012 and 2017); if different years were selected, the results would vary since total emissions from a facility vary annually..."[111]

While the OEHHA report is descriptive of emission trends for facilities covered by the Cap-and-Trade Program, it does not attribute causality for emission changes – either positive or negative – to the Cap-and-Trade Program. The report emphasizes that causality for emission changes is extremely difficult to assign.

The comment cites reference 21 for the assertion "As such, research shows that Cap-and-Trade results in disproportionate environmental and health impacts on environmental justice

[111] Impacts of Greenhouse Gas Emission Limits Within Disadvantaged Communities: Progress Toward Reducing Inequities. (oehha.ca.gov).

communities." Reference 21 is a techno-economic analysis of CO_2 sequestration at natural gas power plants and bears no relevance to the assertion.

Furthermore, other current research does not show the Cap-and-Trade Program results in negative disproportionate impacts for environmental justice communities. The research paper that has been most commonly cited by those asserting that the Cap-and-Trade Program makes local air pollution worse is inconclusive, at best.[112] It studied the relationship between the Cap-and-Trade Program and air pollution in environmental justice communities from 2011-2015. However, the Program did not begin until 2013. Increases in greenhouse gas (GHG) emissions were observed (as a result of the economy coming back after the 2008 recession and other factors), but the lead study author notes that the study does not actually show the implementation of the Cap-and-Trade Program made local air quality worse. And, that there was no cause and effect demonstrated with the Program.[113]

In addition to the recent comments by the lead study author, a 2021 technical evaluation of the research paper noted that any findings in that paper are heavily dependent on the timeframe selected and power sector trends outside of the Program's influence.[114] The evaluation also noted that while there is a long-established relationship between GHGs and co-pollutants, the correlations between GHGs and co-pollutants are not particularly tight and include wide variability between and even within sectors and pollution types for the data evaluated.

A 2020 study from the University of California, Santa Barbara (UCSB) examined data from 2008 through 2017 and found that, since the Cap-and-Trade Program took effect, air quality in environmental justice communities with large cap-and-trade facilities improved more than air quality in wealthier neighborhoods.[115]

CARB recognizes that some large GHG-emitting facilities (such as refineries) have been located in or adjacent to environmental justice communities since well before the Cap-and-Trade Program was adopted. Those facilities are regulated for smog-causing pollution and toxic contaminants by local air districts, with strict permitting and reporting requirements.

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[112] Cushing, Laura et al. (July 2018) Carbon trading, co-pollutants, and environmental equity: Evidence from California's cap-and-trade program 2011–2015 (plos.org) (available at https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002604#abstract2). See also Response to Comments on the Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target, pages 2-4 to 2-11 (available at https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_rtc.pdf).

[113] Johnson, Nathaniel. Cap and Trade-Offs: Did California's landmark legislation help or hurt the state's most vulnerable? (Oct 19, 2020) (available at https://grist.org/climate/the-biggest-fight-over-cap-and-trade-isnt-about-what-you-think-it-is/).

[114] Tempest, Kevin. (March 2021) Part 1: Revisiting the Key Findings of a California Carbon Market and Environmental Equity Study | Low Carbon Prosperity Institute (available at https://www.lowcarbonprosperity.org/2021/03/09/revisiting-the-key-findings-of-a-california-carbon-market-and-environmental-equity-study-part-1/).

[115] Hernandez-Cortes, Danae; Meng, Kyle C. Do Environmental Markets Cause Environmental Injustice? Evidence from California's Carbon Market (November 2022) (available at https://www.nber.org/system/files/working_papers/w27205/w27205.pdf).

Contrary to some claims, there has been no change to the districts' decades-old authority to regulate emissions at these stationary sources. Even while CARB undertook programs to cut GHGs, it redoubled efforts to directly address the largest sources of local pollution with specific and targeted regulations that were aimed directly at the heart of those local sources in environmental justice communities.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R20

10/24/2022 Daniel Lashof, World Resources Institute

R20-1: The commenter states, "The Recirculated EA does not yet reflect this new policy landscape. For example, Table 4-12 projects statewide GHG emissions under the Proposed Scenario of 95 million tons in 2045, in violation of AB-1279."

Response: The final modeling results for the Scoping Plan Scenario were released as part of the proposed final 2022 Scoping Plan documents on November 16, 2022, and demonstrate GHG emission reductions that achieve 85 percent below 1990 emission levels by 2045 as codified in AB 1279. The Final EA has been updated to reflect the AB 32 GHG Inventory Sector emissions in 2045 based on final modeling results. The Recirculated Draft EA included all of the compliance responses needed to achieve the AB 1279 target, including CCS on existing industrial facilities, as confirmed by the modeling results.[116] The compliance responses set forth in the Recirculated Draft EA remain accurate, and no changes are necessary in light of this comment.

R20-2: The commenter states, "Provide a more detailed roadmap for carbon dioxide removal. The recirculated EA incorporates the goal set by Governor Newsom to remove 20 million tons of CO2 by 2030 and 100 million tons by 2045 and describes some of the potential compliance activities in very general terms, but it does little to explore how to integrate this level of carbon removal into a zero net emissions energy system with the lowest possible environmental impacts, nor does it provide an assessment of the potential location of key facilities, such as geologic sequestration reservoirs, carbon dioxide pipelines, direct air capture equipment and biomass gasifiers and/or pyrolyzers. For example, a least-cost strategy to achieve these carbon removal goals will almost certainly involve a combination of direct air capture (DAC) and sequestration of carbon obtained from biomass waste (BiCRS)."

Response: Please refer to response to comment R19-2.

[116] See AB 32 GHG Inventory Sectors Modeling Data Spreadsheet, https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-PATHWAYS-data-E3.xlsx

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R21

10/24/2022 Chelsea Tu, CA Environmental Justice Alliance

The comments suggest modifications to the 2022 Scoping Plan. The comments address recommendations related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R22

10/24/2022 Kenley Farmer, Airlines for America

The comments recommend the use of sustainable aviation fuels to decarbonize the aviation sector. The comments address policy aspects related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R23

10/24/2022 Nora Brown, Charm Industrial

The comments note that carbon dioxide removal strategies provide beneficial impacts to air quality, public health, wildfire risk reduction, and forest resilience. While CARB's certified regulatory program requires an analysis of the adverse and beneficial environmental impacts of a project, these comments do not include substantial evidence to support these suggested benefits of the 2022 Scoping Plan. Because detailed information related to the suggested beneficial impacts of carbon capture and sequestration policies have not been provided, no changes to the Recirculated Draft EA are necessary. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R24

10/24/2022 Laura Haider, Fresnans Against Fracking

The comments express general support for Alternative 2 of the 2022 Scoping Plan, and provide some additional policy recommendations. The comments address policy aspects related to the plan and do not raise significant environmental issues related to the analysis in

the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R25

10/24/2022 Fariya Ali

The comments recommend language that ensures reliability of plans and provides policy suggestions related to clean electricity supplies and demands. The comments address opinions and policy aspects of the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R26

10/24/2022 Leah Bahramipour, Sierra Club

R26-1: The commenter states, "**4. The RDEA and Scoping Plan's public health analyses are incomplete.**

The strength of the Scoping Plan ultimately will be judged in the continued health and the quality of life Californians will enjoy. It is for this reason that we are deeply concerned about the incomplete public health analysis. We know that California's topographical features, proximity to water, fertility of land, proximity to transportation arteries, energy demands, and current air quality demand that we humanize the people of California and present an assessment that is reflective of families not corporations.

The Scoping Plan and RDEA's public health analyses are calculated using a model that does not have the capability to evaluate regional impacts of proposed actions. This stops the public, regulatory agencies, and CARB itself from appropriately evaluating how the Scoping Plan will impact different communities throughout the state. Evaluating impacts on differently-situated communities is particularly crucial in order to understand the impact of the Scoping Plan proposals on California's many diverse low-income communities of color. Due to California's racist land use practices, most polluting industries are sited in or near communities of color, so any sector-specific, reasonably anticipated compliance activities associated with the Plan have the potential to disproportionately impact these communities. If the RDEA cannot evaluate the full scope of health impacts, the Plan will fail to protect communities from increased exposure to high levels of pollutants that result in detrimental degradation of physical and social development and ultimately lead to premature deaths that are akin to a slow suffocation."

Response: The comment does not raise an issue related to the adequacy, accuracy, or completeness of the Recirculated Draft EA and no further response is required, although CARB disagrees firmly with the commenter's claims, including those regarding claimed

racially-disparate harms. CARB also notes that the 2045 climate target is set in statute. (AB 1279 (Muratsuchi, Chapter 337, Statutes of 2022.)

R26-2: The commenter states, "**5. The RDEA's analysis, although incomplete, is clear that CCS will have negative implications on California's water resources.**

We appreciate the efforts to improve the Scoping Plan by eliminating all new gas plants, doubling VMT reductions, and a commitment to having an inter-agency plan to phase down oil refining, but the introduction of reliance on carbon capture and storage ("CCS") unravels the newly introduced improvements. The CCS process has a heavy dependence on chemicals, membranes, and mixed salts. Based on the FY19 Carbon Capture Peer Review Overview Report produced by the National Energy Technology Laboratory, there is currently no complete analysis on the correct concentrations for such chemicals, nor on the long-term health impacts these chemicals would have on communities, nor what their disposal process might be.[19]

CCS depends on a novel amine-based solvent technology. However, there are currently no Safety Data Sheets available to the public on this technology, and it appears that government agencies have not yet completed an assessment of the human toxicity of first-generation monoethanolamine ("MEA").[20] An assessment conducted by Karin Veltman et al, indicates that amine-based scrubbing results in a 10-fold increase in toxic impacts on freshwater ecosystems.[21] There is a maximum 40-fold increase in aldehyde emissions, which results in a maximum 4-fold increase in human health impacts. The increase in human health impacts is predominantly due to formaldehyde emissions,[22] as formaldehyde is a recognized human carcinogen.[23, 24]

As the RDEA correctly explains, carbon removal technologies require large quantities of water, and their operations may place additional strain on existing and future water resources.[25] Furthermore, CARB identified several additional concerns with the impacts of CCS on water quality, including seismic disturbances from storing brine, potential groundwater contamination risks, water demand challenges, and erosion of natural landscapes.[26]

[19] *FY19 Carbon Capture Peer Review Overview Report*, National Energy Technology Laboratory (Dec. 6, 2018), https://netl.doe.gov/sites/default/files/2019-08/FY19-Carbon-Capture-Peer-Review-Overview- Report.pdf.

[20] Karin Veltman et al., *Human and Environmental Impact Assessment of Postcombustion CO2 Capture Focusing on Emissions from Amine-Based Scrubbing Solvents to Air*, Environ. Sci. Technol., 44, 4, 1496–1502 (Jan. 22, 2010), https://doi.org/10.1021/es902116r.

[21] *Id*.

[22] *Id*.

[23] Roberta Bronson Fitzpatrick, *CPDB: Carcinogenic Potency DataBase* (Oct. 11, 2008), https://www.tandfonline.com/doi/abs/10.1080/02763860802198895.

[24] Mark A J Huijbregts et al., *Human-toxicological effect and damage factors of carcinogenic and noncarcinogenic chemicals for life cycle impact assessment*, Integr. Environ. Asses. Man. 1 (3), 181-244 (July 2005), https://doi.org/10.1897/2004-007r.1.
[25] RDEA, p. 244-45.
[26] RDEA, p. 176."

Response: See Master Response 2.

R26-3: The commenter states, "b. The RDEA's analysis of CDR and CCS as it pertains to electricity generation is incomplete and inadequate.

The RDEA, like the Draft Environmental Analysis, is silent on whether the reductions in GHG emissions from the electric sector are assumed to come from CCS and CDR or from retiring GHG-emitting generation. While the RDEA identifies goals and dates for CCS to be on petroleum refining, stone, clay, glass, and cement operations, no such goal exists for the electric sector.[36] The RDEA also fails to apply the 2030 and the 2045 CDR / CCS targets to specific sectors. This is problematic. While we understand that there is "inherent uncertainty in whether, when, or where many measures included in the 2022 Scoping Plan would occur,"[37] the California Environmental Quality Act ("CEQA") requires the RDEA to include an accurate, stable project description, and a thorough assessment of significant impacts, mitigation measures and alternatives. CEQA's core function is to ensure an informed decision making process. To engage in that process, the public must be privy to the Scoping Plan's assumptions regarding these CDR and CCS targets. We look forward to additional CARB analysis pertaining to carbon removal and the electric sector in the modeling and updated Scoping Plan.

While, as noted above, we strongly support the commitment to planning for a future electric sector that does not include additional gas-fired generation, the RDEA includes a reference to the Allam Cycle as a "zero-carbon resource" and as a potentially foreseeable compliance response that would increase renewable energy capacity.[38] This is an error, as promotional materials, scientific analyses and the manufacturer itself all assert that the Allam Cycle is a "novel natural gas power plant design that can theoretically capture 100 percent of emissions."[39] However, there is only one plant, a 50 MW test facility in Texas, that has currently operated with the Allam Cycle design, so whether it can capture 100 percent of emissions at a larger scale remains unknown.[40] Additionally, carbon capture through the Allam Cycle is not a "zero-carbon" resource, as it does not account for up-stream methane leakage during the production and transporting of natural gas to the power plant or the potential leakage of stored carbon after it has been captured.[41] Further, the Allam Cycle is a power plant design, not a modification. According to its manufacturer, it involves an innovative technique of "burning natural gas with pure oxygen" (oxy-combustion), fed through a high-pressure system to a new, specially-sized turbine, and equipped with both a recuperative process and a CO2 disposal method.[42] Because it is an entirely new design, it requires the construction of new, complex gas-fired power plants and cannot be retrofitted onto existing power plants.[43] As described in section 1 above, Allam Cycle technology cannot be used to retrofit existing facilities and requires the construction of entirely new gas-fired power plants.[44] As such, the RDEA should delete any reference to the Allam Cycle, as it is not

"zero-carbon" and its use would require the construction of new gas-fired generation in order to "theoretically" capture carbon, an unproven contention at the utility-scale.

[36] RDEA, p. 17-18.
[37] RDEA, p. 44.
[38] RDEA, p. 20-21.
[39] David Yellen, *Carbon Capture and the Allam Cycle: The future of electricity or a carbon pipe(line) dream?*, Atlantic Council (May 21, 2020), (emphasis added), https://www.atlanticcouncil.org/blogs/energysource/carbon-capture-and-the-allam-cycle-the-future-of-electricity-or-a-carbon-pipeline-dream/; See also NET Power Technology, https://netpower.com/technology/.
[40] *See* Yellen, *Carbon Capture and the Allam Cycle: The future of electricity or a carbon pipe(line) dream?*.
[41] See Raghav Chaturvedi et al., *CO2 Sequestration by Allam Cycle*, Senior Design Reports, University of Pennsylvania 123 (Apr. 20, 2021), https://repository.upenn.edu/cgi/viewcontent.cgi?article=1135&context=cbe sdr.
[42] NET Power Technology, https://netpower.com/technology/.
[43] Karl M. Bandilla, *Future Energy (Third Edition) – Improved, Sustainable and Clean Options for Our Planet*. Chapter 31 – Carbon Capture and Storage, 669, 688 (2020), https://www.sciencedirect.com/science/article/pii/B9780081028865000311?via%3Dihub.
[44] Amanda Doyle, *Process pioneer: Rodney Allam discusses the development of his CCS technology* (July 17, 2018), https://www.thechemicalengineer.com/features/process-pioneer-rodney-allam-discusses-the-development-of-his-ccs-technology/."

Response: The commenter is correct that CEQA requires an accurate, stable project description, and a thorough assessment of reasonably foreseeable significant indirect impacts. The Recirculated Draft EA provides such an assessment, within the bounds of reasonable foreseeability. CARB disagrees with the commenter's assertion that the RDEA is silent on whether the reductions in GHG emissions from the electric sector are assumed to come from CCS and CDR or from retiring GHG-emitting generation. As explained in the Recirculated Draft EA, the 2022 Scoping Plan focuses on increased renewable energy deployment, a primary (and the first listed) feature of the project description,[117] as well as on CCS.[118] The goals for these two sectors are also set forth in Table 2-1 of the Recirculated Draft EA. The Scoping Plan Scenario identifies a suite of resources that are anticipated to meet electricity demand through 2045. This suite of resources selected for the Scoping Plan Scenario are included in the reasonably foreseeable compliance responses in Chapter 2 of the Recirculated Draft EA, as well as described in the 2022 Scoping Plan and in the accompanying output data file. The Scoping Plan Scenario includes existing gas-power plants, along with other renewable and zero-carbon resources selected by the RESOLVE model, to meet demand and reliability needs through 2045. No new gas-power plant capacity, in any form, was implemented as a modeling constraint consistent with the CARB Board direction and Governor Newsom's request. In addition, the Scoping Plan Scenario

[117] See RDEA at 20-22.
[118] See RDEA at 25-26.

would achieve a reduction in electricity sector fossil gas consumption of 47 percent from 2022 to 2045, consistent with the Recirculated Draft EA's project description for further transition away from fossil fuel-based electricity generation. The Scoping Plan Scenario includes carbon capture and sequestration (CCS) on existing natural gas generation in the electricity sector to achieve 85 percent below 1990 emission levels by 2045 as codified in AB 1279. The reasonably foreseeable compliance responses associated with modifications to industrial facilities to capture CO_2 emissions with CCS are included in Chapter 2 of the Recirculated Draft EA and those impacts are described throughout Chapter 4 of the Recirculated Draft EA.

The final modeling results for the Scoping Plan Scenario (the same scenario analyzed as the "proposed project" in the Recirculated Draft EA) were presented at an October 28, 2022, workshop. These results reflect direction from Governor Newsom to avoid new gas-power plants and legislation requiring GHG emission reductions of 85 percent below 1990 levels by 2045 (AB 1279). The electricity resource options available in the RESOLVE model for modeling the electricity sector were unchanged from the Draft Scoping Plan and included Allam-Cycle CCS technology as documented in Appendix H of the Draft Scoping Plan. CARB staff added text related to Allam-Cycle CCS to the reasonably foreseeable compliance responses in the Recirculated Draft EA for completeness, even though Allam-Cycle CCS was not selected as a generation resource by the RESOLVE model in the Draft Scoping Plan modeling. Furthermore, Allam-Cycle CCS was not selected by RESOLVE in the Final Scoping Plan modeling. CARB further notes that the commenter's concerns regarding inclusion of Allam-Cycle CCS in the project description amount to a policy disagreement over whether it would achieve the assumed level of GHG reductions; the comments do not identify any new adverse impacts beyond the existing environmental conditions that have not already been analyzed in the Recirculated Draft EA.

R26-4: The commenter states, "**c. The RDEA's analysis is inadequate because it fails to analyze the additional energy needed to power all the CDR and CCS technologies.**

As parties commented in June 2022, the draft Scoping Plan failed to account for the GHG impacts from powering CDR, direct air capture ("DAC") and CCS that the draft Scoping Plan envisions as necessary to achieve statutory mandates.[45] The RDEA states that the energy needed to power the CDR and CCS technologies will be mitigated by "on-site energy generation . . . involving photovoltaic electricity generation, battery storage, and microgrid systems" as well as "increased generation, both on-site and off-site."[46] The RDEA is silent on details, however, when it comes to how much power will be required and whether it is remotely feasible to build this level of off-grid renewables.

With respect to CCS on existing power plants, studies suggest that CCS technologies require an estimated 10-25 percent more energy to produce the same amount of power the plant would produce without the CCS.[47] This energy penalty is therefore not an insignificant, but rather a sizable amount of additional generation that will be needed to power such carbon removal technologies. As such, the use of CCS on existing power plants foreseeably leads to plants running harder, or longer, to deliver the same electricity to the grid in order to power the CCS. To envision a reliable grid, all calculations based on existing nameplate capacity of

the gas fleet would have to be reduced by 25 percent. Even imagining CCS performed perfectly on existing plants, which no studies suggests it would, the increased power per MW delivered would result in more harmful non-CO2 air pollutants, like NOx and particulate matter, that are not captured by CCS.[48] For industries like refineries, the impacts to the electricity sector are even more extreme. For example, even if it were feasible to retrofit California refineries with CCS, the energy required to power that CCS would be vast. Based on data from 2020, the penalty would represent 5 percent of all energy used, or 7.2 percent of in-state production, in 2020.

For CDR like DACs, estimates of electricity per ton of captured CO2 range from 2.43MWh to 3.89MWh.[49] To power 20 MMT of CO2 removal would require 48,600,000 MWh.[50] According to the U.S. Energy Information Administration, as of July 2022, California had 20,425,000 MWh total net electricity generation, of which utility-scale solar, wind, and geothermal net electricity generation make up 6,731,000 MWh.[51] The RDEA does not even begin to analyze impacts of building this scale of off-grid renewable power.

[45] See e.g. Michael Wara et al., Public Comment on the 2022 Scoping Plan – Stanford CEPP Comments on Scoping Plan (June 24, 2022), https://www.arb.ca.gov/lists/com-attach/4433-scopingplan2022-UiFcLgdnUG0LawNs.pdf.

[46] RDEA, p. 26.

[47] *See CAN Position: Carbon Capture, Storage, and Utilisation, Climate Action Network Int'l.*, p. 9 (Jan. 2021), https://climatenetwork.org/resource/can-position-carbon-capture-storage-and-utilisation/ (finding that pulverized coal stations fitted with CCS require 25% more energy); *See also Carbon Capture and Sequestration (CCS) in the United States*, Congressional Research Service (Oct. 5, 2022), https://sgp.fas.org/crs/misc/R44902.pdf (finding that the energy penalty has been reported at around 20% of a power plant's capacity).

[48] *See* Mark Z. Jacobson, *The health and climate impacts of carbon capture and direct air capture*, Energy and Environmental Science 12, 3567-3574 (2019), https://web.stanford.edu/group/efmh/jacobson/Articles/Others/19-CCS-DAC.pdf (concluding that CCS are "not close to zero-carbon technologies" and that CCS does not capture "CO, NOx, SO2, organic gases, mercury, toxins, black and brown carbon, fly ash, and other aerosol components.")

[49] Leigh Collins, *The amount of energy required by direct air carbon capture proves it is an exercise in futility*, Recharge (Sept. 14, 2021), https://www.rechargenews.com/energy-transition/the-amount-of-energy-required-by-direct-air-carbon-capture-proves-it-is-an-exercise-in-futility/2-1-1067588; see also Michael Wara et al., Public Comment on the 2022 Scoping Plan – Stanford CEPP Comments on Scoping Plan (June 24, 2022) (2000kWh per ton of CO2 captured.).

[50] 2.43 x 20,000,000.

[51] California State Energy Profile, U.S. Energy Information Administration, https://www.eia.gov/state/print.php?sid=CA."

Response: Please refer to response to comment R19-9 regarding CCS energy; refer also to Master Response 3.

The energy requirement for mechanical CDR is modeled in the Scoping Plan Scenario as direct air capture (DAC) technology. Both liquid and solvent-based DAC require energy input that can be in the form of electricity or fuel, such as hydrogen, to produce heat at high temperatures. For purposes of estimating DAC costs in the Scoping Plan Scenario and providing consistency with the carbon neutrality target, the modeling assumed energy requirements for DAC operation were provided by off-grid solar generation, estimated at 64 GW. Low-carbon energy sources such as renewables will maximize net capture efficiencies related to the systems' energy use.

All scenarios analyzed during the 2022 Scoping Plan development process have residual emissions that must be mitigated through carbon removal methods to get to carbon neutrality. Legislative direction provided by SB 905 reinforces the inclusion of CDR technologies as part of the state's climate strategy, where appropriate. Furthermore, the Carbon Capture, Removal, Utilization, and Storage Program to be developed by SB 905 includes evaluating the efficacy and viability of CCS and CDR technologies to ensure that these projects will reduce GHG emissions and to prioritize minimizing land use and other potential environmental impacts, such as those described in the Recirculated Draft EA.

R26-5: The commenter states, "**d. By prioritizing direct emission reductions, CARB can lessen its reliance on unproven carbon removal technologies to achieve its GHG reduction goals.**

As earlier public comments have indicated,[52] CCS is a costly, risky, and unproven form of CO_2 emission reduction. The first large U.S. power plant to implement CCS, the Petra Nova plant, shut indefinitely in January 2021, after only four years of operation, and remains shut down today due to lower oil prices than expected.[53] The world's largest DAC facility in the world, the Climeworks' Orca project, is also experiencing complications. After launching in September 2021, it is running behind schedule after the Icelandic winter caused the technology to stop working.[54] Most major worldwide CCS projects have outright failed or captured significantly less than initially anticipated.[55] These examples demonstrate that getting large, utility-scale CDR and CCS technologies that operate as designed might take decades, in addition to the enormous additional burdens they would place on the electric sector, which is the key to decarbonizing the entire economy. If California is to achieve carbon neutrality by 2045,[56] CARB must act now to plan for retirement of gas-fired power plants and not increase the state's dependence on fossil fuels, while gambling on an unproven technology to develop.

[52] *See generally* Michael Wara et al., Public Comment on the 2022 Scoping Plan – Stanford CEPP Comments on Scoping Plan (June 24, 2022); Chelsea Tu et al., Public California Environmental Justice Alliance, Comment on the 2022 Scoping Plan – CEJA Draft Scoping Plan Sector-Specific Comments (June 24, 2022), https://www.arb.ca.gov/lists/com-attach/4459-scopingplan2022-UDMAY1Y9V2VQCQBk.pdf.

[53] *See Carbon Capture and Sequestration (CCS) in the United States*, Congressional Research Service (Oct. 5, 2022), https://sgp.fas.org/crs/misc/R44902.pdf.

[54] Harry Cockburn, *World's biggest carbon removal machine 'freezes over' in Iceland*, Yahoo! News (Apr. 19, 2022), https://nz.news.yahoo.com/world-biggest-carbon-removal-machine-114645741.html.

[55] *See* Adam Vaughan, *Most major carbon capture and storage projects haven't met targets*, NewScientist (Sept. 1, 2022), https://www.newscientist.com/article/2336018-most-major-carbon-capture-and-storage-projects-havent-met-targets/.

[56] This goal is consistent with AB 1279, Muratsuchi, 2021-2022 legislative session."

Response: Please refer to Master Response 3 and response to comment R18-1 for a discussion on CCS and CDR energy use generally and in the electricity sector, specifically, including the need for deployment of CCS and CDR to achieve the carbon neutrality target by 2045 and updated assumptions regarding the timing of CCS and CDR deployment.

Both the Petra Nova project and the Climeworks' Orca project were designed as technology demonstrations to help identify technical issues associated with scaling up CCS and CDR technologies, respectively.[119,120,121] The Petra Nova project exceeded the target capture efficiency of 90% over its three years of operation, and the capture unit demonstrated a high level of reliability that also improved each year.[122],[123] The closure of the Petra Nova project stemmed from economic issues and process shutdowns that were unrelated to the main carbon capture equipment.[124]

Further review of the article cited by the commenter in relation to the Climeworks' Orca project indicates that the freezing weather caused "basic mechanical complications with components such as belt drives." The issues were resolved following modifications to some

[119] United States Department of Energy, Office of Fossil Energy and Carbon Management. "Petra Nova – W.A. Parish Project." Available: https://www.energy.gov/fecm/petra-nova-wa-parish-project. Accessed: November 11, 2022.

[120] IDTechEx. 2021. "Lessons Learned from the Closure of Petra Nova, IDTechEx Reports." March 22. Available: https://www.prnewswire.com/news-releases/lessons-learned-from-the-closure-of-petra-nova-idtechex-reports-301252906.html. Accessed: November 10, 2022.

[121] Climeworks. 2021. "Climeworks begins operations of Orca, the world's largest direct air capture and CO2 storage plant." August 9. Available: https://climeworks.com/news/climeworks-launches-orca. Accessed: November 10, 2022.

[122] Clean Air Task Force. 2020. "Six Key Ways Petra Nova Has Shown That Carbon Capture Works." August 11. Available: https://www.catf.us/2020/08/six-key-ways-petra-nova-has-shown-that-carbon-capture-works/. Accessed: November 10, 2022.

[123] IDTechEx. 2021. "Lessons Learned from the Closure of Petra Nova, IDTechEx Reports." March 22. Available: https://www.prnewswire.com/news-releases/lessons-learned-from-the-closure-of-petra-nova-idtechex-reports-301252906.html. Accessed: November 10, 2022.

[124] Ibid.

components, however a redesign of the core carbon capture technology was not required.[125] Following these modifications, the project is operating as expected.[126]

The comment indicating that "Most major worldwide CCS projects have outright failed or captured significantly less than initially anticipated" refers to the results of an Institute for Energy Economics and Financial Analysis (IEEFA) study that evaluated the economics and performance of 13 commercial-scale CCS projects worldwide.[127] Further review of the IEEFA study indicates several examples of projects that met carbon capture targets, including projects in sectors for which the Scoping Plan Scenario assumes deployment of CCS (e.g., refining/hydrogen production and power generation). The IEEFA study also indicated that carbon capture technologies could be used in hard-to-abate sectors, including the cement industry, provided that other approaches to decarbonize these sectors are not delayed or inhibited.[128]

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R27

10/24/2022 Nick Cammarota, California Building Industry Association

The comments provide recommendations related to proposed per-capita VMT reductions included in the 2022 Scoping Plan. The comments address policy aspects of the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R28

10/24/2022 Tanya DeRivi, WSPA

R28-1: The commenter states, "Rather than create additional barriers for the utilization and commercialization of CDR/CCS technology, California must streamline permitting for CCS and mechanical CDR projects to ensure that California Environmental Quality Act (CEQA) and other regulatory proceedings do not unjustly stall or halt technologies that are crucial to

[125] Yahoo!News. 2022. "World's biggest carbon removal machine 'freezes over' in Iceland." April 19. Available: https://nz.news.yahoo.com/world-biggest-carbon-removal-machine-114645741.html. Accessed: November 10, 2022.
[126] Ibid.
[127] Institute for Energy Economics and Financial Analysis. 2022. "The Carbon Capture Crux." September. Available: https://ieefa.org/resources/carbon-capture-crux-lessons-learned. Accessed: November 10, 2022.
[128][128] Ibid

meeting the goals of the Draft 2022 Scoping Plan Update. Unfortunately, SB 905 did not address this concern; indeed, it reiterated that it "shall not impair, abridge, or alter any rights or obligations under the California Environmental Quality Act".[6] WSPA would like to reiterate the recommendation in the previous comment letter that CARB should work with the Office of Planning and Research to develop an improved project environmental review (under CEQA) and permitting process for the carbon reduction projects including CCS/CDR that are essential for the implementation and delivery of the Draft 2022 Scoping Plan Update.

[6] Ibid, Section 39471.2(c)."

Response: The comment provides policy recommendations related to permitting of CDR/CCS technology. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the Recirculated Draft EA and no further response is required.

R28-2: The commenter states, "**5. The high-level programmatic CEQA analysis conducted for the Scoping Plan does not include the level of analysis to be relied upon in cumulative impact analyses for specific regulations developed based on this Scoping Plan.**

CEQA requires that the Recirculated Draft EA contain "[a] discussion and consideration of environmental impacts, adverse or beneficial, and feasible mitigation measures which could minimize significant adverse impacts identified," as well as "[a] discussion of cumulative and growth-inducing impacts."[25] CARB has developed a high-level programmatic CEQA analysis for the 2022 Draft Scoping Plan Update. The CEQA analysis in the Recirculated Draft EA lacks details regarding the environmental impact analyses for individual programs and actions included in the Draft 2022 Scoping Plan Update, because it states that "the specific location, design, and setting of the potential actions cannot feasibly be known at this time."[26] Failure to capture the full extent of environmental impacts of all actions in the Scoping Plan scenario will likely lead CARB to underestimate adverse impacts, such an incomplete analysis cannot sufficiently form the basis for future policy and regulatory decisions, and does not fulfill CARB's CEQA obligations.

CARB should clarify that the Scoping Plan's high-level programmatic CEQA analysis is not intended to be solely relied upon for future environmental analysis, particularly cumulative impact analyses, for subsequent programs and regulations. Rather, all future rules and/or regulations listed in the proposed scenario of the Draft 2022 Scoping Plan Update must conduct their own environmental impact analysis to ensure that all indirect and unintentional impacts, and cumulative impacts, from the rules and/or regulations are being considered. In recently adopted/proposed regulations such as the Advanced Clean Cars II program[27] and the proposed Advanced Clean Fleet regulation[28] CARB erroneously declined to perform a cumulative impact assessment based on the purposed adequacy of the EA for the previous Scoping Plan Update.[29].

[25] Cal. Code Regs. tit.17, § 60004.2(a).
[26] See Recirculated Draft EA, at 43.
[27] CARB. 2022. Final Environmental Analysis for the Advanced Clean Car II Program, at 146-147. Available at:

https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/acciifinalea.docx. Accessed October 2022.

[28] CARB. 2022 Appendix D: Draft Environmental Analysis for Proposed Advanced Clean Fleets Regulation, at 111-12. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appd.pdf. Accessed October 2022.

[29] CARB. 2017. Appendix F: Environmental Analysis for Final 2017 Scoping Plan Update. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appf_finalea.pdf. Accessed October 2022."

Response: Section 1.D.2, "Scope of Analysis and Assumptions," addresses the degree of specificity required in this CEQA document, as follows (last paragraph on page 7 of the Recirculated Draft EA):

> The level of detail in this Recirculated Draft EA reflects that the 2022 Scoping Plan is a broad statewide-level planning document. Consequently, the analysis is at a programmatic level and is not intended to be relied upon to develop subsequent environmental documents prepared for specific follow-up actions that other agencies may decide to pursue to reduce GHG emissions. Nor is the analysis intended to be relied upon by environmental reviews carried out for reasonably foreseeable, specific projects by various entities consistent with the 2022 Scoping Plan. If CARB or other State agencies pursue regulations to implement any of the GHG measures discussed in the 2022 Scoping Plan, each regulation would go through the APA process. The APA is a rigorous process that includes technical, environmental, and economic analyses, as well as public review and input. The ISOR prepared for each regulation or regulatory amendments proposed by CARB, also known as the staff report, would include a more detailed environmental analysis specific to that proposal. If specific actions included in this Recirculated Draft EA are proposed by a public agency, further CEQA review of the individual projects would be undertaken as necessary.

The determination of the degree to which CEQA documentation is necessary for future programs and regulations related to the 2022 Scoping Plan will be made during preparation of the applicable future environmental analysis. It is not necessary for the Recirculated Draft EA to discount to the potential for tiering and other CEQA streamlining benefits, as requested by the comment. No changes to the document are necessary.

R28-3: The commenter states, "**6. WSPA requests that the Scoping Plan and subsequent EAs should develop a broad array of mitigation measures for all areas that will likely have significant impacts.**

CEQA requires that the Draft EA contain "[a] discussion and consideration of environmental impacts, adverse or beneficial, and feasible mitigation measures which could minimize significant adverse impacts identified," as well as "[a] discussion of cumulative and growth-inducing impacts." Cal. Code Regs. tit.17, § 60004.2(a). As discussed in the previous comment, CARB's Recirculated Draft EA is deficient in several respects – CARB is relying on a

high-level programmatic CEQA analysis that does not quantify many reasonably foreseeable environmental impacts (including, but not limited to, energy generation and energy infrastructure construction air quality and greenhouse gas impacts) even though these impacts are reasonably foreseeable and likely significant. CEQA requires CARB to present a comprehensive list of mitigation measures that would address potentially significant impacts of the programs, actions, or projects required for the implementation of the Draft 2022 Scoping Plan Update, which CARB has failed to do. For example, CARB has not identified a menu of potential mitigation measures for the following actions that are necessary for the success of the Draft 2022 Scoping Plan Update:

- zero emission vehicle manufacturing facilities;
- expansion of the electric grid to increase generation, distribution, and transmission;
- mining of rare earth metals for battery and solar photovoltaic (PV) system production;
- battery storage systems;
- electric vehicle charging infrastructure;
- hydrogen production projects;
- hydrogen fueling stations;
- off-shore wind turbines projects; and
- solar PV energy generation projects

While we understand that the exact location and/or level of impacts of these actions/projects are unknown, WSPA encourages CARB to develop a broad array of actionable mitigation measures for each of these types of actions/projects, which would serve as a toolbox that can be applied to them as they are proposed and undergo project-specific CEQA evaluations. In the Draft 2022 Scoping Plan Update, CARB should identify potential impacts and develop a menu of mitigation measures that would address these impacts. This would meet requirements to identify mitigation measures for foreseeably significant impacts and establish mitigation options for related future programs and actions that aim to accomplish the goals set out in the Scoping Plan."

Response: Chapter 4 of the Recirculated Draft EA addresses the impacts related to the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan. These reasonably foreseeable compliance responses include: zero emission vehicle manufacturing facilities; expansion of the electric grid to increase generation, distribution, and transmission; mining of rare earth metals for battery and solar photovoltaic (PV) system production; battery storage systems; electric vehicle charging infrastructure; hydrogen production projects; hydrogen fueling stations; off-shore wind turbines projects; and solar PV energy generation projects. Mitigation measures that would reduce potentially significant impacts are provided in the Recirculated Draft EA. Furthermore, as discussed in Master Response 1, CARB generally lacks the type of land use authority necessary to adopt and implement mitigation for the project-specific actions anticipated by the Scoping Plan. Therefore, as explained in the EA, mitigation for specific land use projects is not "feasible", as CARB lacks the legal authority to implement it. This comment does not address any further specific inadequacies or concerns with the analysis for which further response can be provided.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R29

10/24/2022 Chris Gould

The commenter provides comments related to leakage potential included in the 2022 Scoping Plan. The comments address policy aspects of the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R30

10/24/2022 Julia May, Communities for a Better Environment

This comment letter is a duplicative submittal. Please refer to response to comment letter R33.

Comment Letter R31

10/24/2022 Sarah Sachs, Ceres

The comments express general support for the 2022 Scoping Plan, and recommend more ambitious and comprehensive climate actions. The comments address opinions related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R32

10/24/2022 Sarah Sachs, Ceres

The comments provide recommendations related to the 2022 Scoping Plan. The comments address policy aspects and opinions related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R33

10/24/2022 Alicia Rivera, Connie Cho, and Julia May, Communities for a Better Environment

R33-1: The commenter states, "Importantly, the Project Description is not up to date – it does not yet incorporate clear direction to begin a planning process for a long-term oil refinery phaseout, made by CARB's Governing Boardmembers and recommended by the Environmental Justice Advisory Committee (EJAC) during the Sept. 1st 2022 hearing, detailed below. (This direction was also given by the Governing Board in its June hearing.) The Project Description incorporates some updates (e.g. substantial offshore wind, directed by Governor Newsom)[5] but left out the refinery phaseout planning, perhaps because of the short time between the Sept. 1st Board hearing discussion, and the Sept. 9th REA publication. We look forward to this addition in the fully updated Scoping Plan and correction of the REA and updated modeling.

[5] The REA states that the Project Description has been revised: "After the end of the Draft EA public review period, CARB identified revisions to certain aspects of the proposal that merit revisions to the project description. The changes are provided in Chapter 2, "Project Description," below. In addition, in response to public comment, the public safety evaluation has been reassessed and expanded for carbon dioxide pipelines associated with potential atmospheric mechanical carbon dioxide removal projects and carbon capture and storage projects." REA at p. 1"

Response: The comment, while addressing the project description, appears to be directed at the 2022 Scoping Plan's design and the policy decisions that it reflects (specifically, at an element that the commenter believes should have been included), rather than raising significant environmental issues resulting from the 2022 Scoping Plan. The project description set forth in Chapter 2 of the Recirculated Draft EA remains accurate.

While the 2022 Scoping Plan does not include direct requirements for specific refineries to phase down production, it does include primary elements that will result in deep reductions in demand for refined petroleum products in California, leading to anticipated reductions of refining output. Chapter 2 of the Recirculated Draft EA addresses the actions associated with a reduction in oil and gas extraction, beginning with the first paragraph on page 20. The environmental impacts of these actions are addressed throughout Chapter 4 of the Recirculated Draft EA. See also Master Response 6 regarding anticipated effects on refinery production. The comment does not raise an issue related to the adequacy, accuracy, or completeness of the Recirculated Draft EA and no further response is required. No changes to the Recirculated Draft EA are required in response to this comment.

R33-2: The commenter states, "The Project Description for oil refineries is also outdated in its assumption that most refinery operations could have Carbon Capture and Sequestration (CCS) implemented by 2030 – this has already been discarded by CARB staff after it was documented as infeasible for refineries (see below), and also since it cannot be considered

until after federal pipeline safety regulations are updated for concentrated CO2 transport from oil refineries to the Central Valley.[6]

[6] "For example, SB 905 (Caballero, 2021-2022 legislative session, enrolled by the legislature but not signed by the Governor at the time of writing) does not allow for the transport of concentrated carbon dioxide via pipelines until a federal CO2 pipeline safety rulemaking is completed. It is unknown at this time when that rulemaking will conclude." REA, p. 16. Note this was subsequently signed by Governor Newsom, Sep. 16, 2022: S905 California: Carbon sequestration: Carbon Capture, Removal, Utilization, and Storage Program, Trackbill.com"

Response: CARB discarded the assumption used in the Draft Scoping Plan modeling that CCS could begin in 2023 and adjusted that to begin 2028. However, CARB did not change the existing modeling assumption that CCS could be operational in 2030 to cover a majority of emissions at petroleum refinery operations in the state. The 2030 date reflecting CCS on a majority of petroleum refining operations by 2030 remains accurate and part of the project description.

R33-3: The commenter states, "We appreciate that the evaluation of CCS has been updated to add previously missing information regarding CO2 pipeline hazards, but it is still incomplete – it does not adequately evaluate and provide feasible mitigation for extremely harmful impacts from overcrowding oil refineries, and transporting and sequestration of CO2."

Response: Please refer to Master Responses 2 and 3. It is not clear what the commenter's overcrowding concern refers to (for example, whether it refers to personnel or equipment [and if equipment, which aspects]), or how it translates to potential environmental hazards. CARB therefore cannot offer a more specific response to that concern.

R33-4: The commenter states, "**I. Petroleum Refining in the Project Description must include beginning planning refinery phasedown, and correct errors regarding availability of CCS**

For Oil Refineries, the Sept. 9th draft REA Project Description table of actions (p. 17) is unchanged from the original May 10, 2022 EA Project Description (p. 15). The REA contains two errors requiring updating: A) the Governing Board and EJAC directed staff to add actions to the Scoping Plan to begin planning to manage a long-term phasedown of Oil Refining and Oil Drilling in California, and B) CCS is known to be unavailable for the majority of refinery operations by 2030. The REA still includes the inaccurate and outdated descriptions:

Table 2-1: Actions for the Proposed Scenario: AB 32 GHG Inventory Sectors[8]

Petroleum Refining	CCS on majority of operations by 2030 Production reduced in line with petroleum demand

A) The Refinery description in Table 2-1 should have been amended to include beginning phasedown planning as instructed by the Board and EJAC

During the Sept. 1, 2022 joint meeting of CARB Governing Board (and Environmental Justice Advisory Committee) directed staff to add the beginning of planning on Oil Refinery and Oil Extraction phaseout. Here are a few of the statements made by CARB Governing Boardmembers and EJAC members[9] (many others were made):

> Sharifa Taylor, EJAC Co-Chair, beginning 1:10:26: "**We want to move actually into our recommendations for the refinery phaseout, or just transition**… By 2024 … **CalEPA should lead the adoption of an interagency plan to manage the decline of California oil refinery production** of gasoline, diesel, and other fossil fuels, as it reflects California's climate laws and zero emission transportation policies by 2045."
>
> Kiran Chawla, JD/PhD Candidate, EJAC, proxy for Connie Cho, EJAC, 45:57: "**CARB should develop and complete a petroleum transition plan by 2024** that lays out a vision for production phase out of petroleum refining by 2045, including the development of interim targets."
>
> Chair Randolph, CARB Governing Board beginning 1:22:50: "**We would like some paragraphs added to the Scoping Plan calling on the Governor to convene an interagency working group to assess the transition of not just refineries, but also I think it needs to include extraction**… "
>
> CARB Boardmember Kracov, beginning1:18:47: "If you don't pay attention to where you're going, you're probably gonna end up somewhere else. **So on this issue, we discussed last time, sending a strong signal - language to signal the need for candid, prudent deliberation, and planning. Maybe multi-agency, on the petroleum phase out** to disclose the constraints and tackle all these tough questions."
>
> CARB Boardmember Dr. Balmes, 1:32:09: "**I totally support a phaseout plan**"
>
> CARB Boardmember Hector De la Torre, 1:21:51: "On this issue of oil and gas um back in June I spoke up on this and I still believe it to this day. Since then I've been telling people that I know that this is the direction that we need to go, from other agencies, electeds, etc. I believed it then, I believe it now.

Many other statements, recommendations, and directions to staff were made directing phaseout, and also asking for evaluation and care for worker training and community transitions and impacts, rebate incentives for clean electric vehicles, and special attention to different transportation and electricity charging needs in rural areas.

In addition, Sharifa Taylor, EJAC Co-Chair referenced the PERI[10] report as a model, labor-supported plan regarding how oil industry phasedown can could be carried out with worker training support. Because a full transcript is not clearly available online, it was not easy to provide a set of all the quotes here, but the full conversation is available at the footnoted

link. Boardmember Takvorian added comments supporting such planning and the need for timelines and details, and Boardmember Hurt added comments of general support, as did others.

Consequently, the Project Description Table 2-1 Actions must be updated, for example as follows:

Table 2-1: Actions for the Proposed Scenario: AB 32 GHG Inventory Sectors[11]: example correction

Petroleum Refining	~~CCS on majority of operations by 2030~~ CCS consideration is delayed until after federal pipeline safety regulation updates for concentrated CO2 transport ~~Production reduced in line with petroleum demand~~ By 2024, develop near and long-term plans through an interagency taskforce to manage the decline of oil refining and oil extraction (fossil fuel supply phasedown), in line with California's climate and zero emission transportation goals (for reduced fossil fuel demand by 2045).

Additional detail on planning workforce training and community transition need to be developed for the new Scoping Plan update, and consistently addressed in the REA.

[9] Video recording available at: https://cal-span.org/meeting/carb_20220901/"

Response: Please refer to responses to comments R33-1 and R33-2.

The Scoping Plan Scenario modeling indicates that demand for petroleum will decline over time, though ultimately some demand will persist through 2045. In the Scoping Plan Scenario, CARB modeled a phasedown of refining activity in line with meeting petroleum demand and therefore including sufficient availability of finished fuel products. The Scoping Plan Scenario results in California petroleum refining emissions of 4.5 $MMTCO_2e$ in 2045 without CCS, corresponding to a reduction of approximately 85 percent[129] relative to 2022 levels and is in line with the decline in in-state finished fuel demand and does not assume any need for ongoing operations to support exports to other states. Emissions from refining can be reduced further through the application of CCS technology. This is consistent with the reduction in refining commensurate with declining, but residual, demand in the 2022 Draft Scoping Plan. The reasonably foreseeable compliance responses associated with the petroleum refining sector are discussed in the project description in Chapter 2 of the Recirculated Draft EA related to decreases in oil and gas use actions, low carbon fuels actions, mechanical CDR and CCS actions, and improvements in oil and gas facilities actions. Therefore, CARB disagrees with the commenter's assertion that the updated Scoping Plan Scenario modeling warrants a change to the project description.

[129] CARB. 2022 Scoping Plan. p.106, https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp.pdf.

The refinements to the project description proposed by the commenter also address program development and design and policy-oriented implementation activities associated with the SB 905 program and transition planning related to the phasedown of petroleum refining in line with demand, including workforce development and equity considerations for communities. These are outside the scope of the project. However, to improve clarity, CARB will adjust the petroleum refining language in Table 2-1 of the Final EA as described in the response to comment R33-5.

R33-5: The commenter states, "**B) "CCS on majority of operations by 2030" for oil refineries has already been found by CARB and others as not achievable; DOE's expert and spokesperson agrees**

The original EA modeling assumed widespread refinery CCS could by implemented starting immediately, ramping up to capturing 13 million tonnes of CO2 by 2030 at oil refineries.[12] However, CARB later reviewed these assumptions and concluded that CCS is currently non-existent at oil refineries in California, and that the modeling assumptions for large quantities of CO2 captured could not be met by 2030.[13] Outside California, there are only a small handful of refinery-related CCS projects, with many having failed to achieve their own goals to reduce emissions.[14]

CCS for oil refineries has been documented to require specialized design due to size, age, and severe space constraints at refineries, limiting CCS applicability to a small number of CO2-emitting combustion units (and not practical for the "majority" of operations).[15] The timeline for refinery CCS implementation would require customized engineering design, environmental review, permitting, and construction, and would not be achievable even in limited operations for oil refineries until closer to the end of the decade. We submitted extensive comments through CEJA documenting industry and regulatory statements of the severe refinery space constraints and major hazards reducing maintenance access and increasing accidents. These comments are still relevant and incorporated by reference. If CARB attempted to implement widespread CCS requirements in refineries on the majority of operations by 2030, this would increase the already high dangers of explosions, spills, and fires at refineries.

We supplement our previous comments with additional information below.

Application of CCS to the "Majority of operations" was originally given more meaning in the original Scoping Plan, where the original modeling provided the volume of CO2 in metric tonnes each year expected captured. That document assumed large volumes of refinery emissions could be captured through CCS (13 million tonnes/year by 2030). This volume definition was shown infeasible.

But now, without availability of the new modeling (not expected until November), there is no public gauge at all defining the "majority of operations" (either in quantities expected captured), nor in terms of defining which parts of the refinery would be equipped with CCS.[16] This leaves a big gap in Project Description, and environmental impact analysis.

Definition of "majority" is necessary, to identify not only volumes CARB is projecting to be captured, but also which refinery processes would be possible candidates, what portion of emissions might be capturable, and how large a portion of refinery real-estate would be needed. Evidence shows that only a portion of oil refinery combustion emissions can be captured and that large portions of refinery property are not available to add more equipment if safety isn't to be further compromised. (Pilot projects to develop "compact" CCS modules footnoted by CARB in the May 10th Scoping Plan, are only currently designed for smaller volume capture, as we documented in our previous CEJA comments.[17])

Not only is it already established that the majority of refinery operations cannot have CCS operable by 2030, but the Department of Energy (DOE) representative went further in public comments. The keynote speaker Dr. Jennifer Wilcox, DOE, Office of Fossil Energy and Carbon Management, stated at the CCS Symposium Sept. 29th, 2022 in Stockton: "Carbon capture is not the right tool for refineries." We agree. CARB staff helped convene and were present at this symposium and have access to notes and a recording of this event, which we incorporate by reference.

[12] For example, see Attachment A, May 13, 2022, CBE, FACT CHECK: California's 2022 Draft Scoping Plan for Oil Refineries, Released Data Show CARB Relies on Unfounded Assumptions for Carbon Capture in the Refinery Sector, Making Results Invalid

[13] In an April 2022 public workshop CARB agreed that these assumptions were incorrect. In response to such comments, CARB also agreed in the subsequently published May 2022 draft Scoping Plan that "[w]hile the modeling included CCS as being available in the first half of this decade, implementation barriers now indicate that is unlikely, and those emissions will be emitted into the atmosphere. For the Final 2022 Scoping Plan, the modeling will reflect updated assumptions for the earliest deployment of CCS for any sector in California." Draft Scoping Plan at 68. Moreover, during the May 23, 2022 meeting of the Environmental Justice Advisory Committee (EJAC), CARB staff acknowledged that they now assume refinery CCS will be unavailable until "later this decade."

[14] For example, see previously cited CEJA Scoping Plan comment of June 24, 2022, at p. 19, available at https://www.arb.ca.gov/lists/com-attach/4459-scopingplan2022-UDMAY1Y9V2VQCQBk.pdf

[15] CEJA, Id, pp. 20-27

[16] This is an example of the problem with publishing an environmental assessment before publishing the project or program document itself (in this case – the updated Scoping Plan and updated modeling). We have never seen an environmental assessment published under CEQA before the full project was defined.

[17] CEJA, Id, pp. 27-29"

Response: Regarding previous CEJA comments, please refer to responses to comments 670-1 through 670-22.

The commenter states the lack of new modeling results at the time of publishing of the Recirculated Draft EA leaves a gap in the project description in terms of defining the "majority of operations" with respect to quantities captured by CCS and defining which parts

of the refinery would be equipped with CCS. As further explained in the response to comment R33-2, CARB adjusted the modeling such that CCS begins in 2028, which also results in slightly less CO_2 being captured by 2030 and 2045 from refining operations in the final 2022 Scoping Plan than in the Draft. Furthermore, as described in the response to comment R33-6, the large amount of process GHG emissions from these units at refineries means CCS can be applied on specific refinery operations and capture a large fraction of that refinery's total GHG emissions, such that applying CCS to 70% of total refinery emissions and an assumed 90% capture efficiency for the CO_2 capture and separation unit is not an unreasonable assumption for modeling purposes. As shown in the modeling for the Scoping Plan Scenario, by 2045, refinery GHG emissions are reduced by 85 percent compared to 2022 levels without CCS (4.5 $MMTCO_2e$).[130] As described throughout the Recirculated Draft EA, the 2022 Scoping Plan (the proposed project) is a high-level, programmatic statewide planning effort that projects many years into the future, and that discusses measures that would require complementary actions by many other agencies across the state. Given the uncertainty inherent to this type of project, CARB has made a good-faith effort to project the scope of potential CCS projects, and in analyzing their potential impacts. The potential environmental impacts associated with CCS on existing industrial facilities are described throughout Chapter 4 of the Recirculated Draft EA, to the extent they are reasonably foreseeable at this time. Therefore, the project description in the Recirculated Draft EA remains valid and CARB disagrees there is a gap in the Recirculated Draft EA.

However, to improve clarity, CARB will adjust the petroleum refining language in Table 2-1 of the Final EA to read as follows:

> ~~CCS on majority of operations by 2030~~
>
> CCS is delayed until 2028 to allow for permitting and SB 905 related pipeline safety regulations to be in effect. Amount of CCS continues to be limited to large units at a refinery site.
>
> Production reduced in line with petroleum demand

The commenter does not further identify how they believe the project description is deficient, including identifying new or increased environmental impacts associated with their project description related comments. CARB acknowledges Dr. Wilcox's statement at the September 2022 CCS Symposium that there are many CO_2 streams at a refinery and not all of those emissions may be economical to capture. Relatedly, CARB's modeling reflects CCS on only a portion of refinery GHG emissions, consistent with a working paper authored by Dr. Wilcox that recommends use of CCS on specific sources of process emissions at refineries.[131] CARB also notes that when discussing application of CCS on refineries, Dr. Wilcox discussed

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[130] See AB 32 GHG Inventory Sectors Modeling Data Spreadsheet, https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-PATHWAYS-data-E3.xlsx

[131] World Resources Institute. 2021. Technological Pathways for Decarbonizing Refinery Emissions. September. Available at: https://files.wri.org/d8/s3fs-public/2021-10/technological-pathways-decarbonizing-petroleum-refining.pdf?VersionId=oCHsIJ44.gemRzzrXlix7dYSIQD0OFrW.

opportunities with refineries of the future that would be producing sustainable aviation fuels (SAF), biofuels, and synthetic fuels and could meet their heat needs with hydrogen, while also incorporating "polishing" systems to address remaining NOx emissions – resulting in overall lower polluting operations. The Scoping Plan Scenario also envisions this reduction in liquid petroleum fuels and substitution with cleaner fuels; the scenario results in a reduction in liquid petroleum fuels of 94 percent and a reduction in total liquid fuels (e.g., petroleum, ethanol, renewable diesel, SAF) of 85 percent in 2045 from 2022 levels.[132] CARB also notes that Legislative direction provided by SB 905 reinforces the inclusion of CDR technologies as part of the state's climate strategy, where appropriate. Furthermore, the Carbon Capture, Removal, Utilization, and Storage Program to be developed by SB 905 includes evaluating the efficacy and viability of CCS and CDR technologies to ensure that the technology deployment will reduce GHG emissions and minimize land use and other potential environmental impacts, such as those described in the Recirculated Draft EA.

Regarding the commenter's concerns about available space at facilities and the potential for equipment overcrowding, CARB responds that the 2022 Scoping Plan does not in any way mandate the use of CCS at particular facilities. Further consideration and procedural steps would need to take place before CCS is implemented for any particular purpose at a given facility. Most of the comment appears directed at logistical and planning considerations, rather than potential adverse environmental impacts relating to the equipment issues described. CARB disagrees with the commenter's contention that adding carbon capture-related infrastructure would present potential safety-related issues beyond those analyzed in the Recirculated Draft EA. Please also refer to Master Responses 2 and 3.

R33-6: The commenter states, "C) Refinery Title V permits provide detail on refinery fossil fuel combustion units, encompassing far more than Hydrogen Production & FCCs as largest CO2 sources

In order to further illustrate the large numbers of operations where CCS in refineries would need to be applied if CARB expected to cover the majority of large refinery combustion sources, CBE made the effort to compile from publicly available Title V permits, a list of refinery combustion units and their capacity (firing rate for burning natural gas or refinery gas in millions of BTUs[18] per hour, resulting in CO2 and other emissions). We also previously provided other lists of the large numbers of combustion units at South Coast refineries in our previous CEJA comments documented in NOx Regulation 1109.1, which are still relevant (though not as detailed as the table below for an individual refinery, regarding specific refinery combustion units). Unfortunately, this issue is still receiving a trivial level of evaluation in the REA.

The Title V permits establish the large number of refinery fossil fuel combustion processes which would need to be controlled if CARB meant to include CCS on "the majority" of refinery operations by 2030 in the Scoping Plan.

[132] Ibid.

CARB has already found the notion of applying CCS to the majority of operations as untenable, as previously cited. And in fact, CARB only briefly identified three specific refinery operations in the original Scoping Plan: 1) refinery Hydrogen Plants (Steam Methane Reformers or SMR), 2) refinery Electricity production (combined heat and power), and 3) [Fluid] Catalytic Cracking units (FCCs), stating in the May 10, 2022 Scoping Plan: "Refineries can have a variety of point sources that emit CO2, such as steam methane reformers for producing hydrogen, combined heat and power units, and catalytic crackers." (p. 68)

We show at least ten major refining activities would need to be covered if the majority of CO2 emissions were to be addressed. Each of these ten categories have multiple separate combustion units, requiring separate controls. It is not feasible to cover all these refinery operations with CCS, underscoring the lack of realism in having a general and undefined goal of covering "the majority of operations" at refineries. It appears that CARB has not actually evaluated the scope of refinery operations in this regard, but instead relied on hopeful and generalized thinking, but technically flawed concepts.

As a real-world example, we extracted Title V permitting information for the Tesoro / Marathon Carson refinery, which has about 36 major boilers, heaters, furnaces, and turbines listed in its most recent Title V permit. To address 90% of the emissions from these (a percentage repeatedly stated by CARB as achievable for CCS capture) would require equipping the largest 19 out of the 36 below, encompassing ten different major refinery processes: 1) Electricity Generation, 2) Hydrogen Generation, 3) Crude Oil Distillation, 4) Vacuum Distillation, 5) Catalytic Reforming, 6) Hydrocracking, 7) Fluid Catalytic Cracking, 8) Coking, 9) Steam Generation, and 10) Hydrotreating.

Thus, at a refinery like Tesoro Carson – CCS would need to be applied separately to each of 19 major combustion units if CARB wished to assume it could capture CO2 resulting from 90% of the fuel combusted in the list of boilers and heaters below.[19]

The Tesoro / Marathon Los Angeles Refinery (Carson) from largest to smallest[20]

Size (in Million BTUs of fuel combusted per hour, or MMBTU/hr)	Refinery System/Process (from Title V permit)	Equipment description (from Title V permit)
985	Electricity Generation	Gas Turbine
650	Hydrogen Production	Heater, Primary Reformer
550	Crude Dist. Unit	Heater, No. 1
427	Hydrogen Production	Heater RW0054
360	Vacuum Distill. Unit	Heater No. 51
310	Catalytic Reforming	Heater No. 2 Reformer #015
255	Cat Reform. Unit	Heater No. 1 Reformer 014
173	Hydrocracking	Heater, Reboiler No. 017, Hydrocracker Fractionator
171	Catalytic Reforming	Heater, No. 3 Reformer, No. 016

165	Fluid Catalytic Cracking	Heater RPV 2319, Regenerator Startup Air Heater
150	Crude Dist. Unit Heaters	System 4- Heater, No. 21, No. 2 Crude Oil Distillation
130	Coking & Resid. Conditioning	Heater, No. 1 Delayed Coker Unit (West)
130	Coking & Resid. Conditioning	Heater, No. 1 Delayed Coker Unit (East)
130	Coking & Resid. Conditioning	Heater, No. 2 Delayed Coker Unit
130	Crude Oil Distillation	Heater, No. 4 Crude Oil Distillation Charge
120	Crude Oil Distillation / Vacuum	Heater, No. 52 Vacuum Unit
100	Crude Oil Distillation	Heater No. 22, No. 2 Crude Oil Distillation
89	Fluid Cat Cracking	Heater, Fluid Cat Cracking Feed
82	Hydrotreating	Heater No. 018, Mid-barrel Stabilizer Reboiler
80	Hydrotreating	Heater FCC HDS (HydroDesulfurization) Unit)
52	Catalytic Reforming	Heater, No. 1 Reformer Desulfurizer
52	Hydrotreating	Heater No. 018, Mid-barrel Stabilizer Reboiler
39	Catalytic Reforming	Heater No. 2A, Process Reformer
39	Cat Reforming	Heater No. 2, Desulfurizer No. 2B
39	Hydrocracking	Heater, No. R1
39	Hydrocracking	Heater No. R2 Recycle Gas
39	Hydrocracking	Heater No. R4
39	Hydrocracking	Heater No. R3 Recycle Gas
24	Hydrotreating	Heater, Jet Treater R-1
22	Hydrotreating	Heater Light Gasoline Hydrogenation Feed
12.5	Hydrotreating	Heater, RW 0053, Naphtha HDS Reactor
11	Hydrotreating	Heater, Jet Treater R-3
10	Hydrotreating	Heater, Jet Treater Stabilizer Reboiler
4.9	Fluid Catalytic Cracking	Propylene Tetramer Reboiler

3.9	Crude Oil Distillation	Slop Oil Rerun Unit Heaters

The total fuel combustion capacity above is in 5,614 million BTUs per hour. (See attached pdf of spreadsheet (Attachment A) – the live spreadsheet is available on request.) Using the CO2 Emission Factor of 53.06 kg/MMBTU for combustion of natural gas results which was used by Tesoro during their 2017 environmental permitting,[21] results in CO2 emissions of about 1.3 million metric tonnes/year (MMt/yr).[22] Capturing 90% of the combustion capacity (shaded in blue above) would capture about 1.2MMt/yr.[23] This emission factor may be a major underestimation of actual combustion emissions but regardless illustrates the large percentage of processes which would need to be controlled to reach 90%.

We could similarly compile the Tesoro Wilmington, and other California refinery combustion units from their publicly available Title V permits. Such detail in permits only adds to the already overwhelming evidence that complex refineries cannot readily include CCS on the majority of operations by 2030.

A similar distribution of the largest CO2-generating combustion sources operating across multiple refinery operations (representing "the majority of operations") would be expected at refineries statewide. These units combust mainly Refinery Gas and Natural Gas, and also cause large emissions of Nitrogen Oxides, Particulate Matter, and other pollutants harmful to local health, in addition causing regional ozone formation.

The REA must be corrected to remove the goal of CCS on a "majority of refinery operations" by 2030 for all of the above reasons. If not, CARB would need to provide an analysis showing the feasibility and potential impacts of adding CCS to each of these known process units above, and consider alternatives to each of these. Further, CCS at refineries must not even be considered by CARB before major improvements in federal CO2 pipeline standards.

[18] British Thermal Units

[19] We used fuel combustion capacity as a surrogate for CO2 emissions – the more fuel a unit can combust, the more CO2 emitted. These units generally operate continuously. CARB can readily fill in this chart to provide actual CO2 emitted for each source, or we could calculate using a standard emission factor for each, but fuel combustion percent is a reasonable approximation of percent CO2 emissions.

[20] Tesoro Refining and Marketing, Facility ID 174655 (aka Marathon), 6/24/22 Title V Permit, available through SCAQMD "FIND" query, at https://www.aqmd.gov/nav/FIND . We have also attached more detailed spreadsheets compiling the list above, providing the Application #, the individual equipment Unit #, and the page number in the Title V permit, as well as the Title V permit itself.

[21] Tesoro Los Angeles Refinery Integration and Compliance Project, Appendix A: Summary of Emissions, Table A-2: Carson and Wilmington New and Modified Heater Emissions (Potential to Emit), Emissions Factors, Appendix B-3, p. B-347.

[22] 5,614 MMBTU/hr X (53.06 kg CO2 /MMBTU of Natural Gas combusted, per 40 CFR Default) ÷ (1000kg/metric tonne) X (8760 hrs/year) = 2.6 million metric tonnes CO2 per year (MMt/yr).

[23] >90% of 2.6 MMt/year = ~2.4 MMt/year"

Response: This comment questions the feasibility or effectiveness of the 2022 Scoping Plan in achieving the stated GHG reduction goals. The commenter frames their comment as relating to the accuracy of the project description. However, the concern relating to the project description is one of feasibility (i.e., whether certain stated goals can be achieved. CARB disagrees with the commenter's statements that these goals cannot be achieved. Furthermore, this comment does not raise specific issues related to the adequacy, accuracy, or completeness of the Recirculated Draft EA; rather, it presents policy questions or disagreements regarding the 2022 Scoping Plan itself. No further response is required by CEQA.

However, for purposes of transparency, CARB has chosen to respond to specific assertions in the comment regarding the role of CCS in the 2022 Scoping Plan. The comment implies that the Scoping Plan Scenario requires 90% of refinery GHG emissions to be captured by CCS. This is a misunderstanding of the Scoping Plan Scenario. CARB has communicated that in modeling the Scoping Plan Scenario, CCS is applied to 70% of total refinery operations and a 90% capture efficiency is assumed for the CO_2 capture and separation unit.

CARB has indicated that hydrogen production units, fluid catalytic cracking units, and electricity and cogeneration units make up approximately 70% of total refinery operations. Therefore, CCS could be applied to a relatively limited number of units at a refinery to achieve the CCS emissions reduction targets modeled in the Scoping Plan Scenario. The comment relies upon Title V permits, which focus on criteria pollutant emissions, for fuel combustion equipment to assert that a much higher number of refinery units would require carbon capture to cover a significant fraction of refinery GHG emissions. CARB emphasizes that (a) fuel combustion capacities for specific units listed in Title V permits may be only roughly indicative of combustion emissions, and (b) a large fraction of GHG emissions at petroleum refineries are process emissions from hydrogen production and fluid catalytic cracking (FCC) units. For refineries, Title V permits for fuel combustion equipment are not an accurate tool to infer either relative GHG emissions from process units and equipment or total facility GHG emissions. By using Title V permits for fuel combustion equipment, the comment overlooks the large amount of process GHG emissions from hydrogen production units and fluid catalytic cracking units. When properly accounting for the large amount of process GHG emissions from these units it becomes apparent that CCS can be applied at a limited number of locations at a refinery and capture a large fraction of that refinery's total GHG emissions.

R33-7: The commenter states, "**D) Refineries cause many other harms, such as major cancer-causing benzene emissions from Storage Tanks and leaking fugitive sources (valves and seals); CCS would not cover any of these, leaving communities with continued toxic emissions**

We could similarly performing a time-consuming list the even larger number of refinery storage tanks from Title V permits and other sources at refineries – these are even more numerous than heaters and boilers. It is important for CARB and decisionmakers to realize that such petroleum storage tanks (which emit cancer-causing and smog-forming chemicals,

even after decades of regulations to tighten emissions) are entirely uncontrolled by CCS (which is for the purpose of capturing CO2 from combustion).

Consequently, generalized ideas that CCS could somehow address the harms to EJ communities is entirely unrealistic and uninformed regarding the number of different operations at refineries. It is important to recognize that these operations are inherently polluting and must be phased down, not only to protect the climate, but to protect health of nearby neighbors (as well as workers) over time."

Response: The comment states that the impacts of continued oil and gas production and refining must be analyzed in the Recirculated Draft EA, and that CCS would not remove all of the pollutants associated with these operations. However, an EA is required to compare the existing conditions to implementation of the project (i.e., the 2022 Scoping Plan). The Recirculated Draft EA does not indicate that CCS would address the harms EJ communities. Rather, the Recirculated Draft EA provides an analysis of the environmental impacts that would result due to implementation of the reasonably foreseeable compliance responses associated with the 2022 Scoping Plan, as required under CARB's certified regulatory program. No changes to the Recirculated Draft EA are required.

R33-8: The commenter states, "**II. CCS - CO2 Pipeline and other CCS hazards are still inadequately assessed**

Especially since the Scoping Plan still proposes CCS on the majority of refinery operations, and has not yet seriously evaluated the impacts on complex, overcrowded refinery operations, weighed the seriousness of CO2 pipeline impacts, the leaking potential in the Central Valley, nor incorporated severe health impact information presented at the late September CCS Symposium in Stockton (where CARB took part with other regulators and EJ organizations), we are looking forward to supplementing our comments on this issue after the full Scoping Plan and modeling are updated, and hopefully the REA is as well."

Response: Please refer to Master Responses 2 and 3.

R33-9: The commenter states, "Combustion of hydrogen creates large volumes of NOx (even more than combustion of natural gas[24]), harming health, due to presence of nitrogen in the atmosphere. (Hydrogen use in fuel cells on the other hand, do not create NOx). EJ communities need to eliminate such health-harming sources.

[24] The Chemical Engineer, Hydrogen, The Burning Question, *"Disadvantages include: • the higher flame speed increases the flame temperature locally, which can generate high levels of NOx;""*

Response: The Scoping Plan Scenario includes new hydrogen combustion turbine capacity as a dispatchable resource selected by the RESOLVE model for the electricity sector to provide energy to meet demand or to meet resource adequacy needs, including meeting California's planning reserve margin. Hydrogen combustion turbines are being selected as resource

adequacy[133] needs increase, but the modeling results show the resource is not needed to provide energy. CARB agrees that any NOx emissions associated with use of hydrogen in stationary source equipment above established thresholds will need to be addressed through the local air district permitting process, including requirements for best available control technology. It should be noted that the combustion-based fuel consumption in the electricity sector in the Scoping Plan Scenario does not include hydrogen combustion turbines as a source of energy.[134] Therefore, the modeling indicates that this capacity is selected for resource adequacy/reliability purposes and any emissions from hydrogen combustion turbines are expected to be minimal in comparison to the overall reduction in emissions from the transition to renewable and zero-carbon resources in the electricity sector.

R33-10: The commenter states, "The existing infrastructure in California to produce hydrogen is large and polluting, making it very likely dirty hydrogen use will expand. CCS can only partially eliminate some of the impacts of fossil-fueled hydrogen production."

Response: CARB disagrees that use of "dirty hydrogen" is likely to expand as a result of the 2022 Scoping Plan. Fossil fuel is not included as a source of hydrogen in the Scoping Plan Scenario. Furthermore, the 2022 Scoping Plan also calls for accelerating the transition from combustion of fossil fuels to hydrogen and other alternatives. Hydrogen can be produced through electrolysis with renewable electricity or through steam methane reformation of biomethane. There is a high degree of uncertainty around the availability of solar to support both electrification of several existing sectors and the production of hydrogen through electrolysis in the near-term. Producing hydrogen required under the Scoping Plan Scenario with electrolysis would require about 10 gigawatts (GW) of additional solar capacity. If steam methane reformation is paired with CCS, the hydrogen produced could potentially be low carbon. Additionally, the biomethane used to generate hydrogen could be sourced from gasification of forest or agricultural waste resulting from forest management and other natural and working lands management practices, which could also lead to net negative carbon outcomes. Steam methane reformation paired with CCS can thus ensure a rapid transition to hydrogen and increase hydrogen availability until such time as electrolysis with renewables can meet the ongoing need, assuming there is also sufficient water supply. Fossil fuel is not included as a source of hydrogen in the Scoping Plan Scenario. Additional background and next steps for CCS can be found in Chapter 4 of the 2022 Scoping Plan.

R33-11: The commenter states, "Even green hydrogen (produced from water using renewable energy) has major impacts which must be carefully considered, including requirements for large amounts of water, and extreme amounts of renewable energy to power electrolysis (which is a relatively inefficient process[25]).

[25] GTM: A Wood Mackenzie Business, Energy, So, What Exactly Is Green Hydrogen?, *["The business case for green hydrogen requires very large amounts of cheap renewable electricity*

[133] CPUC. *Resource Adequacy Homepage*. https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/resource-adequacy-homepage

[134] See AB 32 GHG Inventory Sectors Modeling Data Spreadsheet, Electricity Sector Combusted Fuels, at: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-PATHWAYS-data-E3.xlsx

because a fair amount is lost in electrolysis. Electrolyzer efficiencies range from around 60 percent to 80 percent, according to Shell. The efficiency challenge is exacerbated by the fact that many applications may require green hydrogen to power a fuel cell, leading to further losses."]"

Response: Electrolysis manufacturing plants may require a considerable water supply. Because hydrogen production technology is evolving, a precise estimate would be speculative. However, the demand for input water for electrolysis would need to be consistent with state water law. California's water management system includes the need of contracts with water suppliers for surface water and compliance with sustainable ground water plans for ground water. As discussed under Section 4.19.a in the Recirculated Draft EA, "[t]hrough the environmental review process, utility and service demands would be calculated, and agencies would provide input on available service capacity and the potential need for service-related infrastructure, including expansions to wastewater treatment plants, new water supply entitlements and infrastructure, stormwater infrastructure, and solid waste-handling capacity (e.g., landfills)." Furthermore, projects with large water demands, including those demanding an amount of water equivalent or greater to a 500 dwelling unit project, are subject to preparation of a water supply assessment (WSA) under California Water Code Sections 10910 through 10915 (commonly referred as SB 610). A WSA must provide detailed information regarding water availability from the relevant water provider, which decision-makers must consider prior to approval of development projects. The purpose of providing such information is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects, and the demands of proposed projects.

The environmental impacts of renewable energy projects, including impacts to water resources, are addressed throughout Chapter 4 of the Recirculated Draft EA.

R33-12: The commenter states, "Hydrogen is an indirect but potent GHG, and is flammable and explosive.[26] Leaks in hydrogen pipelines create new impacts and hazards. Hydrogen leaks contribute to climate change – by reacting with radicals in the atmosphere, hydrogen increases levels of the potent GHG methane.[27] Blending of hydrogen into natural gas pipelines can embrittle them.[28]

[26] US OSHA, Green Job Hazards, Hydrogen Fuel Cells: Fire and Explosion *["Hydrogen used in the fuel cells is a very flammable gas and can cause fires and explosions if it is not handled properly. Hydrogen is a colorless, odorless, and tasteless gas. Natural gas and propane are also odorless, but a sulfur-containing (Mercaptan) odorant is added to these gases so that a leak can be detected. At present, it is hard to tell if there is a hydrogen leak because it has no odor to it. Hydrogen is a very light gas. There are no known odorants that can be added to hydrogen that are light enough to diffuse at the same rate as hydrogen. In other words, by the time a worker smells an odorant, the hydrogen concentrations might have already exceeded its lower flammability limit."]*"

[27] Warwick et al, University of Cambridge, Atmospheric implications of increased Hydrogen use, April 2022, Executive Summary, *["… any leakage of hydrogen will affect atmospheric*

composition (with implications for air quality) and have an indirect warming effect on climate, partially offsetting some of the climate benefits of the reduction in carbon dioxide. … Leakage of hydrogen into the atmosphere will decrease the tropospheric concentration of hydroxyl radicals (OH), the major tropospheric oxidant, and thereby increase the atmospheric lifetime of methane and its impact on climate."]

[28] Hafsi et al, *Hydrogen embrittlement of steel pipelines during transients*, https://www.sciencedirect.com/science/article/pii/S2452321618302683"

Response: The potential hazards associated with hydrogen fuel cells are discussed on pages 142-143 of the Recirculated Draft EA (pages 142-143):

> There are inherent risks associated with the installation and use of hydrogen fuel cells, including fire and explosion, electric shock, and exposure to toxic materials. Hydrogen possesses several hazardous properties, such as a very wide flammability range, very low ignition energy, low viscosity, and high diffusivity, and hydrogen is chemically lighter than air … However, fuel cell manufacturers developed and extensively safety-tested carbon-fiber hydrogen tanks, which can withstand environmental and human-made damage, including crash testing and ballistics. Hydrogen tanks are designed with multiple safety enhancements to prevent leaks in both routine use and extreme circumstances. Should a leak and subsequent ignition happen, the low radiant heat of a hydrogen fire and high diffusivity of hydrogen would reduce any potential damage, especially when compared to a gasoline fire.

The transportation of natural gas and hydrogen gas by pipeline infrastructure that currently exists and operates within the United States comes under the authority of the Pipeline and Hazardous Materials Safety Administration (PHMSA), which operates within the Department of Transportation. Minimum federal safety standards for pipeline transportation of natural gas and hydrogen are provided in 49 CFR Part 192. 49 CFR 192 Subpart M contains maintenance for operation of pipelines, including surveying requirements for leaks, record keeping, and standards for repair of imperfections and damages. Compliance with these regulations would limit the degree to which leaks occur. Consistent with discussions provided in the Recirculated Draft EA in the third paragraph on page 143:

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

CPUC has not authorized system-wide injection of renewable hydrogen into California's common carrier pipeline system or the procurement of hydrogen on behalf of utility customers. Consistent with requirements set forth under AB 1900 (Gatto, 2012) and CPUC Rulemaking (R.) 13-02-008 (Order Instituting Rulemaking to Adopt Biomethane Standard and Requirement, Pipeline Open Access Rules, and Related Enforcement Provisions), CPUC has issued the proposed, "Decision Directing Biomethane Reporting and Directing Pilot Projects

to further Evaluate and Establish Pipeline Injection Standards for Renewable Hydrogen." The proposed decision directs the development of pilot projects to evaluate standards for the safe injection of renewable hydrogen into California's common carrier pipeline system by specifying permissible injection thresholds, locations, testing requirements, and independent analysis. While the commenter is correct that safety issues related to injection of hydrogen are possible, this CPUC rulemaking would ensure that potentially hazardous conditions associated with hydrogen injection into pipelines would not be significant.

R33-13: The commenter states, "**B. California's major production of hydrogen from fossil fuels for refinery use, and non-existent green production at present, gives dirty hydrogen the economic and logistical advantage for some time in the future**

Existing large volumes of fossil-fuel produced hydrogen (called grey hydrogen) and lack of green hydrogen (made from renewable energy), make it predictable that most hydrogen production in California for at least a decade will be grey. Oil refineries and their associated third-party hydrogen producers have an economic advantage over green hydrogen producers: refinery-related hydrogen plants are already built. Green hydrogen plants will require design, siting, construction, high operating expenses, access to renewable electricity, and environmental approvals.

The REA does not define the sources of the hydrogen which it projects for use, and generally fails to distinguish between grey and green hydrogen in evaluating impacts. Most hydrogen inside (and outside) California is made using fossil fuels, for oil refineries using Steam Methane Reforming.[30] These plants are known by CARB, which should provide an up-to-date listing. We provide a partial list below.

Hydrogen plants in California are owned by 1) refineries and 2) third parties, usually operated next to or even on refinery property. The trend for a decade has been for increasing production by third parties partnering with refineries (basically captive industries).[31] The *Renewable Hydrogen Roadmap*[32] provided a partial list of third parties producing hydrogen in California in 2016, which shows the domination of end-use by oil refineries:

Renewable Hydrogen Roadmap Figure 4. California Hydrogen Production (January 2016)

Producer	City	Technology	Capacity (kg/day)	Industry
Air Products	Sacramento	SMR	5,542	Multiple
Praxair	Ontario	SMR	20,483	Multiple
Air Liquide	El Segundo	SMR	207,240	Oil Refining
Air Liquide	Rodeo	SMR	289,172	Oil Refining
Air Products	Carson	SMR	240,976	Oil Refining
Air Products	Martinez	SMR	212,059	Oil Refining
Air Products	Martinez	SMR	84,342	Oil Refining
Air Products	Sacramento	SMR	Unknown	Food
Air Products	Wilmington	RFG SMR**	385,562	Oil Refining
Praxair	Ontario	SMR	28,917	Multiple

Praxair	Richmond	SMR	626,539	Oil Refining
Total[33]			2,100,832	
Total third party 2016 exclusive Refinery use			2,045,890	

** RFG SMR = Refinery Fuel Gas SMR – uses refinery gas byproducts, instead of natural gas

Additional California refinery hydrogen plants not listed above:

- In 2020 the PBF Torrance refinery sold five hydrogen plants to Air Products ("Torrance Refinery owner PBF Energy has sold five hydrogen plants, including two in Torrance"),[34] adding to the above third-party capacity in Torrance and Martinez California, and Delaware City, Delaware, with a combined capacity of 300 million scf/day.[35]
- The Chevron Richmond refinery also has two hydrogen plants with capacity of 181.1 scf/day,[36] with plans to expand.
- Partnerships of oil refineries and third-party operators is common, and described in a 2003 Chevron El Segundo Negative Declaration (ND) CEQA review for a new hydrogen plant: "The new Hydrogen Plant is being developed by Air Liquide America, LP for Chevron. Chevron will be the operator of the Hydrogen Plant with Air Liquide as the legal owner."[37] The ND gave capacity at 90 million standard cu ft / day[38].
- The Valero Benicia refinery operates two hydrogen plants (unknown capacity) which incidentally were cited for secretly venting hydrogen and other pollutants for years.[39,40]

Worldwide, there are few industrial-scale green hydrogen plants. It would be helpful if updated proceedings would include listings, so that CARB could assess hydrogen within the current real-world circumstances – where most hydrogen is fossil-fuel produced.

30 Steam Methane Reforming or SMR, reforms CH4 (methane) provided by natural gas, into hydrogen, with large amounts of CO2 and other pollutants emitted.

31 US EIA, Jan. 20, 2016, Hydrogen for refineries is increasingly provided by industrial suppliers

32 Renewable Hydrogen Roadmap, EIN (Energy Independence Now), 2019, p. 13, ["A significant amount of hydrogen is produced in California to supply the oil refineries (over 2 million kg per day) while additional hydrogen is largely consumed by the food and metals industries. Figure 4 provides data on levels of hydrogen produced by IGCs [Industrial Gas Companies] to supply oil refineries."]

33 Note the total provided by EIN only included third party hydrogen production.

34 Daily Breeze, Nick Green, March 31, 2020, *Torrance Refinery owner sells assets as coronavirus pandemic tanks gas demand* attached.

35 Air Products, *Air Products Signs Agreements to Acquire Five Operating Hydrogen Plants for $530 Million and Long-Term Hydrogen Supply to PBF Energy ["Air Products (NYSE:*

APD) today announced it has signed agreements with PBF Energy Inc. (NYSE: PBF) that include the $530 million purchase of five hydrogen steam methane reformer (SMR) hydrogen production plants and the long-term supply of hydrogen from those already operating plants to PBF refineries. The SMRs, with a combined nearly 300 million standard cubic feet per day of production capacity, are located in Torrance and Martinez, California and Delaware City, Delaware."]

[36] Chevron Products Company, Richmond Refinery, *Greenhouse Gas Emission Reductions from the Hydrogen Plant Replacement at the Richmond Refinery*, March 2021, p. 6, https://ww2.arb.ca.gov/sites/default/files/2021-03/2021-0319-chevron-report.pdf

[37] Final Negative Declaration for: Chevron Products Company Refinery Proposed Hydrogen Plant Project, (El Segundo) July, 2003, p. 1-1

[38] *Id*, p. 1-6.

[39] https://www.kqed.org/news/11905065/first-i-had-heard-of-it-valeros-benicia-refinery-secretly-released-toxic-chemicals-for-years

[40] Valero Refining Company – Separate Statement, Stipulated Order of Abatement, Docket #3731, March 10, 2022, at https://www.baaqmd.gov/~/media/files/board-of-directors/hearing-board/agendas/2022-hb/statement-by-respondent-filed-031022-pdf.pdf?la=en&rev=1f4d469a92e0431881b86497fde4687c

[41] US EIA, Production Capacity at Operable Refineries, 2019.

[42] Hydrogen: 423.3 standard cu ft / kg. 1,219 million cu ft / 423.3 cu ft/kg = 2,879,754 kg http://www.uigi.com/h2_conv.html"

Response: Please refer to response to comment 296-5.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R34

6/24/2022 Susan Saadat, Sierra Club and Earthjustice

R34-1: The commenter states, "II. Hydrogen Blending

The Scoping Plan should include an accurate and thorough analysis of the many risks associated with blending hydrogen into the gas network and also account for new policies that will reduce gas combustion in buildings.

We remain very concerned that the Recirculated Draft EA continues to contemplate blending hydrogen into the gas network for residential and commercial heating, contrary to the consensus of independent experts that advise against this use. No fewer than 32 studies have discouraged the use of hydrogen for home and commercial heating.[1] Furthermore, the Scoping Plan erroneously assumes 20% of the gas pipeline content will be hydrogen (equating to just 7% of its energy content), despite the fact that a recent study by UC

Riverside commissioned by the California Public Utilities Commission (UC Riverside Study) found that safety concerns become evident at blends of 5% by volume (and 2% energy content).[2] Specifically, the UC Riverside Study identified the following risks:

1. Pipeline steels in gaseous hydrogen environments exhibit fatigue accelerated by more than 10x, fracture resistance reduced by >50%, and large effects even with exposure to small amounts of hydrogen (1% by volume).[3]
2. Tests on medium-density polyethylene material "identify limitations in material integrity for mixtures of 20% hydrogen."[4] Specifically, the median performance of plastic test specimens "demonstrates that with the 20% hydrogen blend, the material will rupture in 41% of the time versus no exposure to hydrogen, for a given operating condition."[5]
3. "There are several concerns with respect to the use of hydrogen-natural gas blends in household appliances," including "overheating of components, or … increased emissions of nitrogen oxides (NOx)."[6]

The Draft Scoping Plan and Recirculated Draft EA ignore these alarming findings, even though they assume a hydrogen blend four times higher than the levels that trigger the safety concerns detailed above. The Recirculated Draft EA also lacks any discussion of the costly upgrades necessary to safely accommodate the assumed level of blending (if doing so is even physically and logistically feasible).

[1] Jan Rosenow, Is heating homes with hydrogen all but a pipe dream? An evidence review (Oct. 2022), https://doi.org/10.1016/j.joule.2022.08.015.
[2] Arun SK Raju et al., FINAL REPORT – Hydrogen Blending Impacts Study ("UC Riverside Study") (July 2022) at 4, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M493/K760/493760600.PDF.
3 UC Riverside Study at 67.
[4] Id. At 3.
[5] Id.
[6] Id. At 8.
[7] E3, Achieving Carbon Neutrality (Oct. 2020) at 35, https://ww2.arb.ca.gov/sites/default/files/2020-10/e3_cn_final_report_oct2020_0.pdf."

Response: Please refer to response to comment R33-12.

In regards to comments related to the merits of hydrogen blending in the gas system, no specific details related to the environmental analysis or potential environmental impacts were provided for which a response is warranted.

R34-2: The commenter states, "**V. Dairies**

The Scoping Plan should examine impacts from prolonging reliance on liquid manure from CAFOs and discuss direct regulation of CAFO emissions as a mitigation option.

The Recirculated Draft EA fails to analyze the reasonably foreseeable outcome that installations of capital-intensive anaerobic digesters and low-carbon fuel standard revenue will lead to persistent or even growing herd sizes at participating dairies relative to business-as-usual, and certainly relative to the alternative where dairy pollution is regulated. Persistent or accelerated consolidation of dairy herds in confined feedlots that rely on liquid-based manure management can lead to numerous potential harms, including:

1. Increased or prolonged methane generation with the risk of additional methane leakage;
2. Increased or prolonged emissions of VOCs, PM2.5, ammonia, and nitrates;
3. Increased odors and other nuisances for nearby communities; and
4. Accelerated decline of smaller and pasture-based dairies due to distortionary incentives.[19]

The Scoping Plan may not be where regulations are set, but the Recirculated Draft EA improperly suggests that other actors, apart from CARB, will be responsible for determining the outcomes of this sector. Under Senate Bill (SB) 1383, CARB has the authority to set regulations on methane emissions from livestock manure starting on January 1, 2024, and the Scoping Plan is the appropriate place to examine the options and merits of this approach, which has been repeatedly requested by the EJAC.

Alternative A in the Recirculated Draft EA presents a scenario in which CARB "directly regulates dairies to achieve the SB 1383 methane target, with emphasis on maximizing deployment of alternative manure management strategies, aggressive adoption of enteric strategies by 2030, and increased rate of dairy herd size reduction compared to historic levels."[20] Unfortunately, the Draft EA fails to consider the potential co-benefits that this approach would provide—including avoided methane generation and associated leakage, improved soil carbon sequestration, reduced water consumption, reduced air emissions from dust and truck traffic, and reduced nitrate pollution in water—and instead assumes without support that this strategy would lead to "leakage" or relocation of dairies outside California. This is not an inevitable outcome of a strategy that transitions dairy production in California to a smaller or more sustainable model, especially given the significant potential of reduced dairy demand through healthier diets and a transition to plant-based alternatives.[21] We urge CARB to revise its assumptions about dairy relocation and more carefully examine direct regulation of CAFO emissions in the final Scoping Plan.

[19] See Union of Concerned Scientists, "Manure biomethane analysis" (Jan. 6, 2022), 24-lcfs-wkshpdec21-ws-AHVSN1MhVlpXNQRl.pdf (ca.gov).
[20] CARB, Recirculated Draft EA at 289."
[21] Zhonxiao Sun et al., Dietary Change in High-Income Nations Alone Can Lead to Substantial Double Climate Dividend (Jan. 2022) Nature Food, https://doi.org/10.1038/s43016-021-00431-5.

Response: The comment suggests that entities other than CARB would be responsible for determining the outcomes of how dairies are managed, and refers to SB 1383, which includes manure management components. The analysis the Recirculated Draft EA contains assumptions based on the reasonably foreseeable compliance responses of the 2022 Scoping Plan and the plan alternatives. As stated in the second paragraph on page 2 of the Recirculated Draft EA:

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

The Recirculated Draft EA provides a good-faith effort to evaluate programmatically the potential for significant adverse impacts associated with implementation of the 2022 Scoping Plan and the plan alternatives based on what is known at this time. The Recirculated Draft EA makes a good faith effort to disclose the potentially adverse environmental impacts of the reasonably foreseeable compliance responses under the 2022 Scoping Plan, and the plan alternatives, and satisfies CARB's legal requirements under it certified regulatory program. While the comment indicates that dairies may accommodate changes to regulations by consolidating, rather than moving out of State, it is not clear why this would be a more likely scenario than presented in the Recirculated Draft EA. CEQA Guidelines Section 15151 states that "[d]isagreement among experts does not make an EIR inadequate, but the EIR should summarize the main point of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure."

In regards to the discussion of beneficial impacts related to Alternative A, the purpose of the alternatives analysis is to determine whether different approaches to or variations of the project would reduce or eliminate significant project impacts, within the basic framework of the objectives, a principle that is consistent with CARB's certified regulatory program

requirements. An evaluation of potential beneficial impacts is not necessary. No changes to the Recirculated Draft EA are required.

Responses to this comment letterhave been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R35

10/24/2022 Robert Spiegel, CMTA

The comments provide suggestions to incentivize SAF production and appropriate targets for utilization. The comments address policy aspects of the 2022 Scoping Plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R36

10/24/2022 Katelyn Roedner Sutter, Environmental Defense Fund

The comments express support for the updated analysis presented in the Recirculated Draft EA, related to CCS. The comments also provide policy recommendations for the 2022 Scoping Plan. The comments address policy aspects and opinions related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R37

10/24/2022 Kathleen Van Osten, MVM Strategy Group

The comments provide recommendations related to the use of sustainable aviation fuel. The comments address policy aspects related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R38

10/24/2022 Edgar, Evan, Edgar & Associates

R38-1: The commenter states, "**Page 22: Low Carbon Fuel Actions**

ZEV batteries need to be charged and manufactured as other low carbon fuels. ZEV batteries need to have their true-life cycle analysis provided in this. As stated on page 24,"*To conservatively disclose the range of potential environmental impacts, the compliance responses below assume all outcomes and potential actions reflected in the Scoping Plan are fully realized.*" The potential environmental impacts of ZEV battery production needs to be included in the Environmental Analysis."

Response: Chapter 4 of the Recirculated Draft EA contains an analysis of increase ZEV battery production, under the subheading "Expanded Use of Zero-Emission Mobile Source Technology Action." Without specific information related to an environmental impact that was not considered in the Recirculated Draft EA, no further response can be provided.

R38-2: The commenter states, "**Page 24: Expanded Use of Zero-Emissions Mobile Source Technology Actions**

This narrative below in italics directly from page 24-25 is disingenuous for failing to account for ZEV battery mining impacts, as those impacts are happening now and will only be exacerbated. **AB 32 Climate Change Scoping Plan Statutory Requirements is that CARB Should Not Exacerbate Harm Disproportionately to Low Socio-economic Communities**

"Reasonably foreseeable compliance responses associated with the expanded use of zero-emission mobile source technology could include increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries*; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste disposal or recycling from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies. These compliance responses include the potential for increased mining of various metals and other natural resources that are needed in zero-emission battery technology. Common metals used in electric vehicle batteries include, but are not limited to, lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, and aluminum. Additionally, the production of hydrogen fuel cells commonly requires the use of platinum. CARB does not intend to limit the types of batteries that may be used to comply with zero-emission vehicle requirements under the 2022 Scoping Plan and recognizes that future zero-emission technologies may be developed that use other minerals, metals, or resources.*

This Recirculated Draft EA does not attempt to capture the potential effects of mining the gamut of existing and potential battery materials because it would be speculative to attempt to predict the specific methods, locations, and extent of mining conducted to extract these minerals, metals, and resources in the future. Adding to the speculative nature of such an undertaking, battery technology continues to evolve, and it is not possible to predict new technological breakthroughs or the likely uptake for a given technology. Nevertheless, this Recirculated Draft EA makes a good-faith effort to disclose potentially adverse environmental effects of increased mining activity. Notably, of the aforementioned metals (i.e., lithium, graphite, cobalt, nickel, copper, manganese, chromium, zinc, aluminum, and platinum), lithium is often mined using brine mining (i.e., pumping and processing of brine water), whereas the other metals are harvested using surface open pit or underground extraction of ores followed by a variety of processing techniques. Where appropriate, the environmental impacts associated with brine, open pit, and underground mining are disclosed, which is intended to reasonably 379escryibe the types of impacts associated with the increased mining of these metals".

CARB and Environmental Justice Advisory Committee has been briefed on this topic at seven public meetings backed up with dozens of credible references. The reference documents are listed below in the Annotated Bibliography. The current impacts are happening now, and it is not speculative to discount human rights and environmental damages.

Andersen-Rodgers, D., & Crawford, K. F. (2018). *Human Security Theory and Action*. Rowman & Littlefield.

Congo Leader Wants Rival's Troops Moved. (2006, Nov 23). *New York Times (1923)* http://proxy.lib.csus.edu/login?url=https://www-proquest-com.proxy.lib.csus.edu/historical-newspapers/congo-leader-wants-rivals-troops-moved/docview/93138208/se-2?accountid=10358

Crossette, B. (2000, Feb 13). Africans Want U.N. to Play A Stronger Role in Congo. *New York Times (1923-)* http://proxy.lib.csus.edu/login?url=https://www.proquest.com/historical-newspapers/africans-want-u-n-play-stronger-role-congo/docview/91516335/se-2?accountid=10358

Democratic Republic of the Congo: Opinion: Another cold case in the Democratic Republic of Congo? (2021, Feb 26). *Asia News Monitor* http://proxy.lib.csus.edu/login?url=https://www.proquest.com/newspapers/democratic-republic-congo-opinion-another-cold/docview/2492983178/se-2?accountid=10358

Deputy High Commissioner for Human Rights to the Human Rights Council: Transitional Justice Is Key to Unblocking the Vicious Circle of Violence That Persists in the Democratic Republic of the Congo. (2021, Oct 06). *Targeted News Service* http://proxy.lib.csus.edu/login?url=https://www.proquest.com/wire-feeds/deputy-high-commissioner-human-rights-council/docview/2579391466/se-2?accountid=10358

Gambino, A. W. (2009). State Failure: The Responsibility to Protect Civilians in the Democratic Republic of the Congo. *Georgetown Journal of International Affairs*, 10(2), 51–58. http://www.jstor.org/stable/43133573

OCHA Services. (2001, May). *Lusaka Ceasefire Agreement to be reviewed – democratic republic of the Congo*. ReliefWeb. Retrieved March 25, 2022, from https://reliefweb.int/report/democratic-republic-congo/lusaka-ceasefire-agreement-be-reviewed

Peterman, A., PhD., Palermo, T., PhD., & Bredenkamp, C., PhD. (2011). Estimates and Determinants of Sexual Violence Against Women in the Democratic Republic of Congo. *American Journal of Public Health*, 101(6), 1060-7. http://proxy.lib.csus.edu/login?url=https://www.proquest.com/scholarly-journals/estimates-determinants-sexual-violence-against/docview/867826010/se-2

Secretary-General's remarks on the attack on peacekeepers in the Democratic Republic of the Congo. (2017, Dec 08). *M2 Presswire* http://proxy.lib.csus.edu/login?url=https://www-proquest-com.proxy.lib.csus.edu/wire-feeds/secretary-general-s-remarks-on-attack/docview/1974024958/se-2?accountid=10358

Trotsky, L. (1936). *I. the program of the International Revolution or a program of socialism in one country?* Leon Trotsky: The Third International After Lenin (Section 1-1). Retrieved March 2022, from https://www.marxists.org/archive/trotsky/1928/3rd/ti01.htm

Tsabora, J. (2014). Fighting the "resource wars" in the Democratic Republic of the Congo: an exploratory diagnosis of the legal and institutional problems. *The Comparative and International Law Journal of Southern Africa*, 47(1), 109–128. http://www.jstor.org/stable/24585819

Wakabi, W. (2008). Sexual violence increasing in Democratic Republic of Congo. *The Lancet*, 371(9606), 15-6. http://dx.doi.org/10.1016/S0140-6736(08)60051-3

Young, H. (2017, September 12). *Intrastate conflicts: Refocus on the intractable*. MPSA Blog. Retrieved March 2022, from https://blog.mpsanet.org/2017/09/12/intrastate-conflicts-refocus-on-the-intractable/

Cobalt is being mined by forced child labor in the Democratic Republic of the Congo where Amnesty International has documented serious human rights violations linked to the extraction of the minerals used in lithium-ion batteries. Think about the environmental degradation the ZEV battery imposes on the environment, outside of California on the people of Africa, China, South America, and first nations people of Canada. Think about the extraordinary volume of water and resources used to mine rare minerals for the ZEV battery."

Response: Please refer to response to comment R38-1. See Section 4.B.10.c of the Recirculated Draft EA for a discussion related to impacts on water resources associated with mining. This comment raises social and economic issues that are not required to be analyzed pursuant to CEQA. No changes to the Recirculated Draft EA are required in response to this comment.

R38-3: The commenter states, "**Page 24: Expanded Use of Zero-Emissions Mobile Source Technology Actions – Battery Recycling**

Is CARB requiring ZEV battery end-of-life recycling in the Scoping Plan, as on page 24 the following is stated:

"…increased recycling or refurbishment of batteries"

The Cal-EPA final report dated March 2022 from the Lithium-Ion Car Battery Recycling Advisory Group was mandated by AB 2832 (Dahle). This report documents over two years of work of 19 experts who volunteered their time to address this important issue supported by academic research from University of California, Davis. The Environmental Analysis should recognize the policy recommendations and require end-of-life recycling to minimize mining impacts. Without any of those end-of-life recycling policies adopted, the Environmental Analysis would have to assume virgin mining and the impacts that are happening today. As noted bin this EA, the Scoping Plan is a policy document, and the following policies from the Cal-EPA Report needs to be added to the policy document.

"The state of California has long been a leader in policies that support electric vehicle (EV) adoption, and their success has made California home to 42% of the nation's EV fleet (U.S. Department of Energy, 2021a). Evs are powered by lithium-ion traction batteries. As Evs retire from service, a flow of end-of-life (EOL) lithium-ion batteries (LIBs) will be generated. These LIBs can be resold as-is, remanufactured, repurposed, recycled, or discarded in a hazardous waste landfill. In 2018, California Assembly Bill 2832 (AB2832) required the convening of the Lithium-Ion Battery Recycling Advisory Group whose mandate includes submission of policy recommendations to the Legislature to ensure "…that as close to 100% as possible of lithium-ion batteries in the state are reused or recycled at end-of-life"(Dahle, 2018).

Policy proposals that define EOL management responsibility

Two policy proposals that define EOL management responsibility rose to the level of majority support: core exchange with a vehicle backstop, and producer take-back. These policies complement, and do not replace, current warranty regulations and programs that require the vehicle manufacturer to properly reuse, repurpose, or recycle a removed EOL battery that is still under warranty.

The core exchange and vehicle backstop policy garnered the most support from the Advisory Group at 93% of voting members. It builds on existing industry standards and policies for other vehicle components, specifically a core exchange and product take-back. This policy defines responsibility for out-of-warranty batteries under three possible circumstances:

1. *For Evs still in service, if a battery pack, module, or cell is replaced before the vehicle reaches EOL, a core exchange program detailed by the EV battery supplier shall be used for the replacement battery (or any module or cell). The entity removing the battery shall be responsible for ensuring the used battery (or module*

or cell) is properly reused, repurposed, or recycled. The entity selling an EV battery shall use a core exchange program to track that the used battery has been properly managed.

2. *For Evs reaching EOL, a dismantler who takes ownership of an EOL vehicle is responsible for ensuring the battery is properly reused repurposed, refurbished, or recycled. If an EV battery is directly reused in another vehicle with no alterations, the process for Evs still in service shall apply. If the battery is refurbished or repurposed, the responsibility transfers to the refurbished or repurposer.*
3. *For Evs reaching EOL where an EOL EV with an OEM-certified battery is not acquired and removed by a licensed dismantler, the vehicle manufacturer shall be responsible for ensuring that the vehicle is properly dismantled and the battery is properly reused, refurbished, or recycled*

Page 99 – Biological Resources – Low Carbon Fuels
Page 131- Geology and Soils
Page 174 – Hydrology and Water Quality

The land use impacts of mining rare minerals for ZEV batteries as a low carbon fuel needs to be assessed using the GTAP model. CARB uses GTAP for other low carbon fuel impacts and assess the life cycle impacts such as for the LCFS. There is a land use change (LUC) for mining and that needs to be included in this Environmental Assessment for both Biological Resources and Geology and Soils.

Mining can cause a wide range of adverse land use impacts during mining operation and after closure, e.g. **fragmenting the landscape and polluting soils and water with effects on human settlements, agriculture plantations, and natural ecosystems**.

"CARB estimates the indirect land use change effects of biofuel crop production using the Global Trade Analysis Project (GTAP) model, which is a computer model developed and supported by researchers at Purdue University. Within the GTAP's scope, there are 111 world regions, some of which consist of single countries, others of which are composed of multiple neighboring countries. For each region, data tables describe every national economy in that region, as well as all substantial intra- and nter-regional trade relationships. The data for this model are contributed and maintained by more than 6,000 local experts. GTAP model analysis considers life cycle CI impacts related to potential or actual deforestation and conversion of other land use types. When a life cycle pathway is developed for a crop-based biofuel, a land use change (LUC) value is developed using the GTAP model for land that would be converted to agricultural production because of increased demand for that crop. The approach accounts for land conversions in all regions of the world based on available land and likelihood of land to be converted as demand for land goes up. The methodology attributes new land to come from forest lands, pastureland, and cropland. A fuel that is more likely to displace sensitive lands, such as forests, would have a higher LUC value, making it less attractive for use in complying with the LCFS regulation. However, while the models consider effects related to land use changes, they do not explicitly prohibit adverse effects

on habitat or biodiversity, and there could still be substantial environmental impacts on biological resources."

Evidence of the impacts of metal mining and the effectiveness of mining mitigation measures on social–ecological systems. A systematic protocol is copied below and need to be included in this Environmental Assessment."

Response: Increased mining and recycling of batteries are included as reasonably foreseeable compliance responses of the 2022 Scoping Plan, and the associated impacts are analyzed in the Recirculated Draft EA. The impacts associated with mining are addressed throughout Chapter 4 of the Recirculated Draft EA under the short-term impact headings and/or long-term operational impacts under Subheading, "Expanded Use of Zero-Emission Mobile Source Technology Action," in the following topic areas: Section 4.B.1, "Aesthetics," 4.B.2, "Agriculture and Forest Resource," 4.B.3, "Air Quality," 4.B.4, "Biological Resources," 4.B.5, "Cultural Resources," 4.B.6, "Energy," 4.B.7, "Geology and Soils," 4.B.8, "Greenhouse Gas Emissions," 4.B.9, "Hazards and Hazardous Materials," 4.B.10, "Hydrology and Water Quality," 4.B.11, "Land Use," 4.B.12, "Mineral Resources," 4.B.13, "Noise and Vibration," 4.B.14, " Population and Housing," 4.B.15, "Public Services," 4.B.16, "Recreation," 4.B.17, "Transportation," 4.B 18, "Tribal Cultural Resources," 4.B.19, "Utilities and Service Systems," and 4.B.20, "Wildfire."

R38-4: The commenter states, "**Background**

On the impacts of mining

Mining activities, including prospecting, exploration, construction, operation, maintenance, expansion, abandonment, decommissioning and repurposing of a mine can impact social and environmental systems in a range of positive and negative, and direct and indirect ways. Mine exploration, construction, operation, and maintenance may result in land-use change, and may have associated negative impacts on environments, including deforestation, erosion, contamination and alteration of soil profiles, contamination of local streams and wetlands, and an increase in noise level, dust and emissions (e.g. [1,2,3,4,5]). Mine abandonment, decommissioning and repurposing may also result in similar significant environmental impacts, such as soil and water contamination [6,7,8]. Beyond the mines themselves, infrastructure built to support mining activities, such as roads, ports, railway tracks, and power lines, can affect migratory routes of animals and increase habitat fragmentation [9, 10].

Mining can also have positive and negative impacts on humans and societies. Negative impacts include those on human health (e.g. [11]) and living standards [12], for example. Mining is also known to affect traditional practices of Indigenous peoples living in nearby communities [13], and conflicts in land use are also often present, as are other social impacts including those related to public health and human wellbeing (e.g. [14,15,16,17]. In terms of positive impacts, mining is often a source of local employment and may contribute to local and regional economies [18, 19]. Remediation of the potential environmental impacts, for example through water treatment and ecological restoration, can have positive net effects on

environmental systems [20]. Mine abandonment, decommissioning and repurposing can also have both positive and negative social impacts. Examples of negative impacts include loss of jobs and local identities [21], while positive impact can include opportunities for new economic activities [22], e.g. in the repurposing of mines to become tourist attractions.

Mitigation measures

'Mitigation measures' (as described in the impact assessment literature) are implemented to avoid, eliminate, reduce, control or compensate for negative impacts and ameliorate impacted systems [23]. Such measures must be considered and outlined in environmental and social impact assessments (EIAs and SIAs) that are conducted prior to major activities such as resource extraction [24, 25]. Mitigation of negative environmental impacts in one system (e.g. water or soil) can influence other systems such as wellbeing of local communities and biodiversity in a positive or negative manner [23]. A wide range of technological engineering solutions have been implemented to treat contaminated waters (e.g. constructed wetlands [26], reactive barriers treating groundwater [27], conventional wastewater treatment plants). Phytoremediation of contaminated land is also an area of active research [28].

Mitigation measures designed to alleviate the negative impacts of mining on social and environmental systems may not always be effective, particularly in the long-term and across systems, e.g. a mitigation designed to affect an environmental change may have knock on changes in a social system. Indeed, the measures may have unintentional adverse impacts on environments and societies. To date, little research appears to have been conducted into mitigation measure effectiveness, and we were unable to find any synthesis or overview of the systems-level effectiveness of metal mining mitigation measures.""

Response: The Recirculated Draft EA addresses: deforestation from mining in Section 4.B.2, "Agriculture and Forest Resource," erosion from mining in Section 4.B.7, "Geology and Soils," contamination of soils and waterways from mining in Section 4.B.9, "Hazards and Hazardous Materials," and 4.B.4, "Biological Resources," noise impacts from mining in Section 4.B.13, "Noise and Vibration," and air quality emissions from mining in Section 4.B.3, "Air Quality."

The comment notes that mining could adversely affect migratory routes and habitat fragmentation, however no substantial evidence is provided to address these types of impacts. The second paragraph on page 97 of the Recirculated Draft EA states that, "increased mining activity could directly alter the character of a sensitive habitat that may support special-status species or serve as a wildlife corridor. Impacts could include reduction in habitat, loss of special-status species, increased water consumption, water contamination, and conflict with a habitat conservation plan or natural community conservation plan." No changes to the Recirculated Draft EA are necessary in response to this comment.

R38-5: The commenter states, "**Page 101 – Biological Resources – Expanded Use of ZEVs**

Mining can cause a wide range of adverse land use impacts during mining operation and after closure, e.g. **fragmenting the landscape and polluting soils and water with effects on human settlements, agriculture plantations, and natural ecosystems**. This Environmental Analysis needs to include those for mining the world to produce ZEV batteries.

From the EA:

- Expanded Use of Zero-Emission Mobile Source Technology Actions
    - *"Anticipated operation-related impacts on biological resources from the reasonably foreseeable compliance responses listed above would likely occur primarily from operation of new facilities and increased mining activity associated with increased demand for lithium-ion and nickel-metal hydride (NiMH) batteries. Long-term operation of manufacturing facilities, production facilities, recycling facilities, emission testing facilities, power plants, solar fields, wind turbines, and other electricity generation facilities would often include the presence of workers; movement of automobiles, trucks, and heavy-duty equipment; and operation of stationary equipment."*
    - P. 102 Also says that "operation of a new facility could drive wildlife from the surrounding habitat or could impede wildlife movement through the area"…
    - Does not talk about the biological impacts to the disadvantaged communities in the surrounding communities or the people who would be doing the increased mining"

Response: Comments related to biological impacts are address in Section 4.B.4, "Biological Resources," in the Recirculated Draft EA. Pursuant to CEQA Guidelines Section 15131, economic or social effects shall not be treated as significant effects on the environment unless they result in a physical change that may affect the environment. Please also refer to response to comments R36-4 for a discussion of impacts cause by land use changes due to mining. No changes to the Recirculated Draft EA are necessary in response to this comment.

R38-6: The commenter states, "**Page 149 – Hazards and Hazardous Materials – Expanded Use of ZEVs**

- Comment about how lithium metal batteries contain potentially toxic metals… does not mention the impacts to the disadvantaged communities in South America."

Response: Comments related to hazardous materials associated with lithium metal batteries are discussed in Section 4.B.9, "Hazards and Hazardous Materials," in the Recirculated Draft EA. Pursuant to CEQA Guidelines Section 15131, economic or social effects shall not be treated as significant effects on the environment unless they result in a physical change that may affect the environment. No changes to the Recirculated Draft EA are necessary in response to this comment.

R38-7: The commenter states, "Page 174 – Hydrology and Water Quality

- *"increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste disposal or recycling from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero-emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero-emission technologies."*
-
    - P. 174 says the production of mining for ZEV batteries could result in over drafting of groundwater, as well as contamination from metals and has domestic mitigation to comply with the Clean Water Act. Where is the mitigation for the massive mining operations overseas in disadvantaged communities."

Response: The comment notes that overdraft of groundwater aquifers is identified as a potentially significant impact related to mining. As shown in Table 4-15 of the Recirculated Draft EA, impacts related to expanded use of zero-emission mobile source technology actions on hydrology and water quality could be reduced through Mitigation Measure 10.b.1. Pursuant to CEQA Guidelines Section 15131, economic or social effects shall not be treated as significant effects on the environment unless they result in a physical change that may affect the environment. Without recommendations for how to change the mitigation measures presented in the Recirculated Draft EA, no further response can be provided.

R38-8: The commenter states, "**Page 197 to 223 – Mineral Resources**

AB 32 Climate Change Scoping Plan Statutory Requirements is to Minimize Leakage

AB 32 Climate Change Scoping Plan Statutory Requirements is that CARB Should Not Exacerbate Harm Disproportionately to Low Socio-economic Communities

This Environmental Assessment does not assess the impacts of mining lithium, graphite, cobalt, nickel, copper, plantimum and palladium overseas where the GHG emissions are leaked upon the manufacturing and mining counties, and where harm is exacerbated on disadvantaged communities. From page 197 below:

"Implementation of the 2022 Scoping Plan could have an effect on the availability of known materials because it would involve mining lithium. Owing to continued exploration, identified lithium resources have increased substantially worldwide and total about 86 million tons. In 2021, the total amount of lithium ore available in the United States was 7.9 million tons in the form of continental brines, geothermal brines, hectorite, oilfield brines, and pegmatites. Lithium consumption for batteries has increased substantially in recent years because of increased demand for rechargeable lithium-ion batteries, which use approximately 71 percent of the world's lithium resources. As of January 2022, a domestic lithium mine is in operation in Nevada, and the developer, Controlled Thermal Resources, has begun

extracting lithium in the Salton Sea. Two companies produced a large array of downstream lithium compounds in the United States from domestic or South American lithium carbonate, lithium chloride, and lithium hydroxide. From 2016 through 2019, the United States imported lithium from Argentina (55 percent), Chile (36 percent), China (5 percent), Russia (2 percent), and others (2 percent) (Jaskula 2022). However, there are current initiatives at the State and federal level that are likely to influence lithium mining domestically, which include efforts in California. Table 4-17 details lithium mine production and reserves by country."

There should be mitigation measures for biological, soils and geology, and hydrology and water resources for mineral resources, and there are not.

Global warming is dangerously close to spiraling out of control with extreme weather and forest fires. The United Nations' Intergovernmental Panel on Climate Change warned that the world is already certain to face further climate disruptions for decades to come and that humans are "unequivocally" to blame. Rapid action to cut greenhouse gas emissions could limit some impacts, where the focus should be on reducing short-lived climate pollutants, such as methane and black carbon. In order to bend the climate curve to delay further catastrophic events, methane needs to be reduced over the next 8 years. If not, deadly heat waves, gargantuan hurricanes and huge floods, which are already happening, will only become more severe.

With the stakes so high, why is the California Air Resources Board (CARB) still promoting heavy-duty zero emission vehicles (ZEV) without conditions of sourcing, lifecycle analysis, and end-of-life recycling.? Kicking the can to 2045 for a carbon neutral future is not the answer, which may not exist the way we may hope. Digging up rare earth minerals to manufacture ZEV batteries assumes we can mine our way out of this to combat climate change. As Disco Inferno states, we will 'burn, baby, burn'; we have already 'drilled, baby, drilled', and now we plan to 'mine, baby, mine' with child slave labor? Instead, the urban, forest, and agricultural biomass should be used to produce biofuels to transport the world into a greener future.

The Governor is budgeting $15 billion in climate resiliency with some valid programs. The Cap-and-Trade program is generating over $1 billion per quarter with carbon pricing increasing for $12/ton to $30/ton. Cap-and- Trade has funded 28 compost and anaerobic digestion facilities investing $54 million at a cost of just $53/ton for each ton of GHG reduced, since these projects avoid methane generation at landfills and build upon existing programs and truly implement an organic circular economy. Another $70 million is on the way this year at such a critical time. The Healthy Soils Program with compost and biochar use have 466 projects investing $33.6 million at a cost of $177/ton with another $75 million budgeted this year. Expanding these value programs provides 'bang for the buck' on mitigating methane and sequestrating carbon into our working lands. Meanwhile, ZEV deployment is costing $778 to $3,000 per ton to displace diesel, and if true lifecycle carbon accounting was performed, there would be minimal GHG reduced since ZEV charging and battery manufacturing is comparable to CNG vehicles in their GHG emissions.

CARB will be adopting the Advanced Clean Fleet Rule this month to accelerate heavy-duty ZEV deployment much sooner than technically or economically feasible with overarching

issues such as grid reliability, duty cycle, and charging infrastructure not being addressed. CARB is promoting a linear global economy that will mine disadvantaged communities in the Congo, South America, and Canada, and disrupt the carbon-negative circular economy that is bio-based with local resources not needing to import raw materials or export waste. CARB is rolling the dice on ZEVs, where the trucks will not PASS GO when the grid is down and will have no place to electrify until billions more fund the charging infrastructure. CARB is promoting a ZEV strategy without conditions and will be on the wrong side of history as this Environmental Assessment is lacking on allowing GHG leakage and exacerbating harm on global disadvantaged communities."

Response: Mitigation measures applicable to impacts of the 2022 Scoping Plan are provided in each resource section in Chapter 4 of the Recirculated Draft EA. For impacts and mitigation measures related to biological resources, soils and geology, and hydrology and water resources please see 4.B.4, "Biological Resources," 4.B.7, "Geology and Soils," 4.B.10, "Hydrology and Water Quality." No significant impacts to mineral resources were identified in the Recirculated Draft EA, thus no mitigation measures are required. Furthermore, The comment does not indicate any adverse impacts to mineral resources beyond those already analyzed. Pursuant to CEQA Guidelines Section 15131, economic or social effects shall not be treated as significant effects on the environment unless they result in a physical change that may affect the environment.

Regarding the comment concerning life-cycle emissions from electric vehicles, refer to response to comment 356-2.

The comment suggests that goals of the 2022 Scoping Plan could be met through the use of urban, forest, and agricultural biomass to produce biofuels. However, it is not clear how this would reduce the significant environmental effects of the proposed 2022 Scoping Plan while still meeting most of the project objectives.

Please refer to response to comment 574-1 for issues of grid reliability.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R39

10/24/2022 Ellie Choen, The Climate Center

The comments address concern related to the 2022 Scoping Plan. The comments address opinions and recommendations related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R40
10/24/2022 Leadership Counsel for Justice and Accountability

The comments address concern related to the 2022 Scoping Plan. The comments address opinions and recommendations related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require a written response under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R41
10/24/2022 Marc Hardy, Tejon Ranch

R41-1: The commenter states, "1. Natural and Working Lands. CARB proposes to rule out development on 90 percent of California's land by labelling it as "natural and working lands." The Plan seeks to avoid conversion of all existing forests, shrublands and grasslands, as well as a 50 percent reduction from current development conversion levels in "deserts and sparsely vegetated landscapes." Such a sweeping designation as natural and working lands suggests a dismissal of local jurisdictions' land use authority, imposed at a time when local jurisdictions should be exercising their approval powers more urgently to address the housing shortage and home affordability crisis experienced by all Californians. CARB's CEQA proposals strongly disfavor all but relatively high-density (e.g., at least 20 units/acre), central urban, mass transit-oriented development and re-development. The effect is to disfavor, prejudice, and overly burden all other types of development (lower density communities and redevelopment projects, suburban development and hinders the development of sustainable master planned communities designed to help meet the rising housing production needs, including affordable housing, of Californians. Candidly, CARB's promotion of infill-only is misguided, unpractical and non-workable."

Response: Please refer to response to comment H122-1.

Responses to this comment letter have been prepared consistent with the requirements set forth under CARB's certified regulatory program. No other comments provided in this letter identify significant environmental issues related to the analysis in the Recirculated Draft EA; therefore, no additional responses to this letter are required. The comments are noted and have been provided to the Board members for their consideration.

Comment Letter R42
10/24/2022 Olson, Katrina

The comments express concerns related to Alternative 3 of the 2022 Scoping Plan. The comments address opinions related to the plan and do not raise significant environmental issues related to the analysis in the Recirculated Draft EA, therefore they do not require written responses under CARB's certified regulatory program implementing CEQA. The comments are noted and have been provided to the Board members for their consideration.