

Response to Comments
on the Environmental Analysis

Prepared for the

**PROPOSED AMENDMENTS TO THE CALIFORNIA CAP ON GREENHOUSE
GAS EMISSIONS AND MARKET-BASED COMPLIANCE MECHANISMS**

(CAP -AND- TRADE REGULATION)

California Environmental Protection Agency

 **Air Resources Board**

To be considered at the
June 25, 2015 Board Hearing

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1.0 INTRODUCTION

To meet the requirements of the California Air Resources Board's (ARB) certified regulatory program under the California Environmental Quality Act (CEQA), ARB staff prepared environmental analyses (EA) as part of the Initial Statement of Reasons (ISOR) for the proposed amendments to the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation (Cap-and-Trade Regulation or Regulation) to add one updated offset protocol (Compliance Offset Protocols U.S. Forest Projects) and one new offset protocol (Compliance Offset protocol Rice Cultivation Projects), hereinafter referred to as Proposed Protocols. A draft EA specific to the newly proposed Compliance Offset Protocol Rice Cultivation Projects (Rice Protocol) is included in Chapter III of Appendix B of the Staff Report, and a draft EA specific to the proposed update to the Compliance Offset Protocol U.S. Forest Projects (Forest Protocol) is included in Chapter III of Appendix C of the Staff Report.

The ISOR for the Proposed Protocols was released for a 45-day public review period from October 28, 2014 to December 15, 2014. Subsequent to the Board hearing held in December 2014, one separate notice with modified regulatory language, reflecting changes directed by the Board at the hearing, was circulated for a period of 15 days as required by the Administrative Procedures Act. The changes reflected in the 15-day notices did not affect the compliance responses to the Proposed Protocols in any way that affected the conclusions of the environmental analyses included in the Staff Report of each within the ISOR, so no revision to or recirculation of the environmental analysis was required.

This document presents written responses to comments received during the 45-day and 15-day comment periods that raise environmental issues. These comments are only a subset of all the comments received. Substantive responses in this document are limited to comments that "raise significant environmental issues associated with the proposed action," as required by ARB's certified regulatory program at California Code of Regulations, title 17, section 60007(a). ARB conservatively included comments and responses in this document if the comment raises an environmental issue related to the proposal even if the comment does not directly relate to the adequacy of the environmental analyses. This document includes responses to environmental comments received outside of the 45-day comment period provided for review of the EAs, namely comments received during the subsequent 15-day comment period provided for purposes of the Administrative Procedure Act, even though the EAs were not recirculated or reopened for public review during that time. The Board will consider

these written responses for approval as part of its consideration of final action on the amendments.

Written responses to all public comments received have also been prepared for purposes of the Administrative Procedure Act in the Final Statement of Reasons (FSOR). The FSOR will be posted in electronic form on the ARB Cap-and-Trade Rice and Forestry Protocols rulemaking webpage when the regulatory package is submitted to the Office of Administrative Law for review and approval. The rulemaking webpage for the Amendments to the California Cap on Greenhouse Gas Emission and Market-Based Compliance Mechanism to add the new Rice Protocol and updated Forest Protocol can be found at the following link:

<http://www.arb.ca.gov/regact/2014/capandtradeprf14/capandtradeprf14.htm>

A. Requirements for Responses to Comments

These written responses to public comments on the EAs are prepared in accordance with ARB's certified regulatory program to comply with the CEQA. ARB's certified regulations (17 CCR 60007, *Response to Environmental Assessment*) state:

(a) If comments are received during the evaluation process which raise significant environmental issues associated with the proposed action, the staff shall summarize and respond to the comments either orally or in a supplemental written report. Prior to taking final action on any proposal which significant environmental issues have been raised, the decision maker shall approve a written response to each such issue.

Public Resources Code section 21091 also provides direction regarding the consideration and response to public comments in CEQA. While the provisions refer to environmental impact reports, proposed negative declarations, and mitigated negative declarations, rather than an EA under ARB's certified regulatory program, this section of CEQA contains useful guidance for preparation of a thorough and meaningful response to comments. Public Resources Code §21091(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 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, as those regulations existed on June

1, 1993.

California Code of Regulations, title 14, section 15088 (CEQA Guidelines) also includes useful information and guidance for the preparation of 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. California Code of Regulations, title 14, 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

Staff is required to prepare substantive responses only to those comments that raise "significant environmental issues" associated with the proposed action as required by California Code of Regulations, title 17, section 60007(a). A total of eighty eight (88) comment letters were submitted on the comment docket for the Proposed Protocols that was open until December 15, 2014, and during the Board hearing held on December 18, 2014. ARB staff determined that the comment letters included in this Response to Environmental Comments document have mentioned or raised either an issue related to the EA's adequacy, or an environmental issue related to the Draft EAs. Staff was conservatively inclusive in determining which comments warranted a written response in this document. Staff will respond to all comments in the Final Statement of Reasons.

Public comments and staff responses related to the proposed Protocols are available on ARB's website at:

<http://www.arb.ca.gov/regact/2014/capandtradeprf14/capandtradeprf14.htm>. Those

comments were considered by staff and provided to the Board members for their consideration.

2.0 RESPONSES TO COMMENTS

ARB received a total of eighty eight (88) comment letters during the 45-day and 15-day comment periods. Only those comment letters that mentioned or raised an issue related to the EA, or an environmental issue, are included in this document. The list below identifies those commenters, along with the Comment ID number assigned when the letter was submitted to the electronic docket and is also used to identify the comment in the written responses. All comment letters and attachments received on the Proposed Protocols are posted on the ARB website, with comments ordered by date received, and grouped by review period. These comments may be viewed at the following link:

<http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=capandtradeprf14>

Abbreviation	Commenter
ACR1	Jessica Orrego and Stewart McMorrow, American Carbon Registry Written Testimony: December 15, 2014
ACR2	John Kadyszewski, American Carbon Registry Written Testimony: June 4, 2014
AFT1	James Daukas, American Farmland Trust Written Testimony: December 14, 2014
BM1	Richard Saines, Baker & McKenzie LLP Written Testimony: June 3, 2015
BS1	Roger Williams, Blue Source Written testimony: June 3, 2015
CBD1	Brian Nowicki, Center for Biological Diversity (Rice Protocol) Written testimony: June 4, 2015
CBD2	Brian Nowicki, Center for Biological Diversity (Forest Protocol) Written testimony: June 4, 2015
CW1	Alex Rau, Climate Wedge LLC Verbal Testimony: December 18, 2014
EDF1	Robert Parkhurst, Environmental Defense Fund Written Testimony: June 4, 2015
ESI1	Richard Scharf, Environmental Services, Inc. Written Testimony: December 12, 2014

Abbreviation	Commenter
FCC1	Sean Carney, Finite Carbon Corporation Written Testimony: December 15, 2014
FCC2	Sean Carney, Finite Carbon Corporation Written Testimony: June 4, 2014
FRAQMD1	Christopher Brown, Feather River Air Quality Management District Written Testimony: December 15, 2014
FWW1	Wenonah Hauter, Food and Water Watch Written Testimony: December 15, 2014
IETA1	Katie Sullivan, International Emissions Trading Association Written Testimony: June 4, 2015
NAFO1	David Tenny, National Alliance of Forest Owners Written Testimony: December 15, 2104
OCSEES1	James Tansey, Offsetters Climate Solutions and Era Ecosystem Services Written Testimony: December 15, 2014
PI1	Matthew Keene, Private Individual Written Testimony: November 11, 2014
PI2	Todd M Shuman, Private Individual Written testimony: June 3, 2015
PFT1	Constance Best, Pacific Forest Trust Written Testimony: June 4, 2015
SF1	Ara Marderosian, Sequoia ForestKeeper Written Testimony: June 3, 2015
SIG1	Charles Kerchner, Ph.D., Spatial Informatics Group LLC Written Testimony: December 15, 2014
SPI1	Edward Murphy, Sierra Pacific Industries Written Testimony: December 15, 2014
SU1	Aaron Strong and Barbara Haya, Stanford University Written Testimony: December 15, 2014
UCB1	William Stewart, University of California, Berkeley Written Testimony: December 15, 2014
WC1	Edie Sonne Hall, Weyerhaeuser Company Written Testimony: December 15, 2014

The comments are responded to in the following format:

Comment: *Comments received under the COMMENT ID are presented individually as shown in this example, beginning with the **Comment** on the first line, followed by the COMMENT ID in parenthesis [e.g.; (ABC2)].*

Response: *ARB written responses are presented following each comment, or following a group of similar comments.*

Proposed Compliance Offset Protocol Rice Cultivation Projects

Rice Nitrogen Emissions

Comment: I am concerned with the proposed amendments regarding rice cultivation. I agree that methane levels should be reduced, but the proposed changes increase nitrogen levels. Nitrogen is more of a concern in regards to ground level air pollution. There are numerous CARB programs aimed at reducing oxides of nitrogen (NO_xs) and this seems contradictory. In addition, what will this program of increased periodicity of drainage do to water consumption? Thank you for the ability to be heard. (P11)

Response: Commenter is concerned about changes in nitrogen levels. Nitrogen is the major component (approximately 78%) of the air we breathe. The proposed Rice Cultivation Projects Compliance Offset Protocol (Rice Protocol) should result in no changes to nitrogen levels. If the commenter is referring to emissions of nitrous oxide (N₂O) as a result of fertilizer application, the proposed Rice Protocol accurately accounts for any increased N₂O emissions and debits any emission increases from the methane emission reductions. Nitrogen oxides (NO_x) are environmentally distinct from nitrogen, and are primarily a result of fossil fuel combustion. The air quality impacts of the proposed Rice Protocol are addressed in subsection III.C.3.c of the Environmental Analysis. Due to the expected similar fuel consumption between current agricultural practices and modified agricultural practices, any increases in air pollutant impacts (both toxic air contaminants and criteria pollutants) that may result from modified cultivation practice would be negligible and less than significant.

As to the second question about changes in water consumption due to the increased periodicity of drainage, the implementation of Alternate Wetting and Drying in the Mid-South region would likely have a beneficial impact on water usage. Instead of being required to constantly add water to a field to maintain flooding during the entire growing season, the farmer will periodically cease irrigation and allow the field to drain down for a few days before reflooding. This will likely result in less water usage by fields participating in this activity.

Comment: We raise a continued concern, however, with the inclusion of the N₂O term in the protocol: if the DNDC model fails to capture spikes generated by drying out fields, the model's reported average project reporting period N₂O emissions (N₂OP_i) may be a significant underestimate for some fields. (SU1)

Response: The commenter is referring to emissions of N₂O as a result of fertilizer application. The Air Resources Board (Board or ARB) is confident the DNDC model accurately captures N₂O emissions. Spikes result mainly from draining a field too soon after fertilizer application. This is unlikely to happen because farmers do not want to waste fertilizer and the common schedule for drying allows adequate time for fertilizer uptake. Additionally, the protocol takes a conservative approach in dealing with N₂O emissions, Reductions in N₂O emissions are not eligible for crediting; however increases in N₂O emissions are debited from the total project emission reductions. As a result there will be an overall reduction of greenhouse gas (GHG) emissions from these projects taking into account methane, N₂O, and soil organic carbon.

Rice Water Usage

Comment: The proposed rice cultivation offsets also have a highly dubious aspect in that offsets will be generated from rice cultivated in the Sacramento Valley area of California — an area that is experiencing the highest level of drought and water shortages in California. It's beyond appalling that offsets could be generated from an agricultural practice that now relies on pumped ground water to continue production in the midst of one of the worst droughts in California in 1,200 years. Polluters will be able to continue emissions at the source and buy offsets from rice cultivation, which will support and further engrain this water intensive crop doing nothing to resolve the drought and allowing precarious emissions reductions. (FWW1)

Comment: The current draft of the protocol includes the eligibility requirement:

Offset projects developed using this protocol must: Grow rice of the same maturity characteristics during the crediting period as the baseline period.

This requirement could create a disincentive for farmers to switch to shorter duration rice.

Shorter duration rice would use less water, and may result in less methane emissions on average because of a shorter flooding season. It is possible that there could be a business-as-usual shift toward shorter duration rice varieties in both California and the Mid-South, in part, due to the lower water requirements of such varieties. Because of the water use benefits, and possible emissions benefits, we believe that it is important that the protocol avoid creating a disincentive to switch to shorter duration rice. (SU1)

Response: In response to the two comments above, rice cultivation offsets do not provide sufficient financial incentive to either prevent switching to a shorter duration rice strain or maintain a long duration rice strain that is not financially viable. A University of California Davis (UC COOP, 2012 from ISOR) study estimated the average cost per acre for rice farming in 2012 in the Sacramento Valley is \$1600/acre. The estimated highest offset generation from implementing all eligible activities is about 0.5 offsets per acre. At an estimate of \$10/offset, the most a project can expect to generate from offset revenue is \$5 an acre, which does not account for the expense of annual monitoring, reporting, and verification, or hiring consultants to assist farmers through the complex protocol. So offsets are expected to reduce the cost of rice farming by less than 0.5%. While switching strains may result in reduced methane emissions, the presence of an offset protocol would not substantially influence either switching strains or water usage. Additionally, none of the eligible activities would lead to increased water usage at existing farms.

Rice Straw Burning Baseline Emissions

Comment: Specifically, in our review of the protocol, we see open filed burning referenced in the table on page 21, however, we don't see a factor either described in narrative or in any of the baseline equations that take it into account. Section 5.2.2 starting on page 24 and ending on page 39 describes accounting for Unadjusted Baseline Emissions. Starting on page 29, section 5.2.2.1 specifies how the baseline is established. On page 29, through page 31 specific parameter are described - d - I, as specified in 5.2.2.1(c). None of these includes open field rice straw burning. Only equation 5.6 explicitly includes a parameter for rice straw burning emissions, and subtracts from project benefits. Equation 5.10 is used to calculate straw burning emissions. There is no similar equation that we can find that performs a similar calculation to establish straw burning emissions in the baseline.

Perhaps burning emissions is a parameter built into the DNDC model, but nowhere is that explicitly stated. Appendix A, (a) (4) does require general information of post-harvest residue management, (description and dates) but not quantification. Therefore, from our review it seems that the calculations for the baseline do not adhere to the stated goals of SSR7 in the table on page 21. (AFT1)

Response: The comment above does not raise any significant environmental issues associated with the proposed protocols, or the adequacy of the

environmental analyses; however, in the interest of providing information, ARB has provided the following response.

Secondary emission source calculations handle baseline emissions differently than primary emission source calculations. Both the baseline and project emissions from rice straw burning are included in equation 5.10. The term $Area_{BR,B,i}$ accounts for the baseline rice straw burning.

Under CEQA Guidelines (14 CCR 15204(b)), reviewers should focus on the finding that the project will not result in any significant adverse impacts on the environment. In accordance with ARB's certified regulatory program (17 CCR 60007(a)) and the CEQA Guidelines, no revision or further written response is required in response to this comment.

Rice Straw Burning and PM Emissions

Comment: The first comment is regarding the impact of the protocol to the rice straw burning program. Page 32 section ii contains a brief discussion of the Connelly-Areias-Chandler Rice Straw Burning Reduction Act of 1991 and the Conditional Rice Straw Burn Permit Program. These regulations are the framework for the rice straw burning program. However at no place here or elsewhere in the document is there any discussion of the impact of the proposed action on the rice straw burning program. Given that the purpose of the rice straw bring program is to reduce the public exposure to particulate matter (PM) the CEQA equivalent document should identify and discuss any impacts, or lack of impacts, on the rice straw burning program for the proposed action.

...

The final comment is on dust generation. The Staff Report on page 37 postulates a change from aerial seeding to "dry seeding activities," but does not identify or discuss any fugitive dust emission that might result from these activities. It is reasonable to assume that dry seeding activities will be done using off road equipment driving over a dry field. This will generate dust in the fields while working and could break the surface crust of the soil creating additional dust in the fields during high wind events. Fugitive dust emissions from agricultural operations can be a significant source of PM emissions, although the increases resulting from the change from aerial to dry seeding may not result in a significant increase in PM emission. This impact should be identified and discussed in the Environmental Analysis. (FRAQMD1)

Response: As noted by the commenter, subsection III.C.1.c.ii of the Environmental Analysis prepared for the proposed Rice Protocol contains a comprehensive review of the regulatory setting for burning. As discussed in subsection II.C.1, rice straw burning is highly regulated in California. Rice growers must secure Burn Permits and comply with other requirements before burning straw. Since baling would not be an eligible project activity, ARB does not anticipate any changes in burning practices as a result of the Rice Protocol. Therefore, the proposed Rice Protocol would not cause any significant impacts due to changes in rice straw burning.

With regard to the comment on potential dust generation, subsection III.C.1.c.i of the Environmental Analysis prepared for the proposed Rice Protocol discusses the regulatory setting for dust (particulate matter). This section provides the legal framework for PM₁₀ regulation associated with the agricultural sector. U.S. EPA issues national standards and designates the “nonattainment areas” that must reduce pollution in order to meet them, generally basing these designations on data collected at air quality monitoring stations. Based on this data, States then determine what pollution reduction steps will be and outline those steps in plans known as “state implementation plans.” Each state determines how to reduce a nonattainment area’s pollution to meet the standards in a way that makes the most sense for that area. The California air districts that have chosen to address PM₁₀ emissions from agriculture have typically done so by incorporating conservation management practices developed with growers and the U.S. Department of Agriculture into PM₁₀ implementation plans for those nonattainment areas. These conservation management practices are written into enforceable air district rules in districts that have found it necessary to limit PM₁₀ emissions from agriculture. The ambient air quality standards, along with regional PM₁₀ implementation plans (where applicable), ensure that PM₁₀ emissions from the agricultural sector remain within acceptable levels.

However, it is impossible to predict the impact on PM₁₀ levels from switching from wet seeding to dry seeding for a specific field due to the variability in seeding techniques as well as the local climate. Dry seeding can be done on a variety of soil types, by tractor or airplane, on dry to moist soil, and can result in changes to field preparation. All of these site-specific considerations determine whether dry seeding would increase or decrease PM₁₀ emissions from the existing setting. As noted above, local and regional regulations and implementation plans ensure that any potential increases in PM₁₀ emissions would remain less than significant.

Furthermore, to ensure that all offset projects comply with all applicable regulatory requirements, Section 95973(b) of Title 17 of the California Code of Regulations provides that “[a]n offset project is not eligible to receive ARB or registry offset credits for GHG reductions or GHG removal enhancements for the entire Reporting Period if the offset project is not in compliance with regulatory requirements directly applicable to the offset project during the Reporting Period.” Additionally, the proposed Rice Protocol requires all offset projects to be developed in compliance with all federal, state, and local laws, regulations, ordinances, and any other legal mandate, including all CEQA and National Environmental Policy Act (NEPA) requirements, where applicable. The Offset Project Operator or Authorized Project Designee for an offset project is required to attest to ARB that their project meets these requirements. If during verification it is found that the offset project does not meet any of these requirements, the project is ineligible to receive ARB offset credits for the entire reporting period. Therefore, the analysis completed in subsection III.C.3.c accurately concludes that any potential air quality impacts from rice straw burning or PM10 emissions would be less than significant due to the requirement that all offset projects comply with all applicable federal, state, and local laws and regulations.

Rice Straw Removal

Comment: We understand that baling was removed from the initial discussion draft of the Draft Protocol over ARB’s concerns on the potential impacts to migratory waterbirds that currently rely on winter flooding of rice fields for certain habitat needs. In our prior comments filed on April 1, 2014, we stated that we were concerned about the scientific robustness of the Point Blue Conservation Science report entitled “*Assessing the Environmental Trade-offs of Greenhouse Gas Emission Reduction in California’s Rice Fields: The Effect of Baling on Waterbird Use of Winter Flooded Rice Fields, Interim Sub-Report.*” (Point Blue Report) We also stated that we would further investigate this matter and report our findings back to ARB.

Two separate well established and highly regarded wildlife ecologists, Joe Drennan and Tamara Klug, reviewed and critiqued the Point Blue Report. We attach to our comments the findings and reports from these wildlife ecologists along with their curriculum vitae as Exhibits A and B, respectively (collectively, the Ecologists’ Reports). In short, the Point Blue Report should not be relied upon by ARB in setting important policy, including regarding the eligibility of baling under the Draft Protocol. The Point Blue Report is replete with statistical and methodological flaws to point of being wholly unreliable as a basis for policy decision making.

Separately, Ms. Klug further considered the science behind the current mix of rice cultivation practices in California and the wide and varied number of waterbird species that utilize the winter flooded rice fields for habitat as part of their annual migration. It is clear that there are numerous bird species that migrate through California each year. It is also clear that different species have different habitat needs. Not all of the ideal habitat conditions exist with the predominant current practice of deep flooding depths for post harvest rice fields. In fact, many species of waterbirds that migrate through California each year prefer shallower flood depths to meet their habitat needs than those required to decompose the rice straw where such straw is not removed from the field after harvest. Where baling occurs post harvest, the level of flood depth (and water used for such purpose) can be much lower. Thus, contrary to the Point Blue assertions and based on well established principles derived from peer reviewed literature, *including baling activities under the Draft Protocol would actually enhance the habitats for a number of waterbird species.* (See Exhibit B for an in depth discussion on this point).

We also recognize ARB's concern over habitat loss due to the potential for no flooding of post harvest rice fields that have been baled. We concur that if baling were included as an eligible activity and a substantial number of rice fields shifted from flooding to no flooding, that could have a negative impact on certain waterbirds. Accordingly, we propose herein that baling be included as an eligible activity under the Draft Protocol provided that each project demonstrates that its baled field was also flooded post harvest in accordance with the California State Office of the USDA's Natural Resources Conservation Service program entitled Wetland Wildlife Habitat Conservation Practice 644 (USDA's Practice 644 Procedure) (attached as Exhibit C). By making the post harvest flooding of baled fields in accordance with a well established procedure part of the eligibility criteria, it completely removes ARB's stated primary concern over habitat loss. Moreover, as Ms. Klug's Report (Exhibit B) shows, increased baling with flooding would improve the habitat for a large number of waterbird species and have no significant impact for CEQA purposes. (CW1)

Comment: Waiting for additional information on baling rice straw residue as a project activity is wise. What would the destination of the straw be? What are the repercussions to SOC when crop residues are gleaned from rice fields? However, we urge active research to resolve the issue, and include baling as an activity if studies demonstrate no adverse environmental effects. (ESI1)

Comment: We believe that baling could be readily included into the protocol without causing a significant impact on the water fowl that rely on winter flooded fields for migratory habitats. We are submitting today a more detailed ecological and

environmental analysis that has been previously shared with ARB staff. And we understand the time and considerations limited their ability to fully evaluate these recommendations. (CW1)

Comment: As you know, Climate Wedge has been actively involved in the compliance protocol development process from the beginning. We strongly believe that including baling in the Protocol would: (i) materially improve its greenhouse gas benefits; (ii) make it easier to scale for purposes of attracting private sector investment; (iii) enhance the habitat for a number of water-bird species and result in no significant impact under CEQA; and (iv) result in a more sustainable utilization of scarce water resources in California.

We applaud ARB's continuing leadership with the adoption of an agricultural sector Protocol. But, adopting the Protocol without the inclusion of baling as an eligible activity significantly hampers its ability to provide substantial reductions in methane emissions from the rice cultivation sector. Methane (CH₄) emissions contribute to background ozone in the lower atmosphere (troposphere), which itself is a powerful greenhouse gas and contributes to ground level air pollution . The atmospheric concentration of methane is growing, and reducing the emissions of methane from agriculture is one of the key strategies in CARB's recently released Short-Lived Climate Pollutant Concept Paper, as well as in the initiatives of federal and international greenhouse gas regulations.

Tracking down the answer to the questions that prevented baling from inclusion this time around and revisiting the protocol on the shortest possible timeframe should be an ARB goal. A revised and robust Protocol would truly be a model for others to follow, in particular in the large rice growing regions of Asia and worldwide. Without baling, we have serious reservations that the Protocol will be successful in achieving any of the goals outlined before the Board last December. As proposed the Protocol foregoes potential significant in-State greenhouse gas emission reductions which could help reduce compliance costs, and is therefore not likely to attract meaningful investment from the private sector based on the smaller emission reductions achievable merely through dry rice seeding and/or early drainage activities alone. In addition, it misses a real opportunity to make an important contribution in reducing water consumption throughout the state as we work our way through a fourth straight year of drought.

ARB has stated a concern about the potential impacts to migratory water-birds that currently rely on winter flooding of rice fields for certain habitat needs. We believe that a committed and detailed further review of this issue will show the increased benefits in habitat diversity, as well as other environmental benefits, for a broad range of water-birds and their ecosystems. Climate Wedge appreciates ARB's acknowledgement that

additional information should be received and analyzed, and that ARB should not only review currently available research and literature, but to actively pursue its own investigations. Getting the data needed to comfortably make this determination is a publicly stated goal of ARB Board members.

This is a complicated issue no doubt. But we believe it is possible to show positive impacts of baling on both water usage and bird habitat while maintaining current crop yields. These were the original standards ARB stated needed to be met. Taking a holistic view is really key here.

Our ongoing discussions of this issue have been appreciated and have continued to move in a forward, positive direction. One aspect of those discussions has been ARB's openness to committing to continue to work on this issue such that when the Cap and Trade Regulation is again open for amendments, that all the environmental review work would be done. To assist in that effort, Climate Wedge respectfully is including draft Resolution language to be used when this Protocol is finally approved later this summer.

NOW, THEREFORE, BE IT RESOLVED that the Board directs the Executive Officer to take the following actions before December 31, 2016:

1. Evaluate whether there are potential environmental impacts, including potential benefits, to including post-harvest rice straw removal activities into the Rice Cultivation Compliance Offset Protocol;
2. Evaluate feasible alternatives or mitigation measures that could be implemented to reduce or eliminate any potential adverse impacts of baling, while at the same time maximizing the GHG reduction potential of the Protocol; and
3. Present any modifications of the Protocol to the Board for further consideration.

Climate Wedge remains committed to improving the viability of this Protocol, even after it is adopted later this year. Please do not hesitate to contact us moving forward. We look forward to the next steps in this continuing process. (BM1)

Comment:

Expand Eligible Project Activities: IETA welcomes the inclusion of dry seeding, early drainage, and alternative wet/dry cultivation practices as eligible project activities. However, looking ahead, we **encourage ARB to also include post-harvest rice straw and residue removal (i.e., "baling") as an eligible project activity in the Rice Protocol.** Post-harvest rice straw removal inherently eliminates potent methane emissions from the cultivation process by removing biomass from rice fields prior to flooding during the start of the next cultivation cycle. Baling is among the largest

opportunities for greenhouse reductions from the rice sector precisely because it removes the underlying source of methane emissions in the first place. Monetizing eligible reductions from baling practices would also curb water demand – and associated carbon emissions – from water usage at a time when California’s undergoing historical drought conditions. (IETA1)

Response: The Rice Protocol was developed to both protect the environment and maximize eligible GHG reductions. As a result, certain activities were either included or excluded from the protocol. Baling is not included. Not including an eligible project activity in the Rice Protocol would not result in an environmental impact because it would result in a continuation of the existing environmental setting. The comments above do not raise any significant environmental issues associated with the proposed protocols, or the adequacy of the environmental analyses; however, in the interest of providing information, ARB has provided the following response.

During the development of the protocol, ARB staff explored the environmental impact of including rice straw removal after harvest (baling) as an eligible project activity. While not conclusive, the evidence indicated potential impacts to waterbird species as a result of allowing baling under the protocol. Out of an abundance of caution ARB elected to exclude baling as an eligible practice until such time as sufficient evidence is developed to demonstrate that no significant impact to waterbirds would result from the inclusion of baling. ARB is committed to working with stakeholders to review new information as it becomes available.

Under CEQA Guidelines (14 CCR 15204(b)), reviewers should focus on the finding that the project will not result in any significant adverse impacts on the environment. In accordance with ARB’s certified regulatory program (17 CCR 60007(a)) and the CEQA Guidelines, no revision or further written response is required in response to this comment.

Methane Global Warming Potential

Comment: The Compliance Offsets Protocol - Rice Cultivation Projects currently relies upon a Methane GWP of 21, referenced through Table A-1, p 52 of the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions.

The use of such a Methane GWP Coefficient does not accord with the latest IPCC Methane GWP coefficients, which are 28 and 34 for a 100 year interval and 84 and 86

for a 20 year interval. Use of the Methane GWP 21 grossly underestimates the global warming impact of methane, and any cap and trade program needs to update the methane GWP expeditiously to be legally and ethically tenable. I do not see an intent to “update expeditiously” expressed in the document I have reviewed today.

I am pasting a long chunk of text from Robert Howarth's seminal 2014 publication as support for my claims above. It includes some material about natural gas as a fuel but then moves forcefully into reasons for why shorter time frames and higher methane GWPs should be considered, and used, in assessing methane's impact upon our already rapidly-warming planet.

To conclude, I urge the CARB to address seriously the current artificial deflation of methane GWP coefficients and methane global warming impact that is currently reflected in this rule making process for rice cultivation (PI2)

Comment: California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms for Methane will establish a regulation that has fixed the methane GWP at 21, which conflicts with the best available science.

The Compliance Offsets Protocol - Rice Cultivation Projects uses a Methane GWP of 21, referenced through Table A-1, p 52 of the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions.

The use of such a Methane GWP Coefficient is not in accord with the latest IPCC Methane GWP coefficients, which are 28 and 34 for a 100 year interval and 84 and 86 for a 20 year interval. Use of the Methane GWP 21 grossly underestimates the global warming impact of methane, and any cap and trade program needs to update the methane GWP expeditiously to be legally and ethically tenable. An intent to update expeditiously this methane GWP is not expressed in the document.

Pasted below as Exhibit A is a long segment of text from Robert Howarth's seminal 2014 publication (attached) as support for my claims above. It includes some language about natural gas as a fuel but then moves into reasons for why shorter time frames and higher methane GWPs should be considered in assessing methane's impact upon climate change.

To conclude, I urge the CARB to address seriously the current artificial deflation of methane GWP coefficients and methane global warming impact that is currently reflected in this rule making process for rice cultivation. (SF1)

Response: This comment does not raise any significant environmental issues associated with the proposed protocols, or the adequacy of the environmental analyses; however, in the interest of providing information, ARB has provided the following response.

The use of 21 as the Global Warming Potential (GWP) for methane is consistent with the methane GWP used to set the cap and calculate GHG emissions under the Regulation. It is critical that the same GWPs be used for setting the cap as well as calculating emissions and emission reductions to have consistency throughout the program.

Under CEQA Guidelines (14 CCR 15204), reviewers should focus on the sufficiency of the environmental 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. In accordance with ARB's certified regulatory program (17 CCR 60007(a)) and the CEQA Guidelines (See 14 CCR 15088), no revision or further written response is required in response to this comment.

Dry Seeding

Comment: In our comments following the February 2015 workshop, we enumerated the potential Rice Protocol's potential negative impacts to wildlife, including raptors, shorebirds, seabirds, long-legged waders, geese, ducks and other waterbirds, and some special-status species, including bald eagle, Swainson's hawk, and greater sandhill crane. Many of these threats were identified in the Staff Report, which acknowledged that the Rice Protocol has the potential to negatively impact wildlife. *"Because the proposed project activities would occur during the rice growing season, avian species that use the rice fields for resting, nesting, and feeding during the rice growing season have the highest potential to be affected by changes to the flooding practices."* Staff Report at 39. In fact, the potential wildlife impacts were found to be problematic to the extent that the Rice Protocol excludes rice farms in the critically important bird habitat in the Butte Sink Wildlife Management Area from participating in the program. *"By excluding this important and sensitive area from any proposed rice cultivation offset project activities, potential adverse effects in this area would be avoided."* Staff Report at 40.

The threats to wildlife in California seem to be greatest with the Rice Protocol activity known as Dry Seeding, whereby Rice Protocol projects are credited for sowing seed

into dry or moist fields rather than the usual practice of sowing in flooded fields. This incentivizes the management decision not to flood the field for a period of seven to ten days in spring when the field would normally be flooded, a time when flooded fields are normally utilized by late migratory bird species and other avian species that rely on flooded rice fields for nesting.

Although the Staff Report concludes that "*because variability in the timing and availability of flooded rice habitat is common, and voluntary compliance responses under the proposed Rice Cultivation Protocol would occur on a limited rather than widespread basis, implementation of these activities would be within the natural variability of rice farming and would not cause a significant effect on bird populations,*" these conclusions are based on a number of assumptions that are not supported by any evidence presented in the Staff Report or supporting documents. Specifically, the Staff Report provides no evidence that variability in the timing and availability of rice habitat is common, and no characterization of that variability, quantitative or otherwise, that could serve a baseline comparison for the impacts of the Rice Protocol.

Nor does the Staff Report consider that the impact of the Rice Protocol--and the Dry Seeding option in particular--is likely to be more problematic in drought years when there is already a reduction in the area of flooded field habitat regionally. In fact, the Dry Seeding option may be particularly attractive to project landowners in precisely those years when water (and, thus, flooded field habitat) is scarce due to drought. In such cases, rather than being "within the natural variability," Dry Seeding would exacerbate a natural decrease in habitat availability.

In addition, the Staff Report provides no evidence that participation in the Rice Protocol will be limited, stating only that "*rice farms implementing the practices would likely constitute a small fraction of existing habitats within the region at any one time.*" While it may be true that the Rice Protocol is unlikely to become an industry-wide practice, wildlife impacts are more likely to occur at the local level, yet the Staff Report includes no consideration of the potential for localized impacts with respect to exceptionally large project areas or participation by multiple adjacent landowners.

Also, the Staff Report asserts that "*Limiting the proposed project activities to the rice growing season would avoid potential impacts to wintering habitat for migratory waterbirds during the non-growing season.*" However, this conclusion seems to depend on the assumption that switching to Dry Seeding has no effect on winter flooding. Although the decision to flood fields in winter is quite possibly independent of participation in the Rice Protocol, the decision to use Dry Seeding could result in management decisions to end the winter flooding (i.e., to drain the field) earlier.

Given the uncertainty of these various assumptions and the possibility for negative impacts to wildlife, we strongly urge ARB to: 1) verify the various assumptions critical to the assessment of the program's impacts on wildlife and wildlife habitat, 2) put in place measures to guard against localized wildlife impacts from the participation of exceptionally large project areas or multiple adjacent landowners, and 3) make publicly available a map of the cumulative project areas and the reported data on the timing and duration of flooding for each participating project, and solicit public comments regarding the impacts to wildlife. There were no changes in the Proposed 15-day Modifications to the Rice Protocol or the regulation responsive to these concerns.

The Center for Biological Diversity appreciates the attention that ARB has given to the wildlife impacts and the specific measures in the Rice Protocol intended to reduce the negative impacts to wildlife. We would be pleased to work with you to develop measures to check the assumptions identified in the Staff Report, to guard against localized impacts, and to identify wildlife impacts as they occur. (CBD1)

Response: ARB appreciates CBD's comment and offers to work with ARB to address its concerns. As a preliminary matter, ARB notes that this comment was not received during the 45-day public comment period and was not in response to a change in the 15-day version of the protocol. However, in the interest of providing information, ARB has provided the following response.

Commenter has provided no evidence that contradicts the evidence and reasonable determinations made in the Environmental Analysis. ARB stands by the evidence in the Environmental Analysis, and the conclusion that all environmental impacts will be less than significant due to the extensive safeguards ARB has placed in the Rice Protocol. ARB has made its best efforts to uncover and disclose the reasonably foreseeable environmental impacts that may result from the Rice Protocol. The potential impacts identified by CBD are hypothetical and speculative. CEQA does not require an agency to engage in speculation when future actions that may follow from a project are uncertain. (See *Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018, 1032; 14 CCR 15145.) It is difficult to provide additional supporting data in peer reviewed studies due to the lack of available rice fields practicing the activities proposed in the Rice Protocol. Furthermore, given the variability, uncertainty regarding participation in the program, and the voluntary nature of the program, the Environmental Analysis made a good faith effort to evaluate and disclose the reasonably foreseeable environmental impacts of this protocol, without engaging in speculation. ARB concludes these foreseeable environmental effects would be less than significant.

Additionally, staff was directed by the Board in Resolution 11-32 to monitor protocol development, which would include any unanticipated environmental impacts, and propose updates as necessary.

As with all offset projects, ARB will make available project location and additional data for program transparency. This will also allow all interested parties to evaluate if any areas of wildlife concern are also implementing an offset project.

Responses to the specific issues raised by the commenter follow.

Variability of Timing

Dry seeding activities will delay flooding during the normal planting season in May, when the vast majority of waterbirds have already departed. Typically, wet seeding practices occur over several weeks during the planting season.

Discussions with experts during the environmental review process indicated that it is likely that dry seeding activities would similarly occur over several weeks throughout the California Rice Growing Region, thus maintaining similar flooding variability to current practices. This variability makes it probable that some fields that dry seed will be flooded prior to fields using traditional wet seeding. This variability will limit the impact of dry seeding on waterbird habitat. Additionally the rice tail waters from winter drain go to support natural wetlands which can serve as habitat for late migratory birds.

Limited Adoption

The limited adoption assumption is based on the financial analysis provided in the response to the rice water usage comments above showing the rice protocol would not provide a significant financial incentive to switch practices. From conversations with farmers and experts in the field, it may be difficult to convince farmers to change practices given that even a slight drop in revenue from reduced yield would exceed any offset based revenue. Additionally, both the American Carbon Registry (ACR) and the Climate Action Reserve (CAR) have voluntary rice protocols that have been eligible for registration for over two years with only two projects listed in California (neither have received offset credits). These facts taken together lead to the reasonable assumption that very few California farmers will participate in the program.

Drought Effect

Based on the financial analysis presented for the rice water usage comment, it is unlikely that the protocol would incentivize a significant shift in activities by itself.

The decision to dry seed during a drought year due to limited water supply would likely occur with or without the availability of dry seeding as an eligible project activity.

Winter Drain Effect

From staff conversations with experts it is not expected that fields will be drained any earlier in preparation for dry seed versus wet seed activities. Field preparation in both cases is very similar and would be expected to take similar times. If there were any effect it again would be mitigated by the variability in farming practices. Not all dry seed fields will be drained on the same day, just as not all wet seed fields will be drained on the same day.

Increased Waterbird Habitat

The United States Department of Agriculture's Natural Resources Conservation Service (NRCS) created the Waterbird Habitat Enhancement Program (WHEP), to enhance habitat on 100,000 acres of California ricelands. The WHEP program provides incentives for delaying winter draining and increasing nesting habitat in the spring. Combined with the timing variability discussed above this will help ensure a less than significant impact on waterbirds from the Rice Protocol.

Support

Comment:

The Staff have thoroughly investigated wildlife and environmental impacts

The ARB has done a significant amount of work to analyze the potential environmental and habitat impacts that could occur due to implementation of the Rice Protocol. We appreciate that the protocol only allows project activities during the rice growing season. We are encouraged by the Staff's research that the Early Drainage practice "could serve as a benefit to giant garter snake populations." Also, we are pleased to see that rice cultivation within the Butte Sink Wildlife Management Area will not be eligible to participate, considering the critical importance of that habitat for waterfowl. (EDF1)

Response: ARB staff would like to thank the commenter for their support.

Proposed Update the Compliance Offset protocol U.S. Forest Projects

Forestry Even-Aged Management 40 Acre Limit

Comment: We would also like to reiterate our concern on the current limitation of clearcut size to 40 acres in Section 3.11.4 - *Balancing Age and Habitat Practices*. As we noted in our July 18, 2012 comment on Version 3.3, this arbitrary requirement significantly undermines participation in the CAR Protocol by most landowners due to the fact that this size limitation is inconsistent both with standard environmental mitigation measures and the economics of harvesting in many regions of the United States. Additionally, this restriction has no impact in how carbon in forests is accounted for in forestry operations.

From an environmental perspective, a 40 acre clearcut limitation requires more road use than larger clearcut units. Fewer entries over a period of time will result in less soil disturbance helping to minimize sedimentation to streams and lessen risks of soil compaction.

We recognize that appropriate limits to clearcut size do provide environmental benefits as recognized by the leading certification programs. Presumably this is one of the reasons that CAR's Forest Protocol recognizes participation in forest certification programs. As part of their criteria, these programs all provide reasonable limits on clearcut size based on sound silvicultural and sustainability principles. There is little likelihood of a landowner engaging in the added expense of certification and then compounding that expense with this artificial limit on clearcut size.

In addition, clearcutting as a harvest and regeneration method has sound silvicultural and ecological bases:

- It allows sunlight to reach the ground so newly planted seedlings quickly take root and regenerate the forest. As such, it's the system best suited to commercially important shade-intolerant species, including Douglas-fir in the western United States and loblolly pine in the southern United States. These tree species reach their full growth and yield potential only when grown in full sunlight.
- It provides habitat for animal species, some of which are of high conservation priority, that are associated with early successional plant communities. Some plant species in these communities also are of high priority.
- It results in stands of even-aged trees that produce wood products with more uniform qualities.
- As noted above, it requires fewer roads and entries into the stand than partial harvesting systems, thus reducing the risk of sedimentation in streams.
- It is often more efficient, cost-effective and safer than partial harvesting systems.

Overall, the smaller the allowable clearcut size, the more roads need to be built and the more costly the silvicultural operation becomes. This arbitrary limitation discourages landowner participation, offers no additional environmental benefit, and adds nothing to the proper accounting of carbon stored as part of the protocol. (NAFO1)

Comment: With respect to the potentially efficacy of promoting only uneven aged management, we now have a number of large examples of forest management that follows the gist of what the staff's proposal of using very limited amounts of even aged management - the US Forest Service. Unfortunately the outcome of the Chips Fire (2012), Rim Fire (2013) and King Fire (2014) on National Forest Lands suggests that a common outcome of such an approach could result in massive emissions of CO₂ and a landscape with millions of trees that will decompose and release even more CO₂. While no ARB projects were affected by these fires, it is hard to imagine that future fires will not affect projects.

While losses of carbon from wildfires and backburns are considered unplanned, they do lead to a real reduction in carbon stored in our forests. (UCB1)

Clearcutting as a harvest and regeneration method has sound silvicultural and ecological bases:

- It allows sunlight to reach the ground so newly planted seedlings quickly take root and regenerate the forest. As such, it's the system best suited to commercially important shade-intolerant species, including Douglas-fir in the western United States and loblolly pine in the southern United States. These tree species reach their full growth and yield potential only when grown in full sunlight.
- It provides habitat for animal species, some of which are of high conservation priority, that are associated with early successional plant communities. Some plant species in these communities also are of high priority.
- It results in stands of even-aged trees that produce wood products with more uniform qualities.
- It requires fewer roads and entries into the stand than partial harvesting systems, thus reducing the risk of sedimentation in streams.
- It is often more efficient, cost-effective and safer than partial harvesting systems.

We recognize that appropriate limits to clearcut size do provide environmental benefits as recognized by leading certification programs. Presumably this is one of the reasons that the ARB Protocol encourages participation in a forest certification program in section 3.1. As part of their criteria, these programs all provide reasonable limits on clearcut size based on sound silvicultural and sustainability principles. Furthermore, some states also regulate clearcut size based on their own silvicultural realities in their specific states, which are designed to ensure harvest activities will not negatively impact other environmental variables. There is little likelihood of a landowner engaging in the added expense of certification and then compounding that expense with this artificial limit on clearcut size. This also applies to the green-up requirements, which are addressed above.

Overall, the smaller the allowable clearcut size, the more roads need to be built and the more costly the silvicultural operation becomes. This arbitrary limitation discourages landowner participation, offers no additional environmental benefit, and adds nothing to the proper accounting of carbon stored as part of the protocol.

Suggestion: We recommend removing the open canopy harvest requirements by eliminating Section 3.1.A.4.B. Further, we recommend allowing the clearcut size limit to be determined by the specific state forest practice rule, BMP, or certification system that governs the particular project area. (WC1)

Comment: The current Even-aged Management definition is incongruous with accepted silvicultural practices in many areas of the country, where larger scale regeneration cuts are necessary for promoting healthy forest regeneration. As the program is designed to encourage forest participation around the country, promote healthy forests and galvanize support for cap-and-trade expansion in other states, it is counterproductive to enshrine rules that would impede the enrollment of forests outside of California or that are less environmentally beneficial for many forests. (BS1)

Comment: New proposed language guiding even-aged management does not adequately consider the environmental impact of the proposed rules on forestland outside of California. While the intention was to align requirements for even-aged management with those of the California Forest Practice Rules, environmentally sound forest management is not a one-size-fits-all-proposition.

It has been explained to Finite Carbon that the intention of the proposed language is to improve the environmental credibility of the program. However, we believe the Air Resources Board has not adequately considered how this language may provide a financial incentive to harm biodiversity outside the State of California.

Rules concerning forest practices are not like vehicle emissions standards where California is setting a high bar for others to follow. Although the even-aged management language may be the most environmentally beneficial way to manage forests within California, it can have negative impacts if practiced outside of the state. We have identified several ways in which managing a forest under the proposed language can harm biodiversity if practiced at scale outside of California where 17 of our 19 projects on approximately 800,000 acres are located.

To be clear, we are not challenging language from the existing protocol which prohibits clear cuts larger than 40 acres. We are specifically addressing the current language which limits the extent of the practices of seed tree and shelter wood management which are sanctioned under widely respected certification programs such as Forest Stewardship Council (FSC).

Management situations where the proposed management restrictions may harm biodiversity:

- 40 acre or less regeneration cuts that are in areas of high undulate populations frequently fail due to over browsing. This includes most states east of the Mississippi, especially areas in New England, the lakes states, and Appalachia. Small unit harvests allow a relatively small local population to eradicate regenerating trees while larger regeneration harvests of more than 40 acres provide adequate food for local undulate populations and significantly increase the odds of tree survival. Limited regeneration cuts can lead to high browsing pressure on particular species and artificially alter the structure of forests. In several studies in the lake states, hemlock, white cedar, red oak, and yellow birch were found to be especially susceptible to this issue.
- 40 acre regeneration cuts with 50 square feet of basal area retention may artificially alter future species composition in a stand due to shade and competition. A cut with high basal area retention in Allegheny hardwoods may come back to birch, beech, and striped maple instead of cherry and red maple due to shade and browse combined.
- Stands with a high density of a single species like beech can be far more prone to being decimated by disease than a diversified stand. This is not good for biodiversity or climate change. Furthermore, climate change can exacerbate the spread of disease – a climate change mitigation effort by California should not be allowed to contribute to the same issue.
- Many species need larger areas of early successional habitat and may be discriminated against due to the small and fragmented nature of the cut size and buffer requirement. Canada Lynx, neotropical songbirds, Moose, and other species would all be impacted by limiting regeneration size. Carbon projects can

cover significant areas of a single species' habitat and rules developed by California can have landscape scale impacts. Carbon projects developed for California already cover more than 4% of New Hampshire, one of only 6 states Eastern Moose inhabit. (FCC2)

Response: The size limits placed on even-aged management have remained unchanged since the U.S. Forest Projects Compliance Offset Protocol (Forest Protocol) was originally adopted by the Board in October of 2011 and are not proposed for change in these amendments. The 40 acre limit on even-aged management was not limited to clearcutting but would also include other even aged management techniques such as seed tree and shelter wood even-aged management techniques. Therefore the 40 acre limit in the original protocol adopted in October of 2011 would not have allowed seed tree or shelter wood cuts in excess of 40 acres. No environmental comments on the 40 acre limit were raised when the Forest Protocol was released for comment prior to adoption in October 2011. These comments are outside the scope of the regulatory revisions presented here. However in the interest of providing information, ARB has provided the following response.

The original Forest Protocol took the allowable even-aged management size from section 913.1 of the California Forest Practice Rules. Division 25.5 of the Health and Safety Code, The Global Warming Solutions Act of 2006 (Assembly Bill 32 or AB 32) requires that all project activities comply with any applicable local, state or federal laws and regulations. In order to qualify as an offset under ARB's protocol, reductions must also be "additional," meaning they exceed any GHG reduction or removals otherwise required by law, regulation, or legally binding mandate. The Board has directed that the California standards must be the minimum standards for determining the additionality of any project in the U.S. To the extent feasible, the protocol includes environmental safeguards to help assure the environmental integrity of forest offset projects, which include: requirements for projects to demonstrate sustainable long-term harvesting practices; limits on the size and location of even-aged management practices; and requirements for natural forest management. All projects are required to use management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple landscape scales. Participating in the Forest Protocol must result in environmental benefits.

In areas where even-aged management practices in excess of 40 acres are allowed, participation in the protocol may cause additional smaller plots to be even-aged managed. However, overall, projects must have a net increase in

carbon sequestration which will likely result from reduced harvest frequency and intensity, which will result in similar or reduced impact on soil and water. It is likely that as a result of the protocol there will be less harvest activity. Therefore, as stated in the 2010 Functional Equivalent Document prepared for the California Cap on GHG Emissions and Market Based Compliance Mechanisms (2010 FED), forest projects would occur on land that currently supports or historically supported forests. Soil erosion or loss of topsoil, and unstable soil conditions would be present under existing conditions because land proposed for a forest project would already be expected to support or previously supported forest management and/or timber harvest activities of some type, based on land ownership and market conditions. Therefore, the proposed updated Forest Protocol would not significantly impact soil resources and water resources.

As identified in the October 2011 Final Statement of Reasons for California's Cap-and-Trade Program, ARB could not find any definitive evidence as to whether even-age stands are more prone to fire risk than uneven-age stands, and the Forest Protocol requires all forest projects to contribute a percentage of their offset credits to a forest buffer account that will be used to compensate for any unintentional reversals of stored carbon due to fire. Additionally, the 2010 FED and the 2014 Staff Report identified the regulatory setting, setting forth the requirements for forest projects to implement appropriate emergency response/evacuation plans and wildfire risk reduction plans.

Only even aged-management techniques are limited to 40 acres. Uneven-aged management, variable retention and other techniques for improving the forest health may be used in areas in excess of 40 acres.

There is no requirement in the Forest Protocol to retain 50 square feet of basal area in a regeneration cut. Projects may go significantly below 50 square feet basal area. This will allow a harvested plot to maintain its species composition. However, an adjacent plot may not be even-aged managed until the 150 point count or 50 square foot basal area requirement has been met.

There is also no requirement for a plot to cater to a single species, such as beech as the commenter suggests. In fact, the exact opposite is required. All projects must promote and maintain a diversity of native species within the project area. A project would be ineligible if any one species makes-up more than a specific percentage required by the protocol.

Even-aged management causes changes to ecosystems, bringing in new and different flora and fauna than previously existed. Therefore, placing limits on

even-aged management maintains and enhances the existing natural species, rather than facilitating a change in species composition through larger size cuts. This would not have an environmental impact because these new species currently do not exist in the stand prior to even-aged management.

As with all offset projects, ARB will make available project location and additional data for program transparency. This will also allow all interested parties to evaluate if any areas of wildlife concern are also implementing an offset project.

Forestry Even-Aged Management Buffer and Minimum Retention Requirements

Comment: 1. Modification to Even-age management eligibility requirements (3.1(a)(4)(A) – (C))

Requiring a buffer that meets the proposed size requirements at the time of project commencement around each ‘open canopy’ unit is not aligned with commonly implemented forest management practices and silvicultural techniques in the United States. This requirement also differs significantly from what sustainable forest certification programs including Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI) and American Tree Farm (ATF) require in terms of post-harvest adjacency and retention. This proposed language would exclude the majority of forest owners practicing even-aged management systems, including clear-cutting, seed tree and shelter-wood systems. A 20 acre even-aged harvest unit would require a buffer of approximately 127 acres and for a 40 acre even-aged harvest the required buffer area would be approximately 429 acres. It is not economical or ecologically sound to keep such a large area of land effectively out of management after each ‘open canopy’ harvest. In addition, the changes in silvicultural planning to conform to the proposed buffer and retention requirement, especially in areas where timber prices and log quality are low, would be financially impossible.

Further, maintaining 50 square feet retention in the buffer would be both ecologically detrimental and economically infeasible for most forest land owners in the United States. Requiring maintenance of such a high retention level would, for example, result in a forest manager’s inability to conduct preparatory shelterwood cuts to allow for regeneration of the understory. Without this release, the forest age structure would be negatively impacted, and could have deleterious effects on important habitats as well as overall forest health. Maintaining such a high retention across such vast areas could also negatively impact wildlife species that require early successional forest habitat, or species that require large areas for browsing. (ACR1)

Comment: Section 3.1.A.4.B.

One significant benefit of even-aged management is the harvests provide large areas of early successional habitat for wildlife, particularly songbirds. Tubbs et al. provides basal area retention guidelines far below what the ARB prescribes. Retention of the proposed language will discourage even-age management and have an adverse effect on songbird habitat, overall biodiversity, and the “natural forest management” criteria in the protocol. (SIG1)

Comment: General Eligibility Requirements Page 18(a)(4)(A) and (a)(4)(B): ARB has proposed language which requires extraordinary buffers around open canopy harvests:

(4) If harvesting occurs within the project area, meet the following harvest unit size and buffer area requirements:

(A) Harvest units that have less than 50 square feet of basal area retention must not exceed 40 acres in total area;

(B) Open canopy harvest units, harvest units with an area of 3 acres or greater that have less than 50 square feet of basal area retention, must have a buffer area of forest vegetation containing at least 50 square feet of basal area retention must surround the harvest unit. The width of the buffer area must be a minimum of the area of the harvest unit, rounded up to the nearest acre, multiplied by 40; and

(C) Cuts on harvest units that occurred prior to the project commencement date are exempt from subchapters 3.1(a)(4)(A) and 3.1(a)(4)(B) provided that no new harvests occur in the previously cut harvest unit or would be buffer area until the harvest unit cut prior to project commencement meets the requirements of subchapter 3.1(a)(4)(A) and 3.1(a)(4)(B);

The proposed language is potentially problematic in that it would require one even aged management buffer approach to be applied in all forest types, situations, topographies, and ownership types across the US in order to protect visual impacts and maintain wildlife habitat values. We believe the management of forests across the country using one approach will not be effective to meet the intent of the proposed protocol change without significant negative impacts. The US has a wide variety of forests for which this proposed language is not a “one size fits all” solution.

It is our position that the implementation of the proposed requirement has a host of potentially negative unintended consequences including:

1. If a forest owner were to conduct a 40 acre open canopy harvest under the proposed language, the buffer policy (1600 linear feet around the harvest) would take 429 acres (see Figure 1) out of the harvest plans for similar even aged harvests for extended periods of time on a project area. For example, in the Allegheny region of Pennsylvania where natural regeneration techniques are used, regeneration harvests may not reach the minimum target stocking level for 20 years or more. Private landowners cannot bear the economic impact of the proposed level of harvest restriction over their ownership tenure. Nor is the proposed buffer policy in alignment with Forest Stewardship Council and other certification requirements which were developed over years by diverse stakeholder groups for use throughout the United States.
2. The minimum retention of 50 square feet of basal area in the area surrounding a 40 acre cut could translate into unsustainable management for the forest surrounding the target harvest block. Every forest has a mix of species with unique silvicultural requirements, which if not met through management, can be negatively impacted for years into the future. Forcing all landowners to follow one prescriptive approach regardless of their forests' unique requirements can translate to mismanagement at worst, and undesired changes in species composition at the least. The policy needs to recognize and provide latitude for the appropriate treatment of each landowner's forest.
3. The proposed harvest restrictions do not recognize the geographic and topographic differences amongst regions of the country. For example, while the new policy would undoubtedly mitigate visual impacts of harvests in steep mountainous terrain, it would have little to no perceptible positive impact on that forest value where the topography is gently sloping to flat. This translates to a visual management restriction that limits a forest owner's management operations with no perceptible benefit to the ARB program.
4. Wildlife habitat requirements for early successional habitat vary widely across the country. Species such as the Canada Lynx require larger early successional habitats than 40 acres, ruffed grouse management in the lakes States require overstory retention levels below 50 square feet of basal area, many small mammals in the eastern US require larger than 40 acre home ranges in early successional habitat, and many Neotropical birds also require larger young forests. These are just some examples of how one countrywide set of criteria will not meet all intended objectives of this portion of the ARB program.

5. The proposed regulation could reduce the tools available to forest owners to practice sustainable forestry. For instance, in areas where ungulate (deer and elk) populations are high, small cuts isolated in the landscape can, and often do, fail to regenerate due to browse pressure. Regeneration failures are expensive and can create compliance and conformance issues with current forestry regulations in many programs across the country including ARB's proposed buffer and green up requirements. Landowners faced with these challenges often create aggregates of small cuts in a geography to overwhelm localized ungulate populations, allowing the regeneration to thrive. The proposed regulation would preclude the use of this valuable solution to a prevalent problem with forest sustainability. (FCC1)

Comment: Proposed Buffer Width and Buffer Retention Changes in Section 3.1(a)(4)(A and B)

Landowners across the U.S., including industrial landowners in California, that practice even-age management would likely be precluded from registering their forest carbon using the ARB Compliance Offset Protocol (U.S. Forest Projects) if the proposed changes are adopted by ARB.

The proposed change goes well beyond the California Forest Practices Act implementing regulations. For even-age management they call for adjacent harvest units to be of equal size and a minimum 300' distance between harvest units. These constraints must be retained from 3-5 years. The Protocol change proposes, for a 20 acre harvest unit, an 800' buffer to be retained until the plantation has 50 square feet of basal area about 15-25 years of growth. This would drastically change any even-age managed forest's sustained yield plan, require a major amendment to the currently approved 100-year plan and dramatically lower first and second decade harvest levels. No demonstrated need or justification has been provided for this drastic change.

We can provide documentation that for even-aged managed forests a carbon sequestration calculation would show that adoption of this proposed buffer width and buffer retention change would lower sequestered carbon over a 100-year time horizon. This outcome is detrimental and contrary to ARB's stated goals for the forest offset program. The current State Forest Practices Act and the existing US Protocol already provides for significant environmental protection. Under the Public Resources Code, the Resources Agency and more specifically the Board of Forestry are designated the authority to promulgate Forest Practice Act regulations. This proposed change is clearly under their purview and not under that of ARB.

As is usually the outcome of an un-necessary proposal, is that there is almost always unintended consequences. This proposed rule would prevent landowners from successfully providing future habitat to sustainably provide nesting and denning stands for species like the northern goshawk, fisher, California and northern spotted owls.
(SPI1)

Response: While there was no intent to place additional requirements on the even-aged management buffer, only to clarify the existing language to provide criteria for the project operator and the verifier to meet, staff acknowledges these modifications have caused some confusion. The buffer area calculation was meant to be a simplification of the California Forest Practice Rule. ARB selected the California Forest Practice Rules as an appropriate standard because AB 32 requires that all project activities comply with any applicable local, state or federal laws and regulations. The protocol does not allow any forest management activity that is not already allowed by state, federal, or local laws and regulations. In order to qualify as a reduction under ARB's protocol, reductions must also be "additional," meaning they exceed any GHG reduction or removals otherwise required by law, regulation, or legally binding mandate. The Board has directed that the California standards must be the minimum standards for determining the additionality of any project in the U.S. To the extent feasible, the protocol includes environmental safeguards to help assure the environmental integrity of Forest Offset Projects, which include: requirements for projects to demonstrate sustainable long-term harvesting practices; limits on the size and location of even-aged management practices; and requirements for natural forest management. All projects are required to use management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple landscape scales. ARB agrees that a strict reading of the buffer requirement would create unreasonably large buffer areas and has made appropriate modifications to reduce the buffer size to be consistent with the California Forest Practice Rules buffer requirements. The 50 square foot basal area was taken directly from section 912.7 of the California Forest Practice Rules regarding stocking levels. To address these comments and the confusion, staff has provided amendments to these sections to more precisely follow the California Forest Practice Rules.

Even-aged management causes changes to ecosystems, bringing in new and different flora and fauna than previously existed. Therefore, placing limits on even-aged management maintains and enhances the existing natural species, rather than facilitating a change in species composition through larger size cuts.

This would not have an environmental impact because these new species currently do not exist in the stand prior to even-aged management.

As stated in the 2010 FED, timber harvests and/or forest management activities are expected to take place on project sites for reasons that are independent of the Forest Protocol, i.e., the sites contain existing or formerly managed forest, because of their property ownership, land use, and/or location, along with market demands for wood products. Consequently, silviculture activities would occur with or without the inclusion of the protocol in the offset program, so a substantial adverse environmental change resulting from forest offset project activities would not be expected.

However, as explained in the 2014 Staff Report, the possibility cannot be ruled out that a special-status species or its habitat could be adversely affected by project activities, recognizing the changes in habitat expected from the reforestation projects. Therefore, although the risk of adverse impact to special-status species and their sensitive habitats is small, it cannot be eliminated. Furthermore, special-status species and their sensitive habitats deserve extra care in their protection, because of their scarcity and importance. Therefore, a conservative interpretation (i.e., seeking to avoid a risk of understating impacts) would warrant a conclusion that impacts to special-status species and their sensitive habitats are considered to be potentially significant.

All forest projects are expected to include periodic forest management activities, such as thinning to increase resistance to wildfire, insect or disease risks, or to balance age classes, and timber harvests. The requirement of the Forest Protocol to use sustainable long-term harvesting practices and natural forest management would minimize potential impacts to biological resources over the long-term by broadening the goal of increased carbon sequestration to include goals of managing for diversity of native species, multiple forest age classes to support functioning habitat, and complexity of forest structure. However, short-term impacts to biological resources, such as temporary loss of foraging, nesting, sheltering habitat for special-status wildlife or fill or degradation of wetlands, creeks, or other aquatic habitat, could occur during timber harvesting or other forest management activities.

Forest projects would occur on land that is currently timber land and could be subject to forest management and periodic timber harvesting under existing market conditions, or was formerly subject to forest management and/or timber harvesting. Timber harvests and/or forest management activities are expected to

take place on project sites for reasons that are independent of the Forest Protocol, i.e., the sites contain existing or formerly managed forest, because of their property ownership, land use, and/or location, along with market demands for wood products. Compared to existing timber harvesting and forest management activities on a project site, implementation of the Forest Protocol would not be expected to result in substantial adverse environmental changes related to forest projects under the Forest Protocol are not expected to interfere substantially with native wildlife or fish movement or impede the use of movement corridors or nursery sites. Forest projects are required by the protocol to use sustainable long-term harvesting practices and natural forest management, which, in general, would promote principles of biodiversity.

Existing conservation plans adopted to comply with the Endangered Species Act or similar state laws establish legal constraints for forest management and timber harvest that must be similarly carried out with or without an offset project. Therefore, impacts to wildlife or fish movement, corridors, or nursery sites, and local policies and conservation plans, are considered less than significant.

As with all offset projects, ARB will make available project location and additional data for program transparency. This will also allow all interested parties to evaluate if any areas of wildlife concern are also implementing an offset project.

Comment; The proposed requirements for projects that use even-aged silviculture impose requirements that will eliminate incentives for improved management with increased carbon stocks across broad acreages where actions might otherwise be taken with clear climate benefits. ACR believes these requirements should only apply to even-aged regeneration harvests, which remove the pre-harvest existing stand. All other even-aged harvesting should be exempt from this requirement. We believe the proposed threshold of 50 square feet/acre is unnecessarily high, and will disqualify many even-aged systems, including systems with clear climate benefits that keep residual retention above 25 square feet after all harvest steps. (ACR2)

Response: If the high standards of the Forest Protocol prevent a project from participating, as the commenter claims, this would not result in an environmental impact because it would result in a continuation of the existing environmental setting. Therefore, the comments above do not raise any significant environmental issues associated with the proposed protocols, or the adequacy of the environmental analyses.

Under CEQA Guidelines (14 CCR 15204), reviewers should focus on the sufficiency of the environmental document in identifying and analyzing the possible impacts on the environment and ways in which the proposed project's significant effects might be avoided or mitigated. In accordance with ARB's certified regulatory program (17 CCR 60007(a)) and the CEQA Guidelines (See 14 CCR 15088), no revision or further written response is required in response to this comment.

Open Canopy Harvest Unit

Comment: Page 6 Definition 36 – “Open Canopy Harvest Unit”: The definition of open canopy harvest unit as “a harvest unit with an area of 3 acres or greater that has less than 50 square feet of basal area retention” does not provide adequate protection for forest health and environmental concerns. Furthermore, it is not an appropriate standard for forest management in the eastern portion of the United States. (FCC1)

Response: This comment does not raise any significant environmental issues associated with the proposed protocols, or the adequacy of the environmental analyses; however, in the interest of providing information, ARB has provided the following response.

The definition of Open Canopy Harvest Unit is part of the even-aged management requirements. While there was no intent to change even-aged management requirements, only to clarify the existing language to provide criteria for the project operator and the verifier to meet, staff acknowledges these modifications have caused some confusion. The 50 square foot basal area was taken directly from section 912.7 of the California Forest Practice Rules regarding stocking levels. To address these comments and the confusion staff has provided amendments to these sections to more precisely follow the California Forest Practice Rules.

ARB selected the California Forest Practice Rules as an appropriate standard because AB 32 requires that all project activities comply with any applicable local, state or federal laws and regulations. The protocol does not allow any forest management activity that is not already allowed by state, federal, or local laws and regulations. In order to qualify as a reduction under ARB's protocol, reductions must also be “additional,” meaning they exceed any GHG reduction or removals otherwise required by law, regulation, or legally binding mandate. The Board has directed that the California standards must be the minimum standards

for determining the additionality of any project in the U.S. To the extent feasible, the protocol includes environmental safeguards to help assure the environmental integrity of forest offset projects, which include: requirements for projects to demonstrate sustainable long-term harvesting practices; limits on the size and location of even-aged management practices; and requirements for natural forest management. All projects are required to use management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple landscape scales. The protocol is therefore designed to ensure that projects will result in environmental benefits.

Under CEQA Guidelines (14 CCR15204), reviewers should focus on the sufficiency of the environmental document in identifying and analyzing the possible impacts on the environment and ways in which the proposed project's significant effects might be avoided or mitigated. In accordance with ARB's certified regulatory program (17 CCR 60007(a)) and the CEQA Guidelines (See 14 CCR 15088), no revision or further written response is required in response to this comment.

Forestry Logical Management Unit and Minimum Baseline Level

Comment: ARB has proposed a requirement to calculate weighted average above ground standing live tree carbon in the logical management unit of the proposed project if Initial Carbon Stocks are above Common Practice.

This requirement is a barrier to large landowners placing portions of their property into a carbon project in order to protect old growth and other well stocked stands. It was not included in the original version of the protocol and will have a negative impact on utilizing carbon as a conservation tool for subsections of a large property.

These conservation minded projects require landowners to maintain the beginning carbon stocks of stands which are above common practice which are the most at risk for harvest due to their commercial value.

Implementing a project on lands where the determination of a Logical Management Unit is required is a high risk proposition for a landowner because the definition of LMU leaves significant discretion to verifiers and the Air Resource Board in practice. Therefore, landowners must expend significant capital in order for a few individuals to ultimately make an interpretive decision of the appropriateness of the proposed LMU.

Carbon can make a significant difference in the way small ecologically sensitive areas of land within a larger holding are managed. As an example: Carbon rarely competes with the value of timber; however, in riparian areas where logging is more expensive, creating value through the growth of stands allows carbon to be a viable revenue source and will increase the length of rotation for these areas, thereby reducing erosion and negative impacts on water quality and aquatic habitat.

Finite Carbon recommends that Equation 5.5 not be modified. Project scenarios where this proposed modification will be an obstacle include: protecting view sheds; old growth stands or stands with legacy old growth; well stocked stands; riparian areas; endangered species habitat such as spotted owl, marbled murrelet, and fishers; areas with unique soil composition and plant habitat; and culturally sensitive areas. (FCC1)

Comment: The other major area of concern is the requirement to evaluate carbon stocks across a broader Logical Management Unit when determining a project's baseline scenario (specific language below):

Equation 5.5. Determining the Minimum Baseline Level Where Initial Carbon Stocks Are Above Common Practice $MBL = MAX(CP, MIN(ICS, CP + ICS - WCS))$

Where,

MAX = The highest value in the set of values being evaluated

MIN = The lowest value in the set of values being evaluated

MBL = Minimum baseline level for above-ground standing live tree carbon stocks (MT CO₂e/acre)

CP = Common Practice (MT CO₂e/acre)

ICS = Initial above-ground standing live tree carbon stocks per acre within the project area (MT CO₂e/acre)

WCS = The weighted average above-ground standing live tree carbon stocks per acre within the LMU containing the project area (MT CO₂e/acre)

The purpose of this language is to prevent landowners from potentially creating a net negative impact on the climate by decreasing carbon storage on one area of managed forestlands, while increasing the carbon stored on another portion of their forested lands. While this is a worthy goal, this protocol revision may not achieve it, and it may drastically limit the number of landowners and categories of landowners that will be interested in participating in the program. (OCSEES1)

Comment: The new method for determining minimum baseline level (MBL) for IFM projects with initial carbon stocking (ICS) above common practice (CP) will run counter to the program's climate goals. If a landowner is forced to use a MBL above CP, due to

lower stocking levels on other holdings in the same assessment area, a carbon project may not be feasible. This approach disincentivizes landowners from establishing forest projects on their most highly stocked (and likely to be harvested) acres and thereby forgoes the meaningful climate benefits that would have been associated with preventing aggressive harvesting on these acres for the next 100+ years. (BS1)

Response: If the high standards of the Forest Protocol prevent a project from participating, as the commenters claim or imply, this would not result in an environmental impact because it would result in a continuation of the existing environmental setting. The only impact the enhance Minimum Baseline Level requirements would have is reducing the number of ARB offset credits a project is eligible to receive. This may reduce the incentive for forest areas to participate, but it does not cause an environmental impact. Therefore, the comments above do not raise any significant environmental issues associated with the proposed protocols, or the adequacy of the environmental analyses; however, in the interest of providing information, ARB has provided the following response.

Staff agrees that the proposed modifications could unintentionally exclude desired project areas. We have made additional modifications to the definition of Logical Management Unit to allow projects on areas that have experienced natural disturbance such as wildfire or windstorm, and areas designated as High Conservation Value Forest.

Under CEQA Guidelines (14 CCR 15204), reviewers should focus on the sufficiency of the environmental 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. In accordance with ARB's certified regulatory program (17 CCR 60007(a)) and the CEQA Guidelines (See 14 CCR 15088), no revision or further written response is required in response to this comment.

Comment: The minimum baseline level equations are not scientifically justified and will have the consequence of ignoring one of the most efficient and effective methods for reducing GHG emissions, i.e. maintaining high-stocked mature forests. The protocol already has mechanisms in place to prevent issuing offsets to highly stocked mature forests that exist because of weak or absent timber markets, i.e. baselines must incorporate all legal constraints and financial considerations - 5.2.1(e)(1) & (2). In the same respect, forests that were heavily harvested immediately before considering

participation will not be feasible as an offset project because of how the baseline is set, and the high stocking reference analysis. (FCC2)

Comment: For instance, changes to the establishment of the minimum baseline level for Improved Forest Management projects in Chapter 5.2.1(d)(1) will prevent the appropriate inclusion of forests with above average carbon stocks from being conserved, leaving them available for business-as-usual timber harvest. It was and is the intent of the Forest Protocol to protect these carbon rich forest stands, which, if logged or converted would lead to significant emissions as well as loss of important co-benefits, including habitat for rare and threatened species. (PFT1)

Response: If the high standards of the Forest Protocol prevent a project from participating, as the commenter implies, this would not result in an environmental impact because it would result in a continuation of the existing environmental setting. The only impact the enhance Minimum Baseline Level requirements would have is reducing the number of ARB offset credits a project is eligible to receive. This may reduce the incentive for forest areas to participate, but it does not cause an environmental impact. Therefore, the comments above do not raise any significant environmental issues associated with the proposed protocols, or the adequacy of the environmental analyses; however, in the interest of providing information, ARB has provided the following response.

Under CEQA Guidelines (14 CCR 15204), reviewers should focus on the sufficiency of the environmental 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. In accordance with ARB's certified regulatory program (17 CCR 60007(a)) and the CEQA Guidelines (See 14 CCR 15088), no revision or further written response is required in response to this comment.

Common Practice Values

Comment: Based on the newly incorporated Forest Inventory and Analysis (FIA) data and changes in the way site class is determined, CP values have generally increased in assessment areas.

Implications

- CP values, that do not take into account the temporal dynamics of market conditions and forest stocking, could increase GHG emissions and have potentially unintended consequences on climate change mitigation goals. (SIG1)

Comment: Setting CP values based on forest stocking levels at isolated points in time will lead to less than optimal forest carbon sequestration and reduced climate benefit. This is because when baselines are set artificially high based on periodic market fluctuations, and demand for timber surges, there will be even less incentive for landowners to implement a carbon project and stocks will be harvested instead of locked in for 100+ years. Following such market conditions, many forest carbon projects would not be attractive to landowners again until general stocks had subsided and baseline values were sufficiently lowered to allow for project viability. (BS1)

Comment: By instituting the proposed changes to the CP value, owners of forests with greater carbon stores may no longer have an incentive to conserve them by being able to generate offsets. Rather, it is more likely these owners will avail themselves of the log market instead. (PFT1)

Response: The Forest Protocol only credits reductions in GHG emissions and enhanced sequestration so it is unlikely that any forest area that would have increased GHG emissions or reduced sequestration as a result of participating in the Forest Protocol would implement a project. Only projects that result in GHG emission reduction or enhanced sequestration would have any motivation to participate in the Forest Protocol. The commenters are likely referring to reduced participation in the Forest Protocol because the higher common practice values could reduce the number of offset credits a project receives. If the high standards of the Forest Protocol prevent a project from participating, as ARB infers from the comment, this would not result in an environmental impact or increased GHG emissions because it would result in a continuation of the existing environmental setting. Therefore, the comments above do not raise any significant environmental issues associated with the proposed protocols, or the adequacy of the environmental analysis.

Under CEQA Guidelines (14 CCR 15204), reviewers should focus on the sufficiency of the environmental document in identifying and analyzing the possible impacts on the environment and ways in which the proposed project's significant effects might be avoided or mitigated. In accordance with ARB's certified regulatory program (17 CCR 60007(a)) and the CEQA Guidelines (See 14 CCR 15088), no revision or further written response is required in response to this comment.

Impacts of Clearcutting

Comment: When ARB proposed updates to the Forest Protocol in October 2014, the updates included some modest steps toward addressing the impacts of clearcutting in Forest Protocol projects.¹ Specifically, the proposed changes included requirements for buffer areas around clearcutting units, and set clear thresholds for stocking level reductions. In February 2015, ARB announced that they were revising their proposal, eliminating even these limited changes.² The revisions presented at the February workshop instead proposed to apply nationwide some of the minimum legal requirements that apply to clearcutting and other even-age management in California. As this reflects the most damaging and intensive industrial logging practices in California, with all the associated impacts to forest ecosystems and wildlife habitat, this continues to represent a setback for forest conservation standards.

...

In addition, the sentence regarding irregular shape is inadvertently misleading and counterproductive. Forest clearcuts do not mimic natural disturbance, and it is unsupported and highly misleading to imply they can. We know of no scientific basis for asserting that an irregular shape or variation in size in any way mitigates the negative ecological impacts of clearcutting. While a single, smaller clearcut unit on its own damages less forest than a larger one, this assumes the timber operator does not create more clearcut units as a result. Furthermore, the directive "to mimic natural patterns and features found in landscapes" is ambiguous and unenforceable, and there is no basis for this approach. This requirement would need to be defined in quantitative measures to have practical meaning. We strongly recommend eliminating the sentence entirely, or at least removing the implication that forest clearcutting can mimic natural patterns and features.

...

Section 1.2 includes the new term "countable tree" for the purposes of determining stocking levels for regeneration in even-aged management (pages 21-22). Because this definition is relevant primarily to the restocking requirements in Section subchapter 3.1(a)(4)(D), it deliberately excludes standing dead trees. This leaves the retention of standing dead trees subject only to the minimal requirements of Section 3.1. This is generally one metric ton of carbon per acre or 1% of standing live tree carbon stocks, in standing dead tree carbon stocks, whichever is higher.

Including standing dead trees in the stocking requirements is one way that the Forest Protocol could encourage the retention of large, standing dead trees, which are critical for wildlife. This would potentially be very positive for wildlife habitat even if it resulted in

marginally lower stocking levels of live trees. Furthermore, counting large (e.g. greater than 12 3 inches dbh) standing dead trees may not have any negative impact on stocking of live trees, as projects are likely to manage for high live tree densities to maximize carbon stocks.

...

The Center for Biological Diversity urges ARB to develop ecological standards for the Forest Protocol to protect forest ecosystems and wildlife habitat from the damaging impacts of clearcutting and even-age management. California's efforts to reduce our greenhouse gas emissions should not rely on the most damaging forest management practices in California and nationwide and come at the expense of forest ecosystems and wildlife habitat. Instead, management that promotes these important environmental co-benefits should be encouraged and rewarded. (CBD2)

Response: When ARB released the revisions to the Forest Protocol in October 2014 there was not an intent to add additional requirements above and beyond what was already required under the California Forest Practice Rule. However, in ARB's attempt to simplify the requirements, staff acknowledges these revisions caused some confusion. To address these comments and the confusion, staff has provided amendments to these sections to more precisely follow the California Forest Practice Rules.

The Environmental Assessment fully analyzed the potential for adverse impacts resulting from the Forest Protocol. The Forest Offset Protocol would not allow any forest management activity that is not allowed by state, federal, or local laws and regulations. The Forest Offset Protocol includes environmental safeguards to help assure the environmental integrity of forest projects. These include requirements for projects to demonstrate sustainable long-term harvesting practices, limits on the size and location of even-aged management practices, and requirements for natural forest management that require all projects to utilize management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple landscape scales.

Participation in the Forest Protocol requires projects to be beyond what would otherwise be required by law, regulation, or legally binding mandate, and to exceed what would otherwise occur in a conservative business-as-usual scenario. As a result projects will have mainly positive impacts on forest ecosystems and wildlife habitats as a result of reduced harvesting.

Under the Forest Protocol, harvesting (including clear-cut harvesting), does not generate offset credits. The protocol requires projects to maintain or increase the

standing live carbon stocks in the project area. While harvesting may occur, the protocol accounts for harvesting as a decrease in standing live carbon stocks that must be compensated for by an increase in sequestration in the rest of the forest project lands. Offset credits will not be issued if, over any consecutive 10-year period, the data reports indicate a decrease in the standing live carbon stocks.

In addition to the requirement to increase carbon on project lands, projects must be in compliance with all existing rules and regulations to be eligible for generating offsets. The protocol does not allow any forest management activity that is not already allowed by state, federal, or local laws and regulations. To the extent feasible, the protocol includes environmental safeguards to help assure the environmental integrity of forest offset projects. These include requirements for projects to demonstrate sustainable long-term harvesting practices, limits on the size and location of even-aged management practices, and requirements for natural forest management, which require all projects to use management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple landscape scales.

Concerns about clear-cutting or even-aged management relate to how trees are harvested within a forest, but not directly to the carbon accounting that is at the heart of the protocol. It is possible to harvest more or less biomass than annual growth using even- or uneven-aged management. The protocol does not provide any incentive to harvest more frequently (regardless of method) or to clear-cut an area. Rather, the strongest incentive provided by the protocol is to increase the carbon in standing live trees, and increasing rotation ages (which decreases harvest frequency and intensity) is expected to be one of the most common improved forest management activities.

In accordance with these requirements, the Forest Protocol is not expected to increase the size of even-aged harvested areas or to result in plantation forests. Furthermore, modeling forest growth, mortality, and harvesting over time indicate that it would be unlikely for a forest project to remain eligible (i.e., demonstrate a continued net reduction in carbon sequestration), if conversion to a single-species, single-aged plantation occurred (2010 FED).

No changes were made to the standing or lying dead tree requirement in these amendments to the Forest Protocol. Forest projects are still required to meet the same requirements as found in the Forest Protocol initially adopted by the Board in October 2011. Not including an additional standing or lying dead tree

requirements would not result in an environmental impact because it would result in at a minimum continuation of the existing environmental setting. If the existing protocol requirements exceed what is currently present in the forest area the existing requirements would result in additional standing and lying dead trees being retained.

As with all offset projects, ARB will make available project location and additional data for program transparency. This will also allow all interested parties to evaluate if any areas of wildlife concern are also implementing an offset project.