SUMMARY OF COMMENTS & RESPONSES ON THE DRAFT FOREST PROJECT REPORTING PROTOCOL (FPP)

37 sets of comments were received during the Draft Forest Project Reporting Protocol, Version 3.0, 45 day public comment period. Staff from Climate Action Reserve (the Reserve) responded to these comments.

In order keep this summary document to a reasonable size, comments were edited for length. The comment letters can be viewed in their entirety on the Reserve's website at www.climateregistry.org/tools/protocols/project-protocols/forests.html.

Comments received by:

1. American Forest & Paper Association (AF&PA)
2. Baldwin, Blomstrom, Wilkinson and Associates, Inc. (BBW)
3. Bill Stewart, University of California, Berkeley (B.Stewart)
4. California Integrated Waste Management Board (CIWMB)
5. Cantor CO_2e (Cantor)
6. Center for Biological Diversity (Diversity)
7. Conservation Collaboratives, LLC (CC)
8. Craig Blencowe, RPF (C.Blencowe)
9. David Bischel, Ed Murphy, Bob Rynearson, and Gary Rynearson (Bischel et al.)
10. Defenders of Wildlife (DW)
11. Ecofor LLC (Ecofor)
12. Equator, LLC (Equator)
13. Forest Landowners of California (Landowners)
14. Forester's Co-Op (FCO)
15. Jim Cathcart (J.Cathcart)
16. Matthew Hurteau, George Koch, Malcolm North, and Bruce Hungate (Hurteau et al.)
17. MGM International LLC (MGM)
18. National Alliance of Forest Owners, Oregon Forest Industries Council, and Washington Forest Protection Association (NAFO et al.)
19. Natural Resources Defense Council (NRDC)
20. New Forests (NF)
21. Nick Kent, RPF (N.Kent)
22. North Coast Resource Management (NCRM)
23. Northern California Society of American Foresters (NorCal SAF)
24. Paul McArdle, U.S. Department of Energy, Energy Information Administration (P.McArdle)
25. Recyclers Global Warming Council, California Resource Recovery Association (RGWC)
26. Sierra Business Council (SBC)
27. Terra Global Capital (Terra Global)

28. Terry Collins (T.Collins)
29. The Collins Pine Co., W.M. Beaty and Associates, Inc., Mendocino Redwood Co., and Humboldt Redwood Co. (Collins Pine et al.)
30. The Conservation Fund (TCF)
31. The Pacific Forest Trust (PFT)
32. The Trust for Public Land (TPL)
33. The Wilderness Society (WS)
34. Thomas Gaman, RF (T.Gaman)
35. Tim McAbee, RF (T.McAbee)
36. Weyerhaeuser Company (Weyerhaeuser)
37. World Wildlife Fund U.S. (WWF)

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General Comments

1. Abbreviations and Acronyms: CRT (Carbon Reduction Ton) needs to be added to the Abbreviations and Acronyms. It is currently mentioned on page 27 with no definition. **(Terra Global), (WS)**

RESPONSE: Agreed. The CRT acronym has been added to the Abbreviations and Acronyms.

2. We are pleased to see:

a. Improved provisions for ensuring the permanence of credited emissions reductions, including the endorsement of a buffer approach, and the considerations made for project co-benefits.

b. Enhanced recognition of the significance of natural forest management.

c. Inclusion of project implementation agreement that represents an important step towards addressing enforcement issues as well as allowing for increased program participation.

d. Addition of a plan to assign carbon values to harvested wood products.

e. Reduction of cost barriers for Reforestation projects.

f. Use of FIA data as reference point for baselines, which allows for a more pragmatic approach to additionality.

g. Expansion of forest based GHG project eligibility to the entire U.S. **(Equator)**

RESPONSE: Noted.

3. As we have noted throughout these comments, the administrative requirements of the protocol are often unnecessarily burdensome and will be a barrier to participation for many landowners. We recommend that CCAR work to reduce these burdens particularly in areas where their inclusions provide little or no value in furthering carbon sequestration objectives. **(AF&PA)**

RESPONSE: Noted. The FPP work group continues to make every effort to streamline administrative burden and costs where we can do so without compromising accounting or environmental integrity.

4. Using a modeled approach results in fluctuations in carbon sequestration/emissions relative to the baseline. For instance, a project that has reductions on the order of 10,000 tons a year for 20 years (200 thousand tons of reductions) may have emissions in later years resulting in only a net benefit of 150,000 tons. How will CCAR manage the sale of credits to ensure projects do not over-sell? **(Cantor)**

RESPONSE: The baseline approach in the updated protocols is expected to result in a more stable (horizontal) baseline and reduce fluctuations associated with earlier baseline approaches. Any reduction in net project stocks relative to the baseline will be calculated as a reversal requiring the project developer to surrender CRTs. In the case of natural disturbances, reversals may be compensated through the CRT buffer pool and/or an alternative insurance mechanism. It is up to Project Developers to manage the sales of CRTs accordingly.

5. First, given the scope of the changes from the existing forest project protocol, it would be very helpful to have a separate document which summarizes the changes in the Draft. For each proposed change, the overview document should provide a brief description and an explanation of the intent or justification of the change. **(NRDC)**

RESPONSE: Agreed. A summary document will be produced.

6. While substantive improvements should the priority of the review process, the draft would also benefit from a thorough edit for clarity and organization. **(NRDC)**

RESPONSE: Agreed. The final draft will reflect a thorough edit for clarity and organization.

7. In general, every quantitative factor should be based on reliable data and a credible analysis that links the specific factor and proposed quantitative values to real world outcomes. Taking the risk of conversion analysis as an example again, there should be a data-based analysis demonstrating that a forest stand that scored 14 points on the risk of conversion matrix is at least approximately 50% more likely to be converted than a stand that scored 12 points (i.e. a 40% discount vs. a 60% discount). Quantitative factors that are merely guesstimates or are based on short-term political consensus rather than data and analysis are extremely problematic and should be revised or eliminated. **(NRDC)**

RESPONSE: Noted. Wherever possible, the work group utilized published data to support quantification. Professional judgment was used where supporting research didn't exist yet factors were required to improve the overall credibility of the accounting. In such cases, decisions were intended to have a conservative bias to ensure that GHG reductions credited would not be overstated for a project.

8. CCAR should incorporate into the Draft Protocol its previously stated policy that projects verified prior to the adoption of the Draft Protocol may continue to be verified, accepted and credited by CCAR in accordance with the Current Protocol. As a corollary to this principle, CCAR should also indicate that it will treat equally all CRTs verified and listed on the Climate Action Reserve

regardless of the forest protocol under which they are verified. [Please see TCF public comment submission for details.] **(TCF)**

RESPONSE: Agreed. Clarification about CRTs verified under previously adopted versions of the FPP is currently provided on the Reserve's website. Language related to this issue is also found in the Reserve's Program Manual.

9. Check the use of acronyms throughout the document, ensure that the use is consistent throughout and that the acronym is defined in the glossary. **(J. Cathcart)**

RESPONSE: Agreed. The final draft will reflect a thorough edit for consistent use of acronyms and completeness of the list of defined acronyms in the document.

10. Reach out to the 'waste' sector, including the CRRA to ensure that the full range of stakeholders are included from the very start in developing the various protocols. **(RCGW)**

RESPONSE: Noted. The waste sector, specifically the landfill sector, did engage when wood products accounting was discussed within the FPP work group. The conclusions reached by the work group as to handling of landfill carbon and emissions were supported by the waste sector at the February 3, 2009 public meeting. These changes are being incorporated into the new FPP draft.

11. We would suggest that a critical element of implementing protocols in actual projects is the existence of standardized spreadsheets and other tools that would have embedded formulas that would ensure calculations and project assumptions adhered to the protocol details. Often this work is left to a later date long after draft protocols have been completed. We would suggest that a parallel process of developing written protocols along with project management tools would ensure accuracy and speed the adoption of protocols in actual real world situations. **(MGM)**

RESPONSE: Noted. We are in the process of developing standardized spreadsheets/tools for the submittal process that will be available on the Reserve's Web Site. Every effort will be made to have these available as soon as possible. They include:

- **Evaluation Criteria for Native Species and Natural Forest Management**
- **Leakage Assessment (for 3 project types)**
- **Conversion Risk**
- **Quantification of Total Net GHG Reductions**
- **Computing the Buffer Pool Contribution**
- **Estimating Carbon of Wood Products**
- **Determining the Risk Rating for Forest Projects**

12. Difficult to Decipher: The language makes frequent use of double negatives, lengthy sentences, dense paragraphs, and in some cases inconsistent vocabulary**. (SBC)**

RESPONSE: Agreed. The final draft will reflect a thorough edit for the use of double negatives, lengthy sentences, dense paragraphs, and inconsistent vocabulary.

13. Hard to Understand the Implications: Many of the rules and standards would be more easily understood through examples. The standards for developing the baseline of different project types in particular is confusing. Even having attended Work group meetings, piloted several projects, and having strong familiarity with other forest protocols, this protocol is particularly confusing. This presents a barrier for individual project developers, and will create increased reliance on consultants and technical advisors, which adds to the cost of completing a project. **(SBC)**

RESPONSE: Agreed. The final draft will reflect a thorough edit for clarity and additional use of examples to promote understanding for individual project developers.

14. Lack of Clarity or Specific Guidance: Throughout the protocol, the language is vague, relying on the project developer and the verifier to interpret the intended meaning. This jeopardizes the integrity of the projects and consistency of the use of the protocols. **(SBC)**

RESPONSE: Agreed. The final draft will reflect a thorough edit for clarity and consistency.

15. Costs are Unclear: The requirements identified in the protocol pertaining to registration, project maintenance, buffer pool contributions, and verification need to be more clearly outlined with their associated costs. A chart or timeline outlining the costs and timing of managing a project over 100 years would help clarify the requirements**. (SBC)**

RESPONSE: Noted. The FPP outlines the timing of specific required events such as verification. However, individual project costs will differ due to the wide range of variation in project conditions, size, pre-existing data, methodology, and documentation.

16. Summary of Changes: The updated Draft represents significant changes from Version 2.1. It would be helpful to see a table of specific issues that were addressed and that were changed from Version 2.1. In this draft, it's difficult to know if requirements were left out intentionally or unintentionally**. (SBC, Diversity)**

RESPONSE: Agreed. A summary document will be produced.

17. It is difficult to determine which proposed changes failed to achieve consensus. The website states that "the attached minority reports identify areas where the group did not achieve complete consensus," but it is unclear exactly which sections are implicated, and whether the minority reports are comprehensive. Furthermore, considering that the CCAR forest project protocol work group is comprised of neither elected representatives nor proportional representation of stakeholder and public interests, the value and justification of a straight majority vote on policy decisions is unclear. It would greatly improve the clarity of the draft and the process to identify those changes that did not achieve complete consensus, and to provide justification for including them without consensus. **(Diversity)**

RESPONSE: Noted. The 9 areas where the draft FPP lacks complete consensus, as identified in the minority reports submitted by the Nature Conservancy (TNC) and the Pacific Forest Trust (PFT), and their current state of resolution are as follows:

#	Area	State of Resolution in Final Draft
1.	Accounting for wood products in Section 6.4 (TNC, PFT)	At the time of the submission of the minority reports the work group had agreed to further discussions regarding wood products.
2.	Calculation of Improved Forest Management (IFM) baseline for public lands in Section 6.1 (TNC)	The baseline approach was discussed thoroughly within the work group. The lack of consensus was focused on the inclusion of considering budget history on public lands as a factor driving management activities, instead of a focus on policies alone. The majority of the work group felt that budgets must match policies or the policies would be unable to be effectively implemented. The final draft will retain budgets in the consideration of public lands baseline for improved forest management projects.
3.	Metrics and definitions in the buffer calculations in Section 7 and Appendix C (PFT)	A 5% minimum buffer will be required for all projects. Theoretical and subjective risks will be pooled to avoid verification challenges. Every effort will be made to reduce subjectivity to the extent possible.
4.	Legal instruments to mitigate management risk in Section 3.3 (PFT)	A recorded contract will be required between the project developer and the Reserve. Additionally, projects with conservation easements have a lower risk profile for conversion and are acknowledged in the risk assessment.
5.	Assigned management risk ratings in Appendix C (PFT)	The work group invested considerable time discussing the risk ratings and believe they are appropriate.
6.	Clear identification of required and optional carbon pools in	The work group achieved consensus on a revised approach that clearly identifies required and

	Appendix A.2 (PFT)	**optional pools.**
7.	**Clarity of the exceptions listed in Section 3.5.2 for reductions in the live tree portion of a project's carbon stocks (PFT)**	**The work group agreed to provide examples framing how the exceptions might be considered. These will be included in the final draft.**
8.	**Baseline methodology utilizing the USFS Forest Inventory Assessment (FIA) data in Section 6.2 with IFM forest projects (PFT)**	**The use of FIA data as an objective and unbiased indicator of "common practice" was extensively discussed in the work group. Most work group members felt that the inclusion of the common practice indicator is an important tool to define the average risk of timber removals within an assessment area of like forest types and regulatory oversight.**
9.	**Eligibility of forest projects located on federal lands in Section 3.4 (PFT)**	**It was the intent of the working group to establish accounting methodologies that could be used on all lands to identify the climate benefits of different management activities. It was clearly not the work group's intent to develop federal policy. Clarification will be added to the final draft that acknowledges that prior to submitting projects on federal lands, federal policy development most occur that includes a public review process.**

18. Overly Burdensome and Cost-Prohibitive for Small and Medium Landowners: The changes to the protocols may allow for greater participation of industrial forestland owners, but the baseline quantification and modeling additionality requirements are so burdensome that the cost of complying will make it financially unfeasible for smaller landowners to participate. Guidance and more flexibility for aggregating projects would reduce these barriers for individual landowners, maximize participation, and increase co-benefits associated with the projects. **(SBC)**

RESPONSE: Noted. The work group continues to make every effort to streamline administrative burden and costs where we can do so without compromising accounting or environmental integrity. Changes to the FPP regarding the baseline had the intent of further standardizing the baseline approach, removing the problems associated with a variable baseline in terms of calculating permanent reductions, improving accuracy, and preventing the overstatement of credited GHG reductions. Examples have been added to the document to improve their ease of use. The Reserve will develop guidance for aggregation soon after completing this version of the FPP.

19. Minority Report Comments by Pacific Forest Trust and The Nature Conservancy should be addressed, particularly comments pertaining to wood products, baseline quantification, conservation easements, and required pools (unless otherwise justified). **(SBC)**

RESPONSE: See response to Public Comment # 17.

20. The protocol guidelines will be more useful if they do not try to be prescriptive in the details of how forests across the state should be managed for the full range of benefits to the environment and the forest landowners. The best way to develop the protocols is to ensure that incentives exist that bring forest landowners willingly to the table. Full, active participation in the Reserve is the optimal outcome of CCAR's program and the protocols need to acknowledge the positive role that forests have played, and will continue to play.

A review of the way in which the European Commission, the United Nations Framework Convention on Climate Change, and the UN Food and Agriculture Organization, among others, could be beneficial in giving proper consideration to the benefits of forest management in responding to the problem of global climate change. **(NorCal SAF)**

RESPONSE: Noted. The Reserve considers participation as an important metric of the success of the protocols. Another driving principle is that forest management provides many benefits and this has been reinforced by the engagement and contributions from forest landowners and other stakeholders in this effort and in other protocol efforts and forums.

21. We are concerned that experience may demonstrate that expenses related to initial inventory, follow-up accounting and third party tracking will be cost prohibitive over time. Finding more efficient ways of tracking carbon should be a priority. Also some activities, such as reforestation following a wildfire should be expedited to encourage immediate action. **(Bischel et al.)**

RESPONSE: Noted. Fungible forest carbon offsets must meet accuracy standards, which is the rationale behind the inventory, accounting, and verification requirements. Technological innovations may yield more cost-effective means to providing accurate accounting over time. Market forces and policy will help stimulate these innovations. The protocols do not limit the types of sampling methodologies that can be used and welcome such innovations.

The Reforestation Project type eligibility has been revised to allow for projects immediately following a significant natural disturbance provided the project can meet tests of additionality provided in the final draft.

22. We have a concern about recent comments that have emanated from some within the working group participants in the form of a "minority report". Specifically we would like to point out a few major issues of concern with this report:

a. PERMANENCE: Right from the inception of the concept of securing permanence of carbon stocks, we rejected the idea that permanence could only be achieved using the conservation easement vehicle. Those of us in the private sector supported the use of binding contracts then, and we still do today. The addition of a third party entity required for a conservation easement, only adds unnecessary complexity, and serves to dissuade landowner participation. The new draft protocols have successfully secured permanence. **(Collins Pine et al.)**

RESPONSE: Noted.

b. INVENTORY- BELOW GROUND LIVE BIOMASS: The draft protocols are reasonable. To require below ground inventorying subjects the inventory to uncertainty and gross speculation. **(Collins Pine et al.)**

RESPONSE: Noted. In the final draft of the FPP, below ground inventory of live tree biomass is a required pool to be calculated based on above ground sampling. This is not the same as other non-root carbon in soils. Appendix A, Table A.2 recommends the use of a model (Cairns et al., 1997) for these calculations although other models may be proposed, approved, and published by the Reserve.

c. INVENTORY - WOOD PRODUCTS: It was premature to have a publically posted report with conclusionary statements regarding wood products, prior to that subject being fully evaluated and discussed by the working group in late December and January. This is especially troubling when statements are made that can mislead the public regarding the intentions and objectives of the Work group. None of the Work group participant's ever stated that their intentions were to develop "...an accounting system that in effect encourages wood to be harvested and ultimately buried in landfills, at the expense of forest ecosystems". Rather all of the Work group participants seemed very clear that their objectives in meeting in December and January were to come to consensus on a methodology for wood products that as accurately and conservatively as possible accounts for wood products. Inferring that conclusions had been reached prior to the Work group meeting with various experts and fully discussing the issues amongst themselves can lead to confusion of the public rather than clarity of the Work group's process and final consensus recommendations. It seems appropriate for the Board to urge participants to continue to forge ahead collectively in this process and we are hopeful that you will encourage all to do so. **(Collins Pine et al.)**

RESPONSE: Noted. The work group did continue to work on the accounting for harvested carbon and offered the findings to the public on February 3, 2009. The expanded guidelines for wood products are in the final draft.

d. PUBLIC LANDS- Considering that a significant portion of forest lands in the state are federally owned, these lands should be included. Any management that occurs that results in a net sequestration of carbon on federal lands is beneficial. **(Collins Pine et al.)**

RESPONSE: Noted.

23. WWF believes that the tools provided, (for example to quantify leakage, permanence, and baselines), will ensure a consistently verifiable approach from which to continually improve. For example, the leakage risk assessment for improved forest management is based on many

assumptions that need to be refined periodically to ensure that they remain valid. Additionally, Appendix C provides table values for the impact of unit risk on carbon reductions that are useful but need continual monitoring to maintain their usefulness. **(WWF)**

RESPONSE: Agreed. Language has been added to Section 1.2 describing the need for periodic refinement based on continual monitoring to maintain the validity and usefulness of the leakage assessments in Section 6, and the project risk assessment in Appendix C.

24. It is our recommendation that language be included in the protocol to recognize the avoided emissions benefit of fuels reduction treatments in forest types that were historically maintained by frequent, low-severity fire. Recognizing the carbon value of fuels reduction treatments could provide a much needed revenue stream to pay for these treatments on public lands that are left largely unfunded by the Healthy Forest Restoration Act of 2003. Additionally, any small-diameter trees removed in fuels reduction projects that are nonmerchantable can be used to produce bio-energy, replacing fossil-based fuel sources (Canadell and Raupach 2008). [Please see Hurteau et al. public comment submission for further detail.] **(Hurteau et al.)**

RESPONSE: Noted. The FPP currently identifies wildfire as a risk to the project's permanent reductions. Project developers must contribute verified reductions to a buffer pool to serve as an insurance against such a reversal. Projects that demonstrate actions to reduce the risks will contribute less to the buffer pool. This serves to provide a benefit to landowners who undertake such actions to reduce risk of wildfire since they are able to sell more reductions. We do look forward to applying the latest science to assessing risk and associated risk mitigation activities wherever possible

Comments Regarding International Application

25. The Idea of a Project implementation Agreement holding for 100 years may not work internationally to ensure permanence. A system of higher buffer percentages and reversal risks and a max 30-yr or 50-yr PIA agreement could be substituted for the current 100 yr requirement. **(Terra Global)**

RESPONSE: Noted. More work will is needed to address this issue for the FPP to function out of the US. The Project Implementation Agreement (PIA) will only work where land tenure is similar to the US and includes recordation of land ownership with specific rights.

26. In an international context, there must be a stricter definition of what constitutes a "commercial" species. **(Terra Global)**

RESPONSE: Noted. The document has been edited to define the term 'commercial' in the context of the FPP.

27. Table 5.1 N_2O from increased fertilizer use, and CH_4 from ruminants to attain agricultural intensification projects should be added in the international context + CO_2 & N_2O add forest fires from controlled burning. **(Terra Global)**

RESPONSE: Noted. The work group did not address the effects of fertilization in this version of the FPP. A subsequent work group effort will be needed to address the expansion of the FPP to address effects from fertilization and controlled burning, to improve their applicability for such projects. Projects that incorporate practices of broadcast fertilization are not eligible under the current version. The term 'broadcast fertilization' will be defined in the final draft.

28. Tropical forest models should be included to ensure compatibility outside of the U.S. **(Terra Global)**

RESPONSE: Noted. Any migration of the FPP to international projects will require site-specific models and measurements to match regional considerations.

29. It will be very hard to define an applicable mean internationally. Therefore, it could be required that in the absence of a national baseline, projects should choose the more conservative baseline option number 2 (see pg. 15). **(Terra Global)**

RESPONSE: Noted. Any migration of the FPP to international projects will require site-specific models and measurements to match regional considerations.

1 Introduction

30. "Reserve" as in "Climate Action Reserve" should be further defined. "CCAR" and "Reserve" appear to be used interchangeably throughout the document. Are they legally the same entity? Providing clarity in definitions would be helpful. **(TPL)**

RESPONSE: Agreed. CCAR is currently re-branding itself as the Climate Action Reserve. The updated protocol will use "Climate Action Reserve" and "Reserve." They are the same legal entity.

2 Forest-Based GHG Projects

31. We are opposed to including federal lands in the CCAR Forest Project Protocol at this time. States cannot set rules for federal land management. Federal forests operate under a different set of legal mandates and policy guidance compared with forests under state control.

For example, if carbon credits are sold to finance the reforestation of federal land after a fire, does this constrain the Forest Service from letting that acreage burn in a subsequent fire, even if the fire is natural and does not threaten any community? Or is Forest Service compelled to call in the smoke jumpers in order to protect a private carbon project? While these issues also arise at the interface of state-owned lands and the carbon markets, they may very well be answered differently at the federal level, if and when a federal forest protocol is adopted. **(WS, Diversity)**

RESPONSE: Noted. It was the intent of the work group to establish accounting methodologies that could be used on all lands to identify the climate benefits of different management activities. The Improved Forest Management project baseline approach is intended to capture the effect of such policy changes. It was clearly not the work group's intent to develop federal policy. Clarification will be added to the final draft that acknowledges that prior to submitting projects on federal lands, federal policy development most occur that includes a public review process.

2.1 Eligible Forest Project Types and Definitions

32. The proposal calls for public lands to be eligible for offset projects through reforestation and improved forest management. The general requirements for project baselines on p. 4 state that they "must reflect legal, physical, and economic factors that influence changes in carbon stocks on project lands over time, as well as management practices that are present on lands with similar environmental conditions within a project's assessment area." In order to address climate change, federal lands agencies must establish clear mandates to manage for climate benefits, including both carbon sequestration and ecosystem resilience. If new federal regulations or policies require land management agencies to protect or enhance carbon stores, the "business as usual" baseline for those lands will rise (see p. 16, Section 6.2.1.2), the creditable carbon will fall, and federal agencies engaged in offset sales will lose revenue. Public lands should clearly be managed for the broad public good, including climate benefits, and financial incentives that favor a single service could potentially undermine that mission**. (WS)**

RESPONSE: Noted.

33. Forest definition has a minimum forest cover of 10%. It should be ensured that this definition remains compatible with the CDM definition. Also include a minimum tree height, and minimum area of a forest. **(Terra Global)**

RESPONSE: Noted. The following is the CDM definition of a forest, adopted in January, 2001 at Marrakesh:

> ***"Forest" is a minimum area of land of 0.05-1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10-30 per cent with trees with the potential to reach a minimum height of 2-5 metres at maturity in situ. A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest. Young natural stands and all plantations which have yet to reach a crown density of 10-30 per cent or tree height of 2-5 metres are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest… FCCC/CP/2001/13/add.1 page 58***

The work group will consider the implications of modifying the current definition and revise the FPP accordingly.

34. It is unclear what is encompassed by allowing lands to qualify that have been subject to a "significant disturbance." This is not a clearly defined term and could encompass a wide range of events. How will "intentional or grossly negligent" be determined? Why is a 20% loss of carbon stocks proposed as the threshold? The ability to qualify as a reforestation project immediately following a disturbance appears to allow projects to qualify that would have been reforested anyway. **(NRDC)**

RESPONSE: Noted. "Significant disturbance" is in the Glossary and defined as follows:

> ***"Any natural impact on a project's selected carbon pools that results in a loss of at least 20% of the total carbon stocks of the required and selected pools and is not the result of intentional or grossly negligent acts of the forest entity or project developer."***

To assist with the clarity of this definition, "Grossly negligent" has been added to the Glossary and is defined as follows:

> ***"Conscious and voluntary disregard of the need to use reasonable care, which is likely to cause foreseeable grave injury or harm to persons, property, or both. [West's Encyclopedia of American Law]"***

Final eligibility will be determined by the Reserve in consultation with a third party verifier. A 20% loss of carbon stocks is proposed as a threshold because a 20% or more loss results in impacts to the forest that indicates significant reforestation work will be required for restoration. All eligible Reforestation Projects will be subject to tests of additionality to determine whether the disturbed forest area would have been reforested under baseline circumstances. Additional language has been added to the project definition that renders projects ineligible as a Reforestation Project if the baseline considers the commercial harvest of sawtimber within the first 30 project years. This language will allow for more clarity in the difference between Reforestation Projects and Improved Forest Management Projects where harvesting of sawtimber is contemplated within the 30-year period.

2.1.1 Reforestation

35. The protocol only includes Native Tree cover. This excludes a number of potentially valuable projects that could bring valuable GHG benefits. This should be added. **(Terra Global)**

RESPONSE: Noted. At this time, and as stated in Section 3.5:
"This Protocol applies to project activities that achieve not only climate benefits, but also will improve and/or sustain natural ecosystem processes. All forest projects must promote and maintain native species and utilize natural forest management…"

36. The concept of a "significant disturbance" is ambiguous. What happens in case fires was man-made, when is a landowner negligent; in cases of pests: if the 20% decrease is spread over 2 years or so, is this still a disturbance. **(Terra Global)**

RESPONSE: See the response to Public Comment # 34. Eligibility for reforestation projects is to include projects in forest areas impacted by multi-year natural disturbances.

37. Like the other versions of the FPP there is no good description of how to demonstrate that a project was historically forested. If no aerial photos or vegetation cover maps existed, could one look at soil type and prove that there is no difference between the non-forested area and the surrounding forest? Could a project developer rely on oral history? **(Terra Global)**

RESPONSE: The historical review is limited to the Holocene geologic period (covering approximately the last 12,000 years of earth's history). Depending on availability for a specific site, a variety of methods can be appropriately used to indicate the project was previously under forest cover. These include satellite imagery, aerial photography, existing land use records, archival information from key informants, soils data, and other biogeographical techniques. The requirements for a specific project will be determined by the availability and appropriateness of evidence for a specific site.

38. The registration eligibility requirements for reforestation projects outlined in the draft protocol do not clearly define the type(s) of historical records that are acceptable. Equator recommends that CCAR revise the listed requirements to include information regarding appropriate methods to document previous forest conditions. [Please see Equator public comment submission for more detail.] **(Equator)**

RESPONSE: See response to Public Comment # 37. The language is designed to provide some flexibility into demonstrating that the project site once supported the native species proposed at the site.

39. Eligibility for reforestation is established through one of two possible land use histories – land out of forest cover for 10 years or a significant disturbance. Either of these situations seems subject to deliberate gaming or establishment of projects in a low stocking phase of the "business as usual" cycle. Projects on land out of forest cover for at least 10 years need to demonstrate that the land was not deforested as a result of intentional acts of the landowner. Land reforested after a disturbance should show that reforestation would not be accomplished in the absence of the offset project and that reforestation is ecologically appropriate. **(WS)**

RESPONSE: Noted. All Reforestation projects will be subject to tests of eligibility to determine whether the land out of forest cover or disturbed forest area would have been reforested under baseline circumstances. A demonstration that reforestation would not provide adequate financial returns in the absence of the project provides assurance that where there was prior harvesting, it did not occur simply to take advantage of a carbon market during subsequent regrowth. Further, Reforestation projects are only eligible if there is no consideration of sawtimber harvest within the first 30 years of the project. Final determination of eligibility will be determined by the Reserve in consultation with third-party verifiers.

40. Would there be any exceptions to the ten-year rule for lands that have had a change in ownership? For example if large areas were deforested and then the land was sold, would it be possible for a new landowner to get credit for restoring the site to forest? Or would they just have to wait until the 10-year period was up? This could dissuade some owners from buying land that has been cutover to be used in carbon projects. Could prior ownership be considered a "significant disturbance"? **(MGM)**

RESPONSE: Noted. The current eligibility requirements for reforestation projects require the disturbance must be "a significant natural disturbance" such as fire, wind, disease, insects, ice, flood, or landslides. Key to the definition is that the disturbance disrupts the vegetation, and in this case the project area has to experience a loss of over 20% of its forest carbon stocks. At this time, the eligibility requirements will not be expanded to include exceptions for a change in ownership.

41. Section 2.1.1 states that a project can qualify as a reforestation project if the project lands have lost 20% of their carbon stock. A moderate thinning should remove this much carbon and leave the stand poised to grow vigorously. I suggest that this percent loss provision be deleted. **(Ecofor)**

RESPONSE: Noted. In the case where a moderate thinning removed 20% or more of the carbon stocks, a project would not qualify for registration because the loss of carbon stocks needs to be due to a "significant natural disturbance" such as fire, wind, disease, insects, ice, flood, or landslides.

2.1.2 Improved Forest Management

42. The original language excludes projects with GHG benefits which involve no harvesting. Proposed language change: "The management of either private or public lands for commercial or noncommercial harvest and/or regeneration of native trees when employing natural forest management practices. Natural forest management practices are forest management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple scales from the harvest unit (less than 40 acres) up to the watershed spatial scale (third or fourth order watershed level) approximately 10,000 acres in size." **(Cantor)**

RESPONSE: Agreed. The definition will be edited to include language that acknowledges benefits of projects that do not involve harvest, provided they meet the baseline tests that include additionality and are evaluated for leakage.

43. The definition of "improved forest management" appears to be essentially the same as for natural forest management. Why is "natural forest management" defined here? Where is the "improved" part defined? **(NRDC)**

RESPONSE: Noted. The definition will be revised to be more descriptive of the Improved Forest Management project type.

44. We suggest the language be changed to make explicit that the intent is to allow all sustainably managed forests to be an eligible forest carbon offset project type, that the preamble and discussion of this aspect of the protocol make transparent the point that by adopting this position, CCAR does not intend to endorse or oppose the use of all such offsets to meet emissions reductions in any Cap-and-Trade GHG emissions reduction program, and the preamble should point out that the eligibility of, and extent to which forest carbon offsets can be used to meet covered emissions reduction obligations by sectors covered under a Cap-and-Trade program are the province of the specific program rules. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. The FPP requires that the forest project be sustainable, use native species, and meet certain biodiversity requirements.

45. In describing improved forest management, the protocol uses the term "natural forest management practices" and defines this term as "forest management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple scales…" If this definition is taken to require a minimum level of both age and species diversity on every acre, this term is both misleading and inaccurate. There are numerous examples, both within and outside of California, where there are significant native forest stands comprised of a single species. **(NorCal SAF)**

RESPONSE: Noted. The definition of natural forest management includes language that identifies the project area within a watershed scale (up to 10,000 acres in size) as being an appropriate resolution to meet the terms of multiple ages and mixed native species.

46. The issue of labeling uneven-aged, multi-species management as "improved forest management" produces a false dichotomy within silviculture methods with the result that any other type of management is inappropriate or incorrect and needs to be "improved". This gives uneven-aged, multi-species management a status that may not be valid. Foresters use existing stand conditions, among other factors, in determining the best management approach and treatment for each stand. There are natural conditions that make even-age treatments the best option for forest health. These conditions might include insect outbreaks where removing most or all trees in a stand is the only way to slow the infestation. Also, you might have a naturally occurring disease affecting a stand. Removing all trees and planting another species that is not affected by that disease can be the most appropriate treatment option.

If CCAR is going to require uneven-aged, multi-species management, it should state so in the protocols using the correct terminology. Also, clarification on whether small even-aged clumps simulating natural clearings, such as group-selection silviculture are allowed would be beneficial. Calling any particular management strategy improved or natural places an artificial break between appropriate site-specific silviculture methods in a way that is not necessarily honest. **(NorCal SAF)**

RESPONSE: Noted. Section 3.5.1, *Promotion and Maintenance of Native Species* has been edited for clarification on these issues. The intent is to ensure that multiple ages are managed within defined project areas or watershed areas. Even-aged management is eligible providing it meets the criteria for multiple ages and native species within the project area or watershed area.

47. Definition of "Natural Forest Management" does not preclude plantation forestry if practiced on a small scale. This definition should include not just forest structure at multiple levels, but also ecological function at multiple levels. When looking at ecological function, using the harvest unit as the smallest spatial scale for maintaining mixed-age, mixed species structure may be too large for some forests. **(SBC)**

RESPONSE: Natural Forest Management is intended to be applied to the project area and/or the watershed level up to 10,000 acres. Plantation forestry is allowed if provisions are made for multiple species and age classes within the spatial scale described above. Section 3.5.1, *Promotion and Maintenance of Native Species* has been edited for clarification on these issues.

48. The improved forest management project type appears to require harvest as part of the management regime. The avoided conversion project type is narrowly defined to include only projects where forests are likely to be lost to development. Projects on land with low development threat that propose to eliminate harvest to build carbon stocks fall through the

cracks. Forest management projects should be defined broadly to include elimination of harvest activity on entire properties as a carbon-conserving strategy. **(WS)**

RESPONSE: See response to Public Comment # 42.

49. The reference to "harvest unit" within the current eligible forest project activity definition may lead to significant confusion concerning the eligibility of project lands. Equator recommends that CCAR revise these definitions to clarify that "harvest unit" refers to the spatial scale requirements for natural forest management and does not suggest that project lands must be harvested in order to be eligible. As it reads, this definition may unintentionally prevent projects from being developed on many sites, such as fire burned forests, which are not harvested, but should be acceptable under current protocols. To address this issue the word 'harvest' in the first sentence could be replaced with the word 'purposes'. **(Equator)**

RESPONSE: See response to Public Comment # 42.

2.1.3 Avoided Conversion

50. Forest conversion may occur where a forest is converted and the canopy may still be greater than 10%. Proposed Language: "A project consisting of specific conservation actions to prevent the site-specific clearing and conversion of native forests to a non-forest or sub-optimal forest use, such as agriculture or other commercial development." Non-forest use would require a reduction of canopy cover to below 10%. **(Cantor)**

RESPONSE: Noted. Eligibility will be clarified to include conversions that retain significant forest carbon stocks. Additionally the work group will consider increased guidance for Avoided Conversion projects, to assist in the quantitative determination of impacts.

51. Specify Residential development as another non-forest use. **(SBC)**

RESPONSE: Noted. The intent of the Avoided Conversion project is to address activities that permanently reduce the ability of forest sites to continue sequestering carbon. This can be the result of many different kinds of land use activities, too numerous to list in total. The definition will be edited for clarification in the final draft.

2.2 Project Developers

52. The protocol should allow for entities to both own or have long term legal control over the trees**.** **(Terra Global)**

RESPONSE: Noted. The FPP currently requires that entities own the trees. The Project Implementation Agreement obligates the management of the forest for the project life which is typically 100-years or longer. The Reserve will take under consideration the addition of language that provides eligibility for "long term legal control." Bear in mind that in this case, long-term legal control will need to be at least 100 years to meet the project life criteria.

53. The difference between owning timber rights versus owning fee simple of the property should be defined. Without the distinction, this could be problematic as it relates to Section 3.3, p.4. Under Section 3.3, an agreement is signed between the landowner and the Reserve, and the landowner is not necessarily the same as the owner of the timber rights. More clarity regarding the roles and responsibilities between fee owner, timber rights owner, and carbon rights owner would help address this issue. In addition, there should be more thought given to how changes in ownership of any of these rights will be handled by CCAR. **(TPL)**

RESPONSE: Agreed. The language in Sections 2.2 and 3.3 have been edited to clarify the roles and responsibilities of the fee owner and timber rights owner as well as how change in ownership will be handled by the Reserve. Carbon rights are not currently recognized as a legal right.

54. We would like more specific guidance on how to aggregate projects as a Project Developer. In the Attestation of Title section 9.2, the protocol specifies that project developers must own the commercial and non-commercial trees. This is confusing. It's also unclear how one entity becomes the representative for multiple entities in reporting to the Reserve. Does the requirement of registering entity emissions under the General Reporting Protocol for every entity developing a forest no longer apply? **(SBC)**

RESPONSE: The Reserve will develop guidance for aggregation after completing this version of the FPP.

Entity emissions reports and carbon inventories are no longer required under the revised FPP.

55. In those cases where a forest or groups of forests have multiple owners, is it possible to create a single entity that would maintain the ability to register the project and gain the credits? Or would the project merely have to have submitted documents attesting to ownership of trees by all members of the joint project? Could the rights to carbon on multiple properties be assigned to a third party through a document such as the Project Implementation Agreement? **(MGM)**

RESPONSE: The protocols are currently designed to function where there is one or many owners under a single legal entity. The Reserve will consider how multiple owners under separate legal entities can aggregate and submit projects collectively in the future.

3 Forest Project Eligibility Criteria

3.1 Additionality

56. It is suggested that the description of additionality of GHG reductions eligible to be registered be modified to include a definition for managed forests that allows all additional volume (GHG reductions) over baseline, whether harvested or not, to qualify as additional, with the number of reductions (CRTs) attributed to harvested wood to be computed pursuant to the other provisions for quantifying harvested wood product offsets in this draft document. **(NAFO et al.)**

RESPONSE: Agreed. The baseline determination has embedded tests for additionality. The calculation of reductions now requires the inclusion of harvested carbon, using the methodology made public on February 3rd, 2009, in both the baseline and the project activity.

57. The use of the term "Additionality" is muddled under the FPP to mean net project credits (project GHG less baseline) not the "test" of whether the project would have happened in the absence of a carbon market or is business beyond usually regardless of the amount of net GHGs. This is inconsistent with international standards, where additionality refers to the question whether the project would have happened in absence of carbon credits, and relates more to the financial and legal barriers for developing and implementing a project, and not so much to the question whether project credits are above baseline credits. In practice these barriers are included in the CCAR baseline analysis. It might be good to point this out in a text box or so. **(Terra Global)**

RESPONSE: The language in Section 3.1 has been edited to clarify the Reserve's approach to determining additionality. The Reserve interprets "additionality" to mean that a project would not have happened in the absence of a market for carbon offsets. However, the Reserve does not require a separate analysis of regulatory requirements, barriers, financial benefits, and common practice to determine additionality. Instead, the Reserve's preferred approach is to determine additionality according to standard eligibility criteria. In the FPP, regulatory, financial, physical and other variables are factored into baseline characterizations. Thus, as the comment implies, requiring a separate set of tests for additionality purposes would be redundant. Using a rigorously defined baseline as the basis for establishing additionality is consistent with international standards. See, for example, the WRI/WBCSD *GHG Protocol for Project Accounting* and the Clean Development Mechanism's "Combined tool to identify the baseline scenario and demonstrate additionality."

58. Indeed, carbon sequestration levels measured over a regulatory, other minimum baseline or an FIA mean, rather than the actually inventoried baseline level, will likely produce credits for existing carbon stocks. Similarly, carbon stock changes measured over a baseline year inventory may not be incremental to what would have happened in the absence of Reserve's program. We suggest that the Reserve edit the language on additionality in Section 3.1 to better reflect what will be considered additional under the protocol. Such transparency is extremely important to maintain the environmental integrity of the protocol and gain acceptance for forest-based offsets in future climate change policy. **(AF&PA)**

RESPONSE: Noted. Existing stocks in Improved Forest management projects above common practice, as indicated by FIA data within the project's assessment area, are considered additional if the project demonstrates that a) the stocks exceed those allowed by encumbrances; and b) it is economically feasible to reduce them. This is a risk-based approach that acknowledges timber removals will vary by site. Some removals will leave stocks below common practice and others removals will leave stocks above common practice. The language in Section 3.1 and 6.2 has been edited to better reflect what will be considered additional under the FPP.

59. The proposed definition of additionality is confusing. The definition should be consistent with the general CCAR definition. **(NRDC)**

RESPONSE: Noted. The language in Section 3.1 has been edited for clarification.

60. The definition of additionality is inconsistent and asymmetrical. Additionality is defined as above and beyond business-as-usual, yet the baseline modeling suggests that credits can be given for business-as-usual activities in those forests that don't currently maximize timber revenue. Inconsistently, no credit is given for physically additional carbon that accrues in wood products from harvesting the growth increment because it is considered business-as usual. **(Weyerhaeuser)**

RESPONSE: Noted. The baseline characterization is derived from an assessment of a standardized 'business as usual' analysis. To determine 'business as usual' is to predict what each landowner (and successive landowners) will do to the property. A standardized 'business as usual' approach incorporates a risk-based assessment and maximizing timber revenue is only one of several factors that may apply in that assessment. The language in Section 3.1 has been edited for clarification. In addition, Appendix A.5 has been expanded to explain how to account for carbon that accrues in wood products from harvesting.

61. We recommend that symmetry is added to the protocol to allow all additional volume (GHG reductions) over baseline, whether harvested on not, to qualify as additional, with the number of reductions (CRTs) attributed to harvested wood to be computed using the 100-year method as outlined in the Forestry Technical Guidelines of the DOE's 1605b) GHG Registry Reporting Protocol. **(Weyerhaeuser)**

RESPONSE: Noted. The accounting for harvested wood has been revised and expanded in Appendix A.5 of the new draft. This methodology differs from the Forestry Technical Guidelines of the DOE's 1605(b) GHG Registry Reporting Protocol in that crediting is allowed for carbon in products in use at 100-years. Landfill carbon is accounted for, but not credited, due to concerns related to alternative destinations to landfills including recycling, biomass, and composting.

62. The issue of additionality needs to be applied in a manner that promotes use of the protocols and the program, and provides incentives for forest landowners to participate. An appropriate way to provide those incentives would be to make, in the case of California, the minimum standards in the California Forest Practices Act and the Forest Practice Rules (FPRs) the baseline level for timberlands in the state. The FPRs already include the use of best management practices, public review, consideration of cumulative impacts, and protection measures for sensitive species and special resources. [Please see NorCal SAF public comment submission for further detail.] **(NorCal SAF)**

RESPONSE: Noted. First and foremost, the FPP must focus on issues of accuracy and preventing the overestimation of credited GHG reductions to ensure the program has integrity. The standardized baseline approach developed by the work group is a risk-based assessment of 'business as usual.' The work group determined that the use of FIA data provided an objective and unbiased indicator of common practice and is an important tool to define the average risk of timber removals within an assessment area of like forest types and regulatory oversight.

63. Allowing the use of management practices present on lands that are not controlled by the project owner but within the assessment area allows for the inclusion of data that may be subjective and based on assumptions that cannot be verified. Professional judgment must be used to develop baselines so that additional carbon stocks can be assessed based on objective evidence of what is above business as usual for the project owner. **(WWF)**

RESPONSE: Noted. The baseline approach developed by the work group for Improved Forest Management projects on private lands is a standardized risk-based approach to determining 'business as usual' within the project's assessment area (as defined by the Reserve, consisting of forest communities within a common geopolitical setting). The Reserve's approach is to minimize professional judgment in order to maximize transparency, reduce subjectivity, and minimize uncertainty and the potential for disputes between project developers, verifiers, and Reserve staff. The risk-based approach provides rules for estimating baseline carbon stocks based on the suite of legal or regulatory encumbrances and economically feasible management options on the project owner's land, as well as a comparison to common practice within the assessment area. Common practice is determined through the use of FIA data within the assessment area. The use of the FIA data enables an unbiased and objective estimate of common practice.

64. What is the project's assessment area? The definition in the glossary is not specific enough. Is the assessment area to be determined on a case-by-case basis. More clarity and guidance—or even a map—would be helpful. **(SBC)**

RESPONSE: Agreed. Maps will be provided that display the assessment areas determined by the Reserve.

65. The proposed definition of additionality is confusing. The definition should be consistent with the general CCAR definition. **(NRDC)**

RESPONSE: The language in Section 3.1 has been edited for clarification.

3.2 Project Start Date

66. a) More guidance is needed on which project types qualify for the historic start date. If a public land agency wants to receive credit for improved management practices since 2001, do they use historic trends to determine baseline?

b) How is "initiation date" and project commencement defined? What is the official "start date"?

c) The timing for initiating and listing a project needs to be more flexible. Conservation acquisitions and conservation easements can take several years. The protocols should encourage conservation easements to ensure permanence, and a tight timeline discourages participation of these lands and conservation organizations.

Seasonal constraints, such as long snowy winters in the Sierra, can also delay or prolong the timing of project initiation and implementation. We need more flexibility to be able to implement the best projects.

d) We recommend developing an "Intent to Submit" form that can be used as a placeholder for 18-24 months after project initiation. **(SBC)**

RESPONSE: Noted. The final draft will include further guidance to clarify the project start date. The final draft will also ensure that terms are clear such that there are not multiple terms for the same event.

Permanence is managed in the FPP through:

- **Contractual agreement that ensures the protocols, including the monitoring and verification activities, are carried out for the project life.**
- **Contribution to a risk buffer pool to ensure that non-intentional reversals are managed.**
- **Contractual agreement that identifies remedies for intentional reversals.**

Conservation easements are considered a risk-mitigation tool for certain specific risks (in particular, the risk of conversion of forest land to alternative land uses). The Reserve recognizes the potential difficulty of synchronizing conservation easements and project start date, and the FPP therefore allows the recording of an easement and project initiation to occur within one full year of each other (regardless of the order in which they are achieved).

Projects initiated as far back as 2001 will be eligible to register with the Reserve for one year after the adoption of this FPP by CCAR's Board. After one year, only new projects will be eligible to register.

67. This section provides instruction with regard project start dates, but does not clearly specify how to determine project initiation dates in all cases. Equator recommends that CCAR revise the protocols to provide more clarity on acceptable project activity initiation dates for all project types.

The current draft protocol stipulates when a project developer must list a project, however does not address how to determine project initiation dates in situations where crediting is based on project activities relative to a declining baseline. This information is essential for project developers to accurately assess the potential for GHG mitigation and financial feasibility of proposed projects**. (Equator)**

RESPONSE: See response to Public Comment # 66. These issues will be clarified in the final draft.

68. The inevitable adoption of updated forest project protocols and the foreseeable future revisions are of concern to market participants and that projects verified under previous versions may not be credited under the new protocol. Offset contracts often involve "forward" sales of future reductions and therefore rely on the assumption of continued project eligibility. Equator recommends that CCAR revise the draft protocol to include the stated policy that "projects verified prior to protocol revisions will continue to be accepted and credited". **(Equator)**

RESPONSE: Agreed. We acknowledge that this is a critical element for predictability for markets and project developers. Clarification about CRTs verified under previously adopted versions of the FPP is currently available on the Reserve's website and will be included in the Reserve's Program Manual which will also be available through the website.

69. Specify whether baseline data is required for each consecutive year of a 100 yr period. **(Terra Global)**

RESPONSE: Noted. The baseline analysis is conducted at the project's start date for the duration of the project's life. This initial analysis will provide the data needed for annual estimation of baseline carbon stocks. See Section 6.4.

70. The term "listed" is unclear and should specify what is required to list a project, does it mean submit a fully completed set of project documents or something else?, if it means complete submission then the time required for listing after the start date should be increased from 6 months or 2 years. **(Terra Global)**

RESPONSE: Agreed. The term "listed" is included in the Glossary. It is also defined in the Climate Action Reserve's Program Manual, available on the Reserve website. Listing includes completion of the following:

- **creating an account with the Reserve**

- **submitting the required Project Submission Form**
- **paying a Project Submission Fee**
- **review and acceptance of the Project Submission Form by the Reserve. Reserve acceptance means that the project submission form is free of obvious errors and is complete. It does not involve verification, nor is it a final determination of project eligibility.**

71. A clarification should be made in this section that only projects which have suffered from an unintentional reversal may be terminated. Furthermore, if an unintentional reversal such as a fire reduces carbon stock below the original baseline which allows a carbon project to be terminated, language should be in place that prevents the reduction of remaining on-site carbon followed by the initiation of a new project with a starting point lower than the immediate post-reversal level. Proposed Language: "Initiating a new project in an area where a previous project was terminated A new GHG project may be initiated in the same area as a previously terminated GHG project as long as the termination was the result of an unintentional reversal and any reversal of GHG reductions from the former project have been completely compensated for through the Reserve's buffer pool or alternatively through a third-party insurance mechanism (see Section 7). The start date for the new project will be determined by when the new project activity commences. A project that suffers an unintentional reversal and chooses to terminate must have a carbon stock level of at least equal to the immediate post-reversal levels before a new carbon project may occur." **(Cantor)**

RESPONSE: Noted. The section will be clarified regarding project termination resulting from intentional and non-intentional acts. Projects may terminate following intentional acts but are accompanied with significant financial remedies as spelled out in the contractual agreement between the Reserve and the project developer. Carbon accounting for a new project initiated on a previous project site will be based on the carbon pools present at the time of the new project's start date.

72. The provision in Section 3.2 allowing for a project initiation date as early as 2001 does not seem to conform to the additionality principle stated in Section 3.1. There were very few indications that programs or markets would emerge for forest-based GHG reductions in 2001. Accordingly, allowing projects to elect an initiation date as early as 2001 is inconsistent with the principle that GHG reductions should be based on changes in behavior that are planned and implemented in response to a program and a market for offsets. At a minimum, it would seem appropriate to require a project developer seeking such an early initiation date to provide evidence that their project was initiated in response to a reasonable expectation of an emerging market for forest based GHG reductions. **(TCF)**

RESPONSE: Noted. The additionality principle in Section 3.1 will be clarified to indicate the rationale for post-dating to 2001. The creation of CCAR in 2001 sent a signal to potential project developers that they could reasonably expect future regulation of GHG emissions, and that such regulation would likely place a monetary value on activities that sequester carbon. The provision for post-dating projects to 2001 will exist for a period of one year after the adoption of the FPP by the Climate Action Reserve Board.

73. It is understandable the importance of ensuring that a project meet additionality requirements and that historical legally binding agreements create a baseline for determining additionality. However, there are certain projects in Oregon that were developed with explicit language that state the intent of the project to engage in activities that yield climate benefits and that they are awaiting an appropriate protocol to provide the accounting mechanism. Projects with explicit language as such should be allowed to post-date the project's initiation. In general, non-additional voluntary activity that provides the desired carbon outcomes similar to projects being developed and proposed that do meet the additionality test should not be penalized. These should be recognized as 'early adopters' regardless of carbon intent. While accepting these projects may not be considered as additional, acceptance ensures that early activity does not become reversed. In my opinion – the best incentive policy is to reward those who are doing what is desired regardless so those that could change and follow suit follow the reward. Otherwise, the early adopters get kind of screwed and may end up reversing their activity – so rigid adherence to an additionality standard results in carbon being reversed from non-eligible lands. Better to accept a phase of non- or weak additionality first as the means to encourage the true additionality (changed behavior) from beyond the early adopters. **(J. Cathcart)**

RESPONSE: See the response to Comment # 72. Strong additionality rules are necessary to ensure the value and environmental integrity of an offset program. This is one of the key differences between offset programs and programs that merely seek to subsidize beneficial activities. If a particular area of forestland is under threat of conversion and this can demonstrated following the procedures prescribed by the FPP, then it may be eligible for registration with the Reserve as an Avoided Conversion project.

3.3 Project Implementation Agreement

74. A sample of the Project Implementation Agreement should be PIA should be included in this protocol, in the appendix and made available for public comment. **(Terra Global, Cantor, TCF, NCRM)**

RESPONSE: Noted. A sample Project Implementation Agreement (PIA) will be made public on the Reserve's website as soon as possible.

75. Will forestland owners really see the difference between a 100 year implementation agreement and a permanent conservation easement? While it is meant to address permanence, I believe it will not effectively increase participation level because forestland owners will still hold the same reservations between the two mechanisms. Further, who can guarantee that they will have the budgets to implement the project requirements for 100 years? Forest carbon projects are typically being funded through carbon credit buyers, carbon finance and contractual and anticipated purchases with much shorter horizons. And what will the carbon markets look like in 50, 75 or 100 years, not to mention regulation, technology, etc? I would think that a shorter implementation agreement like 5-30 years would increase participation. Alternatively, permanence could be addressed with project-pooled buffers. **(T. McAbee)**

RESPONSE: Noted. Addressing the permanency of the emissions reductions is the basis of this requirement. As stated in Section 7, "The Reserve requires that credited GHG reductions be effectively permanent. For projects that sequester CO2, this requirement is met by ensuring that credited GHG reductions remain sequestered for at least 100 years." Any reduction in the length of the term of the Project Implementation Agreement (PIA) at less than 100 years would not allow the project to meet the test of permanence. The PIA essentially provides the assurance of monitoring and verification to detect any reversals and provides for remedies in the event of any reversals, whether intentional or non-intentional.

76. Public lands should not be exempt for submission of the Project Implementation Agreement, while it may be true that the process is more open and transparent, agencies managing public land should still be required to provide the same commitments as private land. **(Terra Global)**

RESPONSE: Public lands are not exempt from submission of the Project Implementation Agreement. Projects on public lands are exempt from the need to "record" the agreement in the county where the project exists.

77. There is no justification for requiring a conservation easement only on Avoided Conversion projects. If the FPP will allow other projects types not to have a conservation agreement then Avoided Conversion should not be required because conservation can be supported with without an easement and other areas of the protocols discount for this risk of not having an easement. **(Terra Global)**

RESPONSE: Noted. Avoided Conversion projects are, by definition, projects that are at a high risk of conversion. For this reason a conservation easement is currently required for Avoided Conversion projects. For other project types that happen to face a high risk of conversion, failure to have a deed restriction that reduces the risk of developments, are subject to the Risk Assessment in Appendix C, effectively means that at least 50% of credited reductions must be set aside in the project buffer pool, according to the Risk Assessment in Appendix C.

78. The elimination of the requirement for a conservation easement on project land is a positive step. However, the commitment to demonstrate compliance with the protocol for 100 years that replaced it is still a major barrier to participation by forestland owners.

While it may be reasonable from a scientific point of view that creditable sequestration should remove carbon dioxide from the atmosphere for 100 years to be considered "permanent" (and therefore equivalent to offsetting carbon emitted from regulated facilities), we believe this requirement is unrealistic and unworkable from a practical standpoint. We do not agree that landowners must commit their project lands for 100 years–quite simply, they will not do so. Allowing market flexibility for landowners and project developers to establish forest carbon contracts of different duration in response to market demand and realistic ownership and management patterns is imperative. Without this flexibility, participation in the program will be

severely limited. Simply few landowners (small or large) will place 100 year restrictions on their land. This is especially true for large landholdings where unforeseeable circumstances may make portions of the property highly valuable for other uses. Many factors, including business and personal objectives, financial need, and land and carbon values dictate whether project land ultimately remains forested, sequestering carbon. Working forests are business entities and business entities as a rule do not make 100 year commitments. Clear rules should be established for replacing shorter-term credits so that environmental integrity is maintained. **(AF&PA)**

RESPONSE: Noted. The FPP work group considered a range of alternative instruments and terms in their discussions over establishing the permanence for registered GHG reductions. Without establishing credible permanence the value of the GHG reductions would be significantly undermined. Therefore, temporary credits are not considered under this protocol. However, the work group will consider allowing project developers to effectively terminate their projects as long as any reversals are compensated through mechanisms that address permanence as defined in the protocols.

79. There should be no automatic permanence obligation required to transfer with the project land at time of sale. Like a conservation easement, this is an unworkable requirement with a similar effect of limiting participation rates. As with shorter-term offset credits, clear rules should address the sale of land to assure that the landowner makes appropriate arrangements for replacing the project credits sold or contractually arranges for the next owner to maintain the project. **(AF&PA)**

RESPONSE: Noted. As stated in the responses to Public Comments # 75 and # 78, the credibility of registered GHG reductions are paramount at this time. Permanence is defined in the FPP as a reduction out of the atmosphere for a period of 100 years. The PIA will be attached to the title for the project life.

80. What does it mean to say that "the agreement must be recorded?" Recorded by whom? **(NRDC)**

RESPONSE: The Project Implementation Agreement (PIA), except when the project is on public lands, must be recorded in the county where the project exists. This is required to provide the public with notice of the interest in real property represented by the PIA, and thereby ensure that it is binding on the successors and assigns of the landowner. The language in Section 3.3 has been expanded to indicate that the recording is to be done by the Project Developer or Project Entity according to the requirements of the specific county in which it will be recorded.

81. The mention of baseline analysis requirements is out of place. **(NRDC)**

RESPONSE: Noted.

82. The protocols can not simply exempt public lands from any type of agreement. Instead, the protocols need to discuss in detail how public lands will participate. At a minimum, there will clearly need to be some sort of recorded decision to participate. Since public lands can be transferred to private parties and may not always be managed in ways that are open and transparent, both these contingencies should be addressed. **(NRDC)**

RESPONSE: Public lands are not exempt from submission of the Project Implementation Agreement. Projects on public lands are exempt from the need to "record" the agreement in the county where the project exists. The purpose of recording is to ensure that the carbon project property interest is passed on to subsequent owners. Although public lands can be transferred to private parties, that transfer is typically subject to scrutiny above and beyond that of a private to private transfer. Therefore the risks of the carbon project interest becoming lost or non-binding on subsequent owners in a public to private transfer is much lower. Consequently, recording in the case of public lands is not a requirement.

83. NCRM would like to caution the reserve to not over burden landowners and remind all parties involved in drafting the PIA that the document is not a conservation easement. Plainly said the Registry's control and interest in a private property should be limited only to insuring the permanence of allocated carbon reductions. **(NCRM)**

RESPONSE: Noted. The intent of the Project Implementation Agreement is to provide assurance that permanence is achieved through adherence to the FPP, which includes provisions for monitoring and verification, buffer pools for unintentional reversals, and remedies in the event of intentional reversal. The focus of the Project Implementation Agreement is on carbon reductions.

84. CCAR should address the specific instance of private lands moving into public ownership. In keeping with the spirit of the current draft language, CCAR should explicitly state that all lands moving from private into public ownership for conservation purposes should be exempt from further permanence requirements. Prior versions of the Forestry Protocol required a permanent conservation easement for both public and private land. This absolute requirement was considered by many to be too strict and simply did not work for most public land owners. The current approach of 100-year contracts between CCAR and private landowners makes sense, but more legal work needs to take place to ensure the viability and enforceability of those contracts. If the contracts are not legally binding in a way that is difficult to amend, then not much prevents a private timber owner from terminating the project and converting the forest into a housing development when economic conditions offset any penalties of non-compliance with CCAR. We strongly agree that public lands should be exempt from this permanence requirement due to the infrequency and transparency of lands moving out of public ownership. **(TPL)**

RESPONSE: Noted. Public lands are not exempt from the Project Implementation Agreement (PIA). Public lands are as likely as private lands to experience a reversal resulting from natural events. The PIA ensures that such reversals are detected and managed.

85. It is a strength of the protocol that it includes a long term commitment of 100 years that is binding on future landowners. **(WWF)**

RESPONSE: Noted.

86. It is suggested that this section be modified to remove the requirement that the project implementation plan be recorded with the host county, and that steps be taken to ensure that proprietary business information can be protected, thereby removing these barriers and risks to private landowners who wish to participate in the program. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. The FPP work group considers recording with the host county to be an important step to ensure that the PIA is binding on the successors and assigns of the landowner.

87. a) "Project Implementation Agreement" (PIA) goes with owner, and conservation easement (CE) goes with the land. Requiring PIA but not CE may discourage participation by assigning risk to future landowners; why not require one or the other?

b) What are "the rights and remedies of the Reserve in the event of failure of landowner to comply with those obligations"?

c) Conservation Easement must be in place within a year of the project's listing—does this mean a year before or after project initiation? Either way, the timing constraint is restrictive to smaller, simpler conservation deals. Additionally, because a conservation easement is legally binding, if a landowner cannot meet the one-year time constraint, he/she will be encouraged to write a less restrictive conservation easement, which allows for the most intensive forest management possible. Carbon Project Protocols should not incentivize planning to do the most destructive thing possible, just so that the project developer is eligible to capture the maximum carbon potential.

d) What will require public lands to maintain permanence/natural forest management if they don't need PIA or CE?

e) Why is a conservation easement required for avoided conversion projects and not the other project types? **(SBC)**

RESPONSE: The Project Implementation Agreement (PIA) is a requirement of the FPP. A conservation easement is required only for avoided conversion projects.

a) With both the Project Implementation Agreement (PIA) and the conservation easement, the obligation to protect the carbon stocks encumbers the land and all current and subsequent landowners. A conservation easement is different, although complementary to a Project Implementation Agreement (PIA), in that rather than a contractual obligation between the landowner and the Reserve, it is a deeded property right sold or donated to a qualifying organization.

b) The "rights and remedies" of the Reserve in the event of failure of the landowner to comply are found in the Project Implementation Agreement (PIA), which will be made public as soon as possible on the Reserve's website. In the event of default, remedies for the Reserve include placing a notice of default in the online tracking system, freezing all transactions, requiring restoration to portions of property inconsistent with the FPP, and all other remedies available by law.

c) "Within a year" can be either a year before or a year after the project's listing. This was considered adequate time by the work group to link intent to initiate a project and complete a conservation easement.

d) See response to Public Comment # 82

e) See response to Public Comment # 77

88. The draft forest protocol refers to a Project Implementation Agreement that outlines the landowner's obligation to comply with the protocol for a term of 100 years. Equator recommends that CCAR include options to allow landowners the flexibility fulfill their total obligated project emissions reductions before a period of 100 years. [Please see Equator public comment submission for more detail.] **(Equator)**

RESPONSE: The Project Implementation Agreement (PIA) has a term of 100 years to ensure that the registered GHG reductions, as measured by increased carbon stocks over baseline, are permanent which means they are protected for duration of 100 years.

89. Is there a pending template for how this agreement will be drawn up? Are there any benefits for having a conservation easement and project implementation agreement?

Public lands are exempt from the implementation agreement but how will CCAR guarantee that a change in management policy will not reduce the overall carbon stocks on the site. It would seem that an implementation agreement would be just as necessary on public lands as on private, because the issue is not just a change in ownership (which may occur less frequently on public lands) but a change in management. This change in management is often very dramatic from one political administration to the next. **(MGM)**

RESPONSE: Noted. A sample Project Implementation Agreement (PIA) will be made public on the Reserve's website as soon as possible. To be eligible for registration on the Reserve, each project is required to enter into a Project Implementation Agreement with the Reserve. A conservation easement is required in the case of an Avoided Conversion project. Public lands are not exempt from submission of the Project

Implementation Agreement. Projects on public lands are exempt from the need to "record" the agreement in the county where the project exists.

90. CCAR plans to require a Project Implementation Agreement ("PIA") with each project listed in the Registry. The text states that "The agreement must be recorded and is binding on the successors and assigns of the landowner." (5) The term 'recorded' suggests that the PIA is intended to be a restriction on the deed. We suggest that CCAR clarify whether the PIA is intended to be a contract or a property interest and, if the latter, whether it is intended as a real covenant, negative easement, or some other variety of servitude. The law in this area is notoriously murky, and the requirements for servitudes on real property to 'run with the land' can vary from state to state. We therefore strongly suggest that CCAR seek expert legal advice and provide actual clarity on what legal instruments ensuring permanence will be allowed for CCAR forest projects. Lack of clarity on this issue could prove a significant barrier to private investment in forestry projects.

We would suggest that the PIA be clearly acknowledged to be a contract and not be recorded with the deed. We expect that the PIA contract will be often supplemented in practice with conservation easements, given the positive incentives for conservation easements in the risk assessment section of the protocol and the difficulty of using other property interests to ensure the maintenance of obligated reductions over a 200-year time span. **(NF)**

RESPONSE: These issues are being reviewed by the Reserve's attorneys.

3.4 Project Location

91. This section clearly states that the protocol is not for use outside the U.S.; however there are sections that would imply or reference potential use outside the U.S. These should be removed. **(Terra Global)**

RESPONSE: Agreed. References to potential use outside of the U.S. have been removed from the document. Significant work will need to be conducted prior to extending the FPP beyond the specified boundaries.

92. It is not clear what the intent of the Reserve is with the protocol update. Language within the draft update indicates that projects may be developed outside of California under this protocol. Is the intent for these projects to meet California compliance, to be a compliance tool under the Western Climate Initiative (WCI), or be used at a national/broader scale? If the intent is for the protocols to be used for compliance under WCI or national schemes, then additional discussions with a broader participation across states are warranted. Otherwise, it seems other states feel as if they were pulled into California policy making efforts without participation. **(J. Cathcart)**

RESPONSE: Noted. The intent of the Reserve with the updated FPP is to allow greater landowner participation, particularly publicly-owned lands and industrial working forests, and to make improvements to the FPPs' clarity, accuracy, conservatism, environmental integrity, and cost-effectiveness (where doing so does not infringe on other principles).

Additionally, the framework of the FPP update is designed to allow the protocols to be used beyond California's boundaries with minimal additional analysis. The intent of this effort is to provide a forest project protocol that can be applied to an extensive geographic area for generating high-quality GHG offsets for use in the voluntary market. Inclusion of projects from other states will require expanded tools for measurement and analysis. Approved equations and models will be added as they are developed and/or reviewed for each region.

93. Defenders support the inclusion of state and municipal lands to assess and increase their climate benefits. However, we do not support the inclusion of federal lands. Management decisions for federal forests follow completely different legal processes than forests under state control. Allowing projects on federal forests creates real confusion, as it implies eligibility for these projects to sell offsets or obligate emissions reductions to meet compliance goals. The inclusion of federal forests is beyond the scope of CCAR and needs to be decided through the established federal policy development and public review process, consistent with federal laws and regulations. **(DW)**

RESPONSE: The intent of the working group was to establish accounting methodologies that could be used on all lands to identify the climate benefits of different management activities. It was clearly not the work group's intent to develop federal policy. Clarification will be added to the final draft that acknowledges that prior to submitting projects on federal lands, federal policy development most occur that includes a public review process.

94. The current draft forest project protocols are not equally robust with respect to the established guidelines and approved datasets for projects located within and outside of California. Equator recommends that CCAR work to identify acceptable references for the figures required from areas outside of California. The protocol remains California focused, especially with respect to leakage rates and allometric equations. It is necessary that acceptable datasets for quantifying emissions reductions and removals are identified for areas outside of California. **(Equator)**

RESPONSE: Agreed. Moving the FPP beyond California will require the determination of assessment areas to be defined and computation of the FIA means. Leakage rates for avoided conversion projects are posted for California and will be moved to an appendix where they can be easily updated to address conversion rates in other states. Similarly, equations will be posted in an appendix that facilitates inclusion of equations that address other regions.

95. Are there any plans to create a US/Canadian methodology that could be adopted by the Western Climate Initiative? **(MGM)**

RESPONSE: That is a good question beyond the scope of this work group effort.

3.5 Use of Native Species and Natural Forest Management Practices

96. The native forest management and Co-benefits requirements disallows plantation management based on a notion that plantations displace native peoples, livestock or farming and create mono-cultures. Plantations should be allowed if they are 3rd party, FSC equivalent, Certified as the social implications of forest management must be taken into account. Plantations are the future wood basket which take pressure of natural forests and disallowing them is very short-sighted and myopic to California where there are few if any plantations on non-forest lands. Plantations can create much greater additionality than lighter touch forest management, thus sequestering much greater amounts of CO_2. The issue is global warming and carbon sequestration, and the co-benefits is a co-opting of the intent of reducing GHG's. **(N. Kent)**

RESPONSE: Natural Forest Management is intended to be applied to the project area and/or the watershed level up to 10,000 acres. Plantation forestry is allowed if provisions are made for multiple species and age classes within the spatial scale described above. Section 3.5.1, *Promotion and Maintenance of Native Species* has been edited for clarification on these issues.

97. Natural Forest Management language needs to be clarified to ensure typical commercial forests can be eligible. **(Weyerhaeuser)**

RESPONSE: Noted. The definition of natural forest management includes language that identifies the project area within a watershed scale (up to 10,000 acres in size) as being an appropriate resolution to meet the terms of multiple ages and mixed native species. This should allow eligibility of many commercial forest operations. The language in Section 3.5.1 has been edited for clarity on this issue.

98. If interpreted literally, this definition [definition of Natural Forest Management] implies that all landscape scales require "multiple ages and mixed native species." Even under natural conditions, this requirement could not be met for many forest types at the smaller spatial scales. Achieving mixed age classes across an entire management unit would require "uneven-age management", which is a practice that is not suitable to most commercially managed tree species and has no relevance to carbon storage. A commercially reasonable approach would maintain multiple age classes at a small scale through trees retained to meet ecological objectives (such as stream buffers and wildlife trees) and at larger scales by practicing sustainable forest management. We suggest the language be changed to make explicit that the intent is to achieve multiple ages and species across a landscape. We also recommend defining landscape scale at a higher order watershed averaging approximately 30,000 acres. Washington's watershed analysis process used this size and it has proven to be a practical scale for environmental assessment. 10,000 acres is quite small in relation to commercial forestry. **(Weyerhaeuser)**

RESPONSE: Agreed. We concur that the assessment for multiple ages and mixed native species should be conducted a landscape scale. The work group determined that 10,000 acres was a reasonable resolution for this assessment. The final draft will provide

further clarification for project lands that are eligible under the definition of Natural Forest Management.

99. We suggest that, at the minimum, the language be changed to make explicit that the intent is to achieve multiple ages and species across a landscape. We also suggest that language be added to recognize the acceptability of forest-derived offsets from other states and jurisdictions whose forest practice acts and/or best management practices allow a broader definition of improved forest management. As noted above, these changes would allow more ready application of this protocol in other jurisdictions, and ensure that California's program is in harmony with other forthcoming state initiatives while not having to diminish its own forest management objectives and goals. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. The FPP seeks to establish a set of consistent standards of natural forest management that work for all projects across all landscapes at spatial scales of 10,000 acres or less.

100. The forest protocol is intended to not only create climate benefits, "but also will improve and/or sustain natural ecosystem processes." Certain silvicultural practices (e.g., clearcutting) can undermine natural ecosystem processes by contributing to the accelerated loss of soil carbon. In cases where such silvicultural practices are used, long term monitoring for soil carbon loss should be required**. (WS)**

RESPONSE: Noted. The scope of ecosystem processes this protocol addresses is in Section 3.5, 'Natural Forest Management'.

101. Would it be possible to have a plantation that is converted to native forests as an eligible project? Would removal of these plantation carbon stocks be considered as deforestation and have to be discounted, or could this be dealt with by adjusting the start date to not include the removal of plantation species? **(MGM)**

RESPONSE: A forest project that converted an even-aged single species forest plantation to native forest would be eligible as an Improved Forest Management Project, provided the project met the Natural Forest Management terms at the landscape scale (approximately 10,000 acres). Plantation carbon stocks would need to be accounted for in both the baseline and project scenarios. Eliminating the need to account for removal of plantation stocks could not be accomplished by adjusting the start date.

3.5.1 Promotion and Maintenance of Native Species

102. Is climate change an "indirect consequence of human activity"? If species shift from their historic range due to climate change, would that land be ineligible? Does "native species" include plants and animals, insects, pests, etc.? **(SBC)**

RESPONSE: The reference of 'native species' will be clarified to show the intent for native trees. The planting of native species outside of their current settings as an adaptation strategy will be allowed. The definition in the text of Section 3.5.1 has been further clarified to address this issue.

103. The current native forest definition may be interpreted as justification for promoting forest types that are no longer suitable for a particular location. Equator recommends that CCAR revise this definition to include specific limitations that prevent project activities from promoting forest types that are no longer suitable for an area.

The draft protocol requires all forest projects, "promote and maintain forest types that are native to the project area," however the definition provided for native forests simply refers to those, "occurring naturally in an area." As written, this definition does not restrict the timeframe or environmental conditions in which particular forest types must have occurred in an area to still be considered native for the purposes of GHG reduction projects. It is important that the requirement for net-positive impacts be included in the definition of promoting native forest types in order to prevent the promotion of forest types that were historically native, but whose reemergence may be detrimental to the current ecology of an area. **(Equator)**

RESPONSE: See the response to Public Comment # 102.

104. The definition of native forests as "those occurring naturally in an area, as neither a direct nor indirect consequence of human activity" is misleading. Dr. Thomas Bonnicksen discusses the development of North American forests in his book America's Ancient Forests. Humans have been interacting with and modifying forests in American for about 10,000 years, so a baseline uninfluenced by human activities does not exist. The protocols could easily do without the second sentence in the first paragraph of this section. **(NorCal SAF)**

RESPONSE: Noted. The definition in the text of Section 3.5.1 has been reviewed to address this issue and the distinction of human activities pre-dating European settlement.

105. The harvest unit is described as less than 40 acres. However, in the West, harvest areas often are much greater than 40 acres. If for the purposes of the FPP, a "harvest unit" is less than 40 acres, it should be listed in the Glossary of Terms. This only relates to Natural Forest Management from less than 40 acres to 10,000 acres. Why not say "from the harvest unit to 10,000 acres." **(Terra Global)**

RESPONSE: Agreed. The project is eligible if it meets the terms at the landscape scale (10,000 acres).

106. This section states that projects that do not initially meet the natural forest management plan must do so before verifying. Does this mean that credits cannot be earned for years in which the project does not meet the requirement? **(Terra Global)**

RESPONSE: Noted. Section 3.5.1 in the final draft will include language to clarify how credits will be acknowledged if a project fails to meet the criteria for natural forest management.

107. Reforestation projects with no immediate intent to harvest do not have to achieve the same score for habitat features. What if this project starts harvesting in year 3; do they need to meet the score at that time, and is this checked in verification. If not, this opens the door to just postponing harvesting for the sake of not having to comply with habitat features. **(Terra Global)**

RESPONSE: Agreed. Section 3.5.1 will clarify the timing and mechanics of achieving the required structural elements relative to initial stand conditions. Verification activities will include review of supporting data.

108. How do you quantify that "no diversity of species exists": proportion of dominant species >95%? There should be an exact cutoff of some metric. **(Terra Global)**

RESPONSE: Agreed. Section 3.5.1 will address how diversity criteria are met, both at the project's initiation and throughout the project life.

109. Management of species distribution *…+: how does one calculate how management favors one species over another? It is unclear what the 75% relates to: proportion of commercial trees thinned divided by proportion of existing commercial trees perhaps? **(Terra Global)**

RESPONSE: Agreed. Section 3.5.1 will clarify how species distribution is established, the use of objective criteria for meeting this condition, and how this data is linked to inventory data.

110. Table 3.1; please explain the categories under functional habitat elements. P6: please specify the minimal score that is required from Table 3.1. What is the alternative minimal score for projects that have no immediate intent to harvest? **(Terra Global)**

RESPONSE: The scoring system will be replaced with a pass or fail ranking, based on objective criteria linked to inventory data.

111. As in the previous FPP versions, this table is hard to interpret and impossible to read. If each chart in the table were all on one page it would be much easier to understand. A quick review of

the tables/charts before the final print would save considerable time spent wondering over what they mean. **(Terra Global)**

RESPONSE: Agreed. Table 3.1 has been edited to address this issue.

112. It is unclear from the definition whether each unit scale is required to maintain multiple aged mixed native species or if the combination of having various sized and purposed units across the landscape meets the intention of the requirement. When looking at the evaluation criteria outlined in Table 3.1 (page 6), we assume that the criteria values are additive. Even so, depending on how literally or strictly one interprets the criteria it is possible that many managed forests, especially high production plantation forests, may not qualify. While most planted forests consist of native tree species, the requirement for management of distribution over background (unmanaged) levels is not realistic for a managed forest by definition. It is difficult to determine what is meant by "Management of species distribution appears to favor commercial species over background (unmanaged) levels by a factor of 25%" For example, does this mean that an upland pine –hardwood stand planted to loblolly pine (a native species) favors a commercial species and is therefore not allowed for more than 25% of the project? If this is the case than many landowners in the South would not qualify for the necessary 2 points. How would this aspect of the Native Forest – Presence and Composition test be quantified? How many points would a landowner with 50% get? **(AF&PA)**

RESPONSE: Environmental integrity is an important attribute of the FPP. The work group discussions focused on developing criteria to meet this overall intent by developing key requirements which apply to projects regardless of the silvicultural or regeneration methods used to manage or maintain the forest. The key elements include:

- **Maintain tree species composition and distribution consistent with the forest type and forest soils native to the assessment area.**
- **Manage the distribution of habitat/age classes and structural elements to support functional habitat for endemic plant and wildlife species.**

The worksheet was developed as a tool to assess whether a project met these key requirements at a landscape scale of 10,000 acres or smaller.

The evaluation criteria will be made clearer for the final draft.

113. We suggest that a sustainable forest management test is more appropriate for carbon offsets than a natural forest management test. To alleviate these concerns and help make the protocol more applicable to jurisdictions outside of California, we recommend that project developers have the option to show that the project lands are certified to a 3rd party sustainable forestry certification system (SFI, FSC, CSA, Tree Farm, etc) in lieu of using these tables. This will simplify the process significantly for those project lands that are already practicing sustainable forest management. **(AF&PA)**

RESPONSE: Noted. The work group will consider how forest certification can address certain elements in the natural forest management criteria. Elements not addressed by third party certification will have to be met through independent criteria in the protocols.

114. The native species restriction is too restrictive to allow enhanced productivity plantations, which frankly are critical internationally (and nationally) for meaningful and affordable GHG mitigation. Use of faster growing species in highly managed plantations will be needed to expand use of this renewable resource and to reap the low carbon commodity and carbon storage benefits that forest products provide. This is particularly true given the desire to conserve or preserve large tracts of non-working forest for recreational purposes. Perhaps California will choose not to participate in this critical mitigation measure, but other areas clearly will and maximizing forest productivity in carefully managed working forests is a necessary element to meeting societal needs while pursuing climate change mitigation objectives. **(AF&PA)**

RESPONSE: The FPP Natural Forest Management criteria evaluation include requirements to ensure that forest projects provide other environmental benefits above and beyond those that may be required by other carbon offset registries. This is an intentional strategy to enhance the value of CCAR's registered GHG reductions.

115. When looking at the evaluation criteria outlined in Table 3.1 (page 6), we assume that the criteria values are additive, however it would be helpful if this was stated in the protocol. **(AF&PA)**

RESPONSE: Agreed. Table 3.1 has been edited to address this issue.

116. California is the only state with a reference for determining native forests that is listed in App. D. If no other states have references, then for 49 states, the Registry will have to rely on State Botanists. Are there State Botanists in every state? Is the determination of what constitutes a "native forest" something they already do or are qualified to do? How will we achieve consistency across states? Isn't there some other way to determine what "native forest" is? If not, is there some other requirement that could achieve the same goal? **(NRDC)**

RESPONSE: Appendix D has been expanded to address this issue.

117. The text of this section appears to require the exclusive use of native species, but Table 3.1 includes evaluation indicators for the fraction of native species. Are non-natives allowed or not? **(NRDC)**

RESPONSE: While a forest project may be in an area that contains non-native species, the project would not be eligible it consisted of less than 95% native species. Table 3.1 has been edited for clarification.

118. [In regards to Table 3.1] For the first indicator, what is "project guidance?" How are the native species percents calculated? In terms of biomass? Populations? Cover? **(NRDC)**

RESPONSE: Table 3.1 will be revised in the final draft and use language consistent to the rest of the FPP. The units of measurement will be clarified in terms of proportion of 'carbon'.

119. [In regards to Table 3.1] For the second indicator, how are the factors of 25% and 75% calculated? **(NRDC)**

RESPONSE: In Table 3.1, "Native Species – Presence and Composition," in the second row, the factors 25% and 75% indicate the percentages of any one species as determined by biomass. The indicators in the table will be revised and defined for clarity in the final draft.

120. [In regards to Table 3.1] For the third indicator: The entry for each box is identical. How is the score for this indicator determined? The text needs to provide guidance on what "ecologically appropriate" means and how it will be determined. By requiring the verifier to verify habitat elements over the entire project, this indicator appears to require a comprehensive survey of the project every verification cycle. **(NRDC)**

RESPONSE: Table 3.1 has been edited to address this issue.

121. [In regards to Table 3.1] The "sensitive areas on forests" indicators are far too open-ended. The mere existence of "internal policies" doesn't demonstrate anything. The fourth sensitive area forest indicator is an automatic 2 points, since state and federal endangered and threatened species are protected through regulations with oversight everywhere in the U.S. **(NRDC)**

RESPONSE: Agreed. The evaluation table in the final draft will be adjusted to address this issue.

122. [In regards to Table 3.1] The summary appears to allow a 100% monoculture plantation to qualify if the single species grown is a native. **(NRDC)**

RESPONSE: The intent of Table 3.1 was to have an evaluation methodology for projects that would apply to projects regardless of the silvicultural or regeneration methods and would show if those projects met the following key requirements:

- **Maintain tree species composition and distribution consistent with the forest type and forest soils native to the assessment area.**

- **Manage the distribution of habitat/age classes and structural elements to support functional habitat for endemic plant and wildlife species.**

The evaluation system will be improved to ensure the requirements are properly evaluated.

123. [In regards to Table 3.1] Since each project starts with 2 points for the state and federal endangered and threatened species indicator, only 3 additional points are needed to qualify. Three points could be achieved if internal policies exist and their implementation can be verified, even if the policies are trivial or terrible. Overall, the proposed threshold is far too easy to meet. **(NRDC)**

RESPONSE: See responses Public Comments # 121 and # 122.

124. The criteria outlined in Table 3.1 conform to California Forest Practices Rules. but are not practical for other states. We suggest giving the option for a project developer to show that project lands are certified to a third party sustainable forest management standard (e.g. SFI. FSC, CSA, and ATFS) in lieu of using the evaluation criteria outlined in Table 3.1. **(Weyerhaeuser)**

RESPONSE: Agreed. The work group will consider how 3rd party certification can be incorporated as an element of natural forest management. See response to Public Comment # 113 and # 122.

125. a. [In regards to Table 3.1] Native Tree Requirements- This requirement should be changed to encourage native species and avoid the use of non-invasive species as outlined in the RGGI afforestation protocol[1]. Though California may have many suitable native species for carbon sequestration,. there may be future climate and environmental justifications to introduce other species. especially to adapt to climate change.

b. Diversity and site specificity requirement- This test appears to be biased against commercial species. In many cases commercial species are not only native to the area, but also would be found as the dominant species under "background" conditions. Nevertheless, determination of what constitutes an "unmanaged background" level of diversity is impossible. Factors such as soils, aspect, seed source. browse intensity, and disturbances including fire affect diversity of the forest at any given site. and these factors vary spatially and temporally. We don't see any climate relevance to this and suggest removing the test. [In regards to Table 3.1] Structural Requirements- The requirements in this test appear to be the same for each point. Is this intentional?

[1] RGG! Model Rule c.l.ii) Eligible offset projects shall be managed in accordance ",with widely accepted environmentally sustainable forestry practices and designed to promote the restoration of native forests by using mainly native species and avoiding the introduction of invasive non·native species.

c. Sensitive Areas on Forests- The criteria in the previous sections have been based on some element of on-the-ground performance. yet the criteria in this section are based on prescriptions in BMPs/regulatory systems. Why change for this section? This test is particularly puzzling as it appears to be placed in here in anticipation that this standard will be used outside California. The California regulations should be sufficient for these criteria and should simply be incorporated by reference. **(Weyerhaeuser)**

RESPONSE: a) Although there may be future justifications for use of other species, the FPP is focused on native species at this time. b) There is no intended bias in the FPP *against* commercial species but rather *toward a diversity of* commercial species. The 'unmanaged' language will be modified to reflect a quantitative approach. c) Noted.

126. It seems to me that one goal of 'Natural Forest Management' scoring is to ensure forest carbon offsets arise from sustainably managed forestlands. Yet, participation in certification programs this is only scored 1 point. It may be a lot simplier by requiring that all projects be conducted on forestlands that are are certified by the Sustainable Forest Initiative (SFI), the Forest Stewardship Council (FSC), American Tree Farm System or any other recognized third-party certification programs. In the context of wanting to reward 'Natural Forest Management' (not that I am agreeing that this is good policy for a forestry protocol), it would seem the scoring tool should also include points for actions that go above regulation such as voluntary Stewardship Agreements (in Oregon), Habitat Conservation Plans, Forest Stewardship Plans, Safe Harbor Agreements, etc. In general, to be consistent with the purpose of the scoring, the threshold levels for "passing" should be set such that some level of activity in each sub-category of desired activity is met. **(J. Cathcart)**

RESPONSE: See response to Public Comment # 113. The work group will consider how 3rd party certification can address certain elements of natural forest management. The scoring system will be replaced with a pass or fail ranking, based on objective criteria linked to inventory data.

127. [In regards to Table 3.1] The formula outlined in the table could result in unintended consequences. A project could qualify as a native forest under this matrix and yet still have a majority of non-native species. Take for instance, a forest that is composed of 45% native, non-commercial trees and 55% non-native, commercial trees (e.g., eucalyptus). Such a composition would score the project a "0" for native tree species, but a "2" for composition and distribution. With a total score of "2", the native species project test is met. We suggest a more absolute standard for native tree species such as a minimum of 80% natives. **(TPL)**

RESPONSE: Noted. In the final draft the scoring system will be improved to ensure the requirements are properly evaluated and managing for native species is prioritized in the analysis.

128. Greater detail needs to be added to this section. In regard to "Internal policies" the protocol mentions "a monitoring plan must be developed and adhered to that demonstrates consistent

progress toward policies," but makes no mention of who enforces the monitoring plan and what the ramifications will be if the plan is not enforced. A similar situation exists with the phrase "Regulations exist with oversight." Regulations at what level? Technically all four of the rows in this area should be addressed in any Timber Harvest Plan (THP), which is regulated by the State. So, does that mean every single project that has a THP would score an "8" and thus meet the Natural Forest Management Test minimum score of "5"? If so, perhaps additional desirable aspects under this category should be required. **(TPL)**

RESPONSE: Noted. In the final draft the definition of terms in the Table 3.1 will be improved for clarification. Forest management under the California Forest Practice Rules will achieve many of the key requirements evaluated in Table 3.1 and allow a project to pass certain elements for natural forest management. '

129. The third party certification programs should not be weighted equally. The Forest Stewardship Council (FSC) is a more rigorous and accountable standard than most other third party certification programs. To give a greater incentive to meet FSC certification standards, we suggest weighting it with a higher score. **(TPL)**

RESPONSE: Noted. Third party certification can be used to meet the natural forest management criterion to maintain or increase the stocking of live native trees over the project life, except for cases, as described in Section 3.5.2, which include exceptions for increasing resiliency, balancing age classes, silvicultural cycles on small ownerships, and non-harvest disturbances.

130. Defenders supports the requirement for all projects to support functional habitat for endemic plant and wildlife species because it is an essential component to help ensure the ecological integrity of CCAR's program. **(DW)**

RESPONSE: Noted.

131. [In regards to Table 3.1] Unclear. The final tally includes 'Sum of 3rd Party Oversight" twice. It's not clear how the tables relate to or how the score in one affects the others, or if you can qualify even if you don't meet all the criteria for "natural forest management". Examples would be helpful to know the range of projects that would qualify in this section.

Native Species Table section seems to allow less than 80% natives as long as management doesn't favor commercial species. Unmanaged, but non-native, and native with no diversity qualifies for native tree values: allows for monoculture. 75-80% native species presence gets how many points—0 or 1? What do you mean be a "factor of 75%"? 0.75? or three times more commercial trees than background trees? Please clarify.

In Functional Habitat Table, 10% of functional habitat gets 1 or 2 points? Unclear what the verifier's role is in assessing functional habitat. Project area may be too big a scale to measure "natural forest management." There needs to be more clarity about what structural characteristics are good indicators of ecological function.

In the Sensitive Areas Table, voluntary regulations with oversight such as certification programs that address these issues should be equivalent in points to "regulations with oversight". If implementation of policies is verifiable even without certification, the score should be equivalent to "regulations with oversight"

In the Third Party Oversight Table, we think FSC should be worth more points than other sustainable forestry certification systems.

In the Summary Table, the Native Species test columns should be <3 or >3 so you don't promote native monocultures. The Natural Forest Management Test, should have a cutoff greater than 5. **(SBC)**

RESPONSE: The final draft will be edited to correct the duplicate heading.

Native Species Table: The values are in reference to biomass. Definitions of terms will be clarified in the final draft.

Functional Habitat Table: This will be clarified in the final draft.

Sensitive Areas Table: Noted.

Third Party Oversight Table: Noted.

Summary Table: Noted.

132. [In regards to Table 3.1] Using endemic as evaluation criteria could provide for a fairly narrow complement of species in a given area. Using the terms native or indigenous would more likely capture a broader representation of the species in a project area. We recommend that you replace endemic with native as evaluation criteria. **(WS)**

RESPONSE: Noted. This recommended change has merit and will go back to the work group for consideration.

133. [In regards to Table 3.1] The quantification of Functional Habitat Elements for Endemic Plant and Wildlife seems to put a great weight upon small differences on forest structure. According to the ranking a 5% change in percentage of area within 80% of culmination of mean annual increment results in a point difference. Having the highest level be anything with more than 15% of area within 80% of mean annual increment maximum seems to be splitting hairs. **(MGM)**

RESPONSE: The scoring system will be replaced with a pass or fail ranking, based on objective criteria linked to inventory data.

3.5.2 Promotion of On-Site Forest Carbon Stocks

134. The sentence…"reductions shall not be …" is unnecessarily complex; remove double negation. **(Terra Global)**

RESPONSE: The document has been edited to remove the double negative.

135. What if a more accurate sampling leads to a decrease in C stocks because the previous estimates were an overestimate? **(Terra Global)**

RESPONSE: It is reasonable to assume that this could occur depending on the frequency of sampling and adjustments for variation from growth and particularly disturbance. It is also reasonable to assume that such fluctuations in inventory estimates are related to the confidence estimate in the inventory. Through the use of the Project Risk Assessment (Appendix C) the FPP discounts project CRTs based on the confidence determination in the inventory. The final draft will address how this confidence discount will be applied as a reversal risk, and impact the amount of contributions required for the project's risk buffer. In the event this did occur, the project would need to display the findings as a reversal, surrender previously verified credits, and compensate for the reversal from the buffer pool.

136. Please restate the text to state, "Reductions can be registered when a decrease is attributable to one of the following conditions:" The use of double-negative syntax is unnecessarily confusing. It undermines the clarity of the intent of this paragraph. **(NAFO et al.)**

RESPONSE: Agreed. An edit has been incorporated into the document to clarify this sentence.

137. Section 3.5.2 Promotion of Onsite Forest Carbon Stocks (page 9) is confusing in that it states that reductions shall not be registered where a decrease in the standing live pool cannot be attributed to one of several conditions which includes "the harvest is part of a non-harvest disturbance." Is the buffer pool meant to cover wildfire and insect disturbances such that these reductions need not be registered? Please clarify. **(AF&PA)**

RESPONSE: The phrase reads, "the *decrease* is part of a non-harvest disturbance." Section 3.5.2 addresses concerns that projects might receive credited reductions in wood products at the expense on onsite live trees. The phrase acknowledges that decreases in live pools will happen as the result of natural disturbances. Some edits have been made to Section 3.5.2 for clarification.

138. It is unclear why this section is in the proposed protocol or what it would accomplish if anything. It appears to say that the live tree pool can only decrease if the wood is harvested as part of a silvicultural treatment or if there was a natural disturbance. What's excluded? There are numerous unclear and undefined terms and apparently arbitrary exclusions (e.g. why only ownerships of less than 1000 acres?) **(NRDC)**

RESPONSE: The final draft of the FPP includes edits and examples for Section 3.5.2 for clarification. The intent of the section is to outline reasonable cases where inventory decreases are justified under the FPP including when silvicultural applications are allowed and how they are justified. The 1,000 acre size is used as a proxy for those landowners whose infrequent harvest is more than their annual growth to justify harvesting. Landowners with less than 1,000 acres are allowed to harvest more than their growth, provided they demonstrate maintenance or increase of live trees over the project life. Landowners with an adequate land base to economically harvest at, or less than, growth will not be permitted to have this type of decrease in inventory and still register credited reductions.

139. Proposed language change: "Reductions shall ~~not~~ be registered where a decrease in the standing live pool cannot be attributed to one of the following conditions:" But it is still unclear what the plain English meaning of this clause is. It could be very difficult to register item #4 if it not a planned operation. **(B.Stewart)**

RESPONSE: Agreed. A correction to this sentence will be applied to the final draft.

140. This section could open a large loophole that allows project developers to experience significant reductions in their carbon stocks without taking any penalties. Any net loss of carbon in the project should be accounted for, regardless of the reason. **(TPL)**

RESPONSE: Net losses of carbon will always be accounted for, and any net loss in total carbon stocks from one year to the next must be compensated for through the surrender of credits (either from the project owner's account, or from the Reserve-administered buffer pool in the case of natural disturbances). This section merely indicates that no new credits will be issued during any period in which standing live carbon stocks fall below levels in previous years, even if the project is able to demonstrate reductions through all combined pools, *unless* the decrease results from certain allowed activities or under specified circumstances.

141. Protocol needs to be more clearly written to assure that the live tree carbon pool is sustained and increased over the lifetime of a carbon project, as it is vital for both forest ecosystem health and for creation of real emissions reductions. The exception listed in #2 for "balancing structural classes in the development of a sustainable management plan" particularly appears to be a loophole. The current language, combined with a generous calculation for transfers into wood products, has the potential to be interpreted in a fashion that undermines the intent of increasing forest carbon sequestration**. (BBW)**

RESPONSE: As stated in the FPP, any decrease as part of "balancing age classes" must be a forecasted event at the project's initiation, which eliminates the loophole element. Consider a 5,000 acre reforestation project all planted at the same time. The management for balanced age classes will happen at some point in the future. During this management, carbon stocks may be decreased at levels higher than the long-term

balanced and sustainable harvest. These standing live pool decreases, like those resulting from improving resiliency, are important for maintaining and enhancing forest health, environmental co-benefits, and the long-term security of the carbon stocks. Also see the response to Public Comment #140.

4 Identifying a Forest Project's Geographic Boundary

142. In order to promote greater participation, it would be helpful to be able to aggregate projects that are initiated at different times. To do that, we would have to be able to revise the geographic boundaries, and update the listing. If this is not possible, then greater flexibility in the timing of initiating and listing a project is critical (comment above section 3.2). **(SBC)**

RESPONSE: Agreed. The Reserve will develop guidance for aggregation soon after completing this version of the FPP.

5 Defining a Forest Project's GHG Assessment Boundary

143. N_2O from fertilizer used during site preparation for reforestation projects can be a significant source of GHG emissions. International protocols require it to be measured as a project emission if over a de minimis amount. For consistency among protocols and to maintain conservativeness of accounting, N_2O emissions should be included in project accounting. **(Cantor)**

RESPONSE: Noted. The work group did not address the effects of fertilization in this version of the FPP. A subsequent work group effort will be needed to address the expansion of the FPP to address effects from fertilization to improve their applicability for such projects. The FPP will include eligibility requirements that disallow projects that incorporate the use of broadcast fertilization within the project area until such accounting guidance is provided. The term 'broadcast fertilization' will be defined in the final draft.

144. [In regards to Table 5.1] This table provides far too much latitude as to which carbon pools need to be included. The ability to exclude any or all pools other than the live tree pool on the basis of an undefined projection is totally inadequate. **(NRDC)**

RESPONSE: Noted. The work group considered not only which pools can be projected, but also which pools have an effect on additionality.

145. [In regards to Table 5.1] Why are maintenance activities and transportation of wood products excluded pools? Why aren't wood product manufacturing emissions listed? **(NRDC, Diversity)**

RESPONSE: Accounting for the non-biological emissions in other specific industry sectors, such as wood products manufacturing and transportation quickly becomes unreasonably complex and time consuming. The approach taken by the work group has been to limit the required accounting for manufactured wood products but provide guidelines that ensure credited reductions are not overstated regardless of what pools are left out. For example, the FPP approach for harvested wood products currently requires accounting for the *biological* emissions related to *all* sectors of wood products manufacturing and *excludes* any credits for GHG reductions that may be associated with wood that continues to be stored in landfills.

146. [In regards to Table 5.1] There can be negative secondary effects from a project, if harvesting with mechanical equipment is reduced or avoided, if the development of forestland is avoided. There are significant secondary emissions effects of business-as-usual activities, and if this activity is avoided by implementing the project, the project should count those avoided emissions in its project carbon accounting. This comment applies to all project types. **(SBC, Diversity)**

RESPONSE: Noted. Although in some cases the non-biological emissions associated with project activities will be less than non-biological baseline emissions, the costs and complexity of accounting for these are likely greater than the benefits that would be recognized. Both for simplicity and to be conservative in estimating total net emission reductions, secondary effects involving a reduction in emissions are excluded from the GHG assessment boundary.

147. [In regards to Table 5.1] Emissions associated with processing and disposal of wood products, as well as emissions from transportation of wood products, should be included as downstream secondary effects for offset projects that include carbon storage in wood products and landfills. When wood in use and in landfills becomes an included carbon pool, the boundaries of the project have essentially extended to the permanent storage site for that wood. These processes can be a significant source of GHG emissions that are necessary to the wood products carbon storage function (just as necessary as site preparation and timber harvesting). It is sometimes claimed that these emissions are already regulated under a fossil fuel emissions cap, but the allowances that cover these emissions are purchased by other parties so the benefits from those processes should not be fully credited to the landowner where the wood originated. The revised Forest Protocol requires that emissions from equipment use during site preparation and timber harvest be deducted as part of project accounting; assuming that transportation fuels are regulated at the refinery, then these emissions are also covered under the cap. In order to be consistent, all wood processing and transport and disposal emissions (including the global warming potential of methane released from decomposing wood) should also be included in project accounting. **(WS, Diversity)**

RESPONSE: Noted. See response to Public Comment # 145.

148. [In regards to Table 5.1] Is a project developer required to make some estimate of all Primary Effect categories to determine whether the 5% threshold is reached by any of them? Or are these sinks optional? Is it required to sample all pools to determine whether any of them reach the 5% threshold, or can this be done with examples found in academic literature? **(MGM)**

RESPONSE: The FPP has been revised to remove any need for determination of de minimus projection. Pools are either required or optional.

5.1 Accounting for Significant Secondary Effects (Leakage)

149. It is appropriate for the FPP to include leakage for projects and this topic is not straightforward. The inclusion of activity-shifting leakage should be clarified into trying to measure activity shifting leakage within an entity (i.e. they reduced harvest on some lands only to increase it on others) AND activity shifting leakage outside of the entity, where the project has caused others to increase harvesting. This generally means that within a given reference region, the project actions forces non-project-participants to increase GHG emissions, e.g. avoided conversion projects that simply force development in other areas. While most of this is addressed, using clearer definitions could be helpful. However, the FPP does not address "market leakage", which may occur outside of the project entity or further away from the project area. This was only recently added to the VCS guidelines; FPP should either include this or state that it is not a requirement of the protocol. **(Terra Global)**

RESPONSE: The FPP addresses all forms of secondary effects, including 'market leakage' with a risk-based assessment. The protocol specifies which secondary effects are accounted for and which are not. The language in Section 5.1 and Section 6 has been edited for clarification.

150. Revise the draft text to differentiate between internal and external market leakage, and require that project entities that have non-project forest lands to annually submit 3rd Party Certifications to recognized national sustainable forest management standards of their non-project lands annually, to address internal leakage concerns. The draft document should also be modified to inform project entities that the Reserve will undertake a biennial study to monitor the extent to which projects are creating external leakage, the results of which will be used to adjust, as required, a market leakage discount factor, to which their annual offsets will be subject during the project crediting period. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. The methodology in the FPP is the result of work group discussions over what kind of assessment would be both a reasonably accurate representation of project leakage and a feasible calculation for the project developer from readily available sources of information. Isolating leakage into onsite (internal) or offsite (external) categories is not a priority because regardless of location, leakage has the same impact on climate benefits. In addition, it is easier to identify the project activities with leakage risk than account for where that leakage risk is going to take place. The guidelines in the

FPP will be revised over time as advances in leakage accounting are published and available.

151. This sentence has confusing wording and does not make sense – strike the extra phrase? "Leakage is an increase in greenhouse gas emissions ~~in sequestration~~ caused by a project outside of its geographic boundaries." Also, this term should be included in the glossary. **(SBC, WS)**

RESPONSE: Agreed. This edit has been made to the document.

152. Any discussion of leakage should consider the effect of forest regulations and public demands on forest management practices, at state, regional, and global levels. In surveys, the public states that it wants sustainably produced wood products and are willing to pay for those products. Yet, when the public goes to the lumber yard, the choice of wood product appears to be largely based on economics – the less expensive wood products are chosen over those labeled as sustainably grown. The issue of harvesting levels and practices seem to be more a function of "not in my back yard". People want the sustainable products, but want them to come from somewhere else. This results in a shift of the environmental footprint of forest management to states and countries that have fewer costs and restrictions. Another impact of exporting the environmental footprint of local management is the increase in transportation time and distance needed to import those products into the state, with the accompanying increase in GHGs. While difficult to calculate using the methodology included in the protocols (see section 6.2.2 of the protocols), these emissions are every bit as significant, if not more on a global level, as the emissions from equipment operating on-site.

CCAR could develop protocols that encourage forest landowner participation that might have a significant effect on both worldwide GHG emissions and on unsustainable harvest activities in developing countries where deforestation is occurring. **(NorCal SAF)**

RESPONSE: Noted. The methodology in the FPP is the result of work group discussions over what kind of assessment would be both a reasonably accurate representation of secondary effects and a feasible calculation for the project developer from readily available sources of information. As more data becomes available at regional, national, and international levels, refinements will be made to the leakage estimates. A table of sources and sinks will address which sources and sinks are included/excluded in the FPP.

153. The Revised Protocol allows several sources, sinks, and reservoirs (SSRs) to be excluded if, over the project lifetime, they are projected to be less than five percent. Although this requirement is logical, it is difficult to address. Prior to the release of the draft Revised Forest Project Protocol, we conducted a forestry inventory, which included additional measurements for a carbon assessment. We consulted with Professor William Keeton, a forest carbon expert, based at the University of Vermont to design the inventory. We did not take field measurements on shrubs and herbaceous understory, litter, or soil as we did not anticipate the overall change would be significant in an IFM Project. Now, we do not know how to show, without taking

measurements, that these SSR categories represent less than 5% of total GHG reductions and therefore need further guidance to move forward. **(CC)**

RESPONSE: The FPP's have been revised to remove any need for determination of de minimus projection. Pools are either required or optional.

6 Quantifying GHG Emission Reductions and Removal Enhancements

154. The business-as-usual baseline approach is only accurate for forestry projects if it is defined in a manner that eliminates or significantly minimizes uncertainty. To set a baseline by projecting, "What would have happened?" is inherently uncertain when the conditions of a forest are subject to so many forces, both natural and anthropogenic – even if the question is bound by assumptions and limits. The true purpose of a baseline is to establish a reference condition by which to measure future conditions. How can we actually prove additionality (even ex-post) by measuring against a baseline that "would have happened" if it never happens? If the purpose of a forestry carbon GHG offset project is to remove, reduce or prevent CO_2 emissions in the atmosphere by conserving and/or increasing forest carbon stocks, then why not measure just that? Sound statistical methods are already established to measure existing forest carbon stocks which at the project start date should be the "baseline." **(T. McAbee)**

RESPONSE: Noted. Although the comment correctly points to the theoretical challenges associated with estimating a project baseline and determining additionality, the implied solution – to ignore the challenges and simply focus on carbon accounting – is not acceptable. Because carbon offsets are used to compensate for GHG emissions occurring elsewhere, offset credits cannot be given for reductions or sequestration that would have happened "anyway" (i.e., in the absence of a market for offsets). Doing so would result in no change to the amount of CO_2 in the atmosphere relative to a scenario where no offset credits are issued or transacted. In that case, the buyer of an offset credit would have no basis for claiming to have compensated for an emission. It is the nature of the claim made by purchasers of carbon offsets – i.e., that they are substituting an emission reduction from somewhere else for a reduction they would have made themselves – that drives the need for demonstrating additionality and estimating "what would have happened" in the baseline.

155. What is a "removal enhancement? **(NRDC)**

RESPONSE: The title of this Section will be modified to 'Quantifying GHG Reductions.' "GHG Reductions" will be defined in the final draft.

156. I am in favor of using USFS FIA data as a baseline as I believe it is a fair and accurate average to use vs. the Forest Practice Rules, Option C which would simulate an overly depleted forest and which if used is not applicable to other regions outside CA, and would denigrate the protocols by using a method that is not defensable as business as usual. The current conservation easement requirement does not ensure carbon storage and is prohibitively expensive due to the real cost of stewardship endowments, and the disincentive to many landowners of dealing with a third party Grantee on their property as well as the new owner of the carbon they have sold. **(N. Kent)**

RESPONSE: Noted.

157. The criteria that reforestation projects must occur in areas that simply would not be forested in the next 10 years is not relevant as the project proponents are required to provide annual reports to the Reserve which substantiate the project baseline. It is Equator's suggestion that Reforestation project baselines should be based on current and past carbon stocks, and not the next 10 years, provided that the project baseline is consistent with legal and regulatory requirements. **(Equator)**

RESPONSE: The work group has discussed this and will modify the approach to provide a screening for additionality and a provision that accounts for natural regeneration. In addition, available information about current and past carbon stocks would be important considerations in the baseline analysis of any reforestation project.

6.1 Reforestation Projects

158. Sequestration projects such as reforestation and improved forest management should use the stationary approach where the baseline is constant. It is my opinion that if these types of projects, private or public, are voluntary (regulatory surplus) then increasing forest carbon stocks permanently above such stationary baseline should be considered additional. **(T. McAbee)**

RESPONSE: See response to Public Comment # 154.

6.1.1 Primary Effect – Estimating On-Site Baseline Carbon Stocks

159. The baseline characterization of reforestation projects included in the draft protocol allows for excluding the conversion of standing dead material to wood products provided this exception is justified on the basis of economic infeasibility based on stumpage values. However, the protocol does not identify which stumpage value references are acceptable for satisfying the economic viability condition. Including specific information regarding satisfactory stumpage value sources would help to minimize the possibility of disparity between the exceptions tolerated for each unique forest project. **(Equator)**

RESPONSE: This reference to standing dead material will be revised in the final draft. The work group has defined the action that initiates the Reforestation Project as being the planting of trees or site preparation activities associated with planting trees. The baseline analysis will account for any emissions or stock changes in required pools associated with site preparation activities from project initiation forward.

160. "An exception may be justified where the conversion to wood products can be shown to be economically infeasible based on analysis of stumpage values by species and haul cost."

Are there any assumptions about how low timber values must be in order to demonstrate infeasibility of timber harvests? What elements of a business operation (overhead, wages, etc.) are required to be considered in this type of economic analysis? **(MGM)**

RESPONSE: This reference to standing dead material will be revised in the final draft. The work group has defined the action that initiates the reforestation project as being the planting of trees, or site preparation associated with the planting of trees.

161. Section 6.1.1 discusses modeling of newly reforested stands. Forest growth models are unreliable when applied to newly planted seedlings (or expected plantings). I think that local growth and yield tables based on stand site class would give more reliable results. **(Ecofor)**

RESPONSE: Noted. The limitations of modeling newly forested stands have been considered in the "Required Modeling Procedures."

162. A requirement to demonstrate that, under baseline circumstances, the project area would remain out of forest cover for at least 10 years will necessarily be based on many assumptions. Unlike forest modeling, future claims like this one may not verifiable**. (WWF)**

RESPONSE: Agreed. The language will be revised to include focus on baseline accounting and related considerations for additionality.

163. The draft forest protocol does not include information regarding when the required modeling procedures may be announced or the associated public review process that will be used to make these determinations. These announcements are critical to the efforts to develop agreement on forest carbon standards. **(Equator)**

RESPONSE: Agreed. The information on required modeling procedures is included in the final FPP draft.

164. "to the extent similar *…+ project's assessment area": It is unclear as to what is meant here. **(Terra Global)**

RESPONSE: See the response to Public Comment # 160.

165. This paragraph seems to be pushing salvage logging. Some scientific papers demonstrate that salvage logging harms the ecosystem much more than previously thought and leaving large amounts of carbon after a disturbance is necessary for a healthy natural recovery. This paragraph is in disagreement with FPP definition of natural forest management. **(Terra Global)**

RESPONSE: See the response to Public Comment # 160. Salvage logging may be considered part of baseline activities under some conditions. The benefits and/or impacts are considered in context to a project in the FPP.

166. Why is there a different eligibility requirement for reforestation projects provided here (compare to Sec. 2.1.1)? Do they both apply? How does this requirement work for projects that are eligible due to a disturbance that removes only 20% of carbon stocks? **(NRDC)**

RESPONSE: The language of Section 6.1.1 is intended to direct the Project Developer with the baseline characterization rather than to address eligibility requirements. Section 6.1.1 has been edited for consistency with Section 2.1.1 and for clarity.

167. Harvest of carbon stocks either for timber or fuel can not be considered as part of a natural disturbance. Any carbon stocks that are harvested should be included in the baseline. **(NRDC)**

RESPONSE: See the response to Public Comment # 160.

168. Does the final paragraph in this section really require the project proponent to convert standing dead material to wood products unless economically infeasible? Why? **(NRDC)**

RESPONSE: See response to Public Comment # 160.

6.1.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources

169. [In regards to the flow chart, pg. 12] Add a box, "Was ranching or grazing commercially viable?" = No ☐ Leakage Risk = 0%.**(SBC)**

RESPONSE: Agreed. The flow chart entitled "Leakage Risk Assessment for Reforestation Projects" has been edited.

170. The draft protocol instructions for quantifying net changes at other affected GHG sources beyond carbon stocks, despite stating earlier that, "the reporting of all other types of GHGs, as identified by the Kyoto Protocol, is optional for forest projects." As presented, these statements could cause significant confusion regarding the GHG sources necessary to quantify for forest projects. Equator recommends that CCAR revise the guideline to provide further clarity regarding the calculation and reporting of these other GHG sources. **(Equator)**

RESPONSE: Agreed. The first paragraph in Section 5 has been edited to provide clarity regarding the reporting of other GHG sources such as those associated with direct emissions from mobile combustion.

171. This assumes that the only type of leakage that can occur is change from one land use to another. What about leakage from one area to another – i.e. one forest area may be conserved and another harvested, how does this figure into the analysis of leakage? Perhaps this is only an entity wide consideration.

The analysis chart on page 12 seems to not consider "economically unviable" grazing land in the analysis. The difference between commercially unviable cropland (0% risk of leakage) and grazing land that can be either commercially viable or unviable (up to 50% risk of leakage) seems unduly large. **(MGM)**

RESPONSE: Activity shifting leakage, such as shifting harvest or conversion, from one forest area to another is considered in the analysis of Improved Forest Management projects and Avoided Conversion projects.

The analysis chart in Section 6.1.2 has been revised to account for the economic viability of grazing land.

172. The econometric modeling of Murray and others cited by the draft protocol makes more sense than arbitrarily assigning a leakage rate. However, one also needs an emission rate for the leakage. Specifically, section 6.1.2 states that the leakage rate for afforestation of cropland shall be 24%. The question is then what emission occurs per acre of land converted to cropland. The only comprehensive land conversion information I have found for the US is old National Resources Inventory analysis that shows that much of the land converted to cropland comes from pasture or grassland, not forest. This data matches what we see when we travel around the country, or talk to farmers. The question then becomes one of estimating the loss of carbon occurring when grassland or pasture is converted to forest.

I recommend that CCAR calculate a default weighted average emission rate for US lands converted to forest, weighting the proportions of lands being converted to cropland from various land cover types, times the average expected carbon emissions for each type of conversion. **(Ecofor)**

RESPONSE: Noted. The citation for the leakage risk is provided in the diagram. Further modifications to the estimates of leakage will be included in the final draft resulting from consultation with Dr. Murray.

173. It is suggested that if non-forest related emissions can be reasonably estimated to be less than 100 tonnes or less than one percent of annual carbon reductions (whichever is smaller) then these emissions should be considered de minimis. **(Cantor)**

RESPONSE: Noted. A table outlining which secondary effects are required for each project will be updated in the final draft. The parameters of "less than 100 tonnes or less than one percent of annual carbon reductions (whichever is smaller)" will be considered as an assessment of significance in the determination of which secondary effects will be required.

174. Obtaining detailed information from contractors to calculate Mobile Emissions from Forest Management activities may be difficult. The amount of Carbon emissions from commercial logging represents only 1 to 2 percent of the amount of Carbon removed from a forest stand. It would seem like some general rules of thumb could be developed for emissions from various forest treatments on a per acre basis. **(T. Collins)**

RESPONSE: See the response to Public Comment # 173.

175. What about the use of fertilizer and other non-biomass and non-combustion related emissions? **(Terra Global)**

RESPONSE: The final draft protocol will provide a table of sources and sinks to be considered for inclusion into the project's GHG assessment boundary. The final draft will also include a eligibility prohibition for projects that broadcast fertilizers until accounting guidance can be developed.

176. The values provided for leakage for reforestation projects, are based on limited research and should only be used as a default in the absence or more defined and project appropriate data that can be provided by the project developer. It should be clearly specified, how project developers can provide and use numbers based on research and data other than those provided here. These could lead to significant mis-estimation for some projects. **(Terra Global)**

RESPONSE: Noted. The leakage estimates were derived from US EPA data and consultation with leading experts in leakage. The methodology in the FPP is the result of work group discussions over what kind of assessment would be both a reasonably accurate representation of project leakage and a feasible calculation for the project developer from readily available sources of information. A standardized approach will be required for all projects. The goal of developing leakage estimates is to ensure that project reductions are not over-stated. Over time, if alternative assumptions and data are presented to Reserve staff, they will be reviewed in light of making appropriate modifications and updating the FPP.

177. It is unclear what is the test for "commercial viability"; this should be defined clearly. **(Terra Global)**

RESPONSE: "Commercially viable" is defined in the FPP as "profitable either without subsidies or with a reliable, long-termed sustained form of subsidies." The assessment of commercial viability shall be determined by analysis of comparable practices within the assessment area on comparable conditions (slope, soils, access to markets, etc.)

178. Looking to the acres under forest cover for a entity and assuming anything > 5% implies leakage, does not specifically allow for a number of factors that could explain changes in forest cover acres other than leakage. These should be clearly outlined, specified as adjustments that can be made to the 5% test. **(Terra Global)**

RESPONSE: Noted. The FPP no longer includes the requirement for tracking entity acres by forest cover type to assess onsite activity shifting leakage for Reforestation Projects.

179. Define "forest cover type". From table 6.1, it seems to be only forest/non-forest, or does it also include forest strata? **(Terra Global)**

RESPONSE: Noted. The FPP no longer includes the requirement for tracking entity acres by forest cover type to assess onsite activity shifting leakage for Reforestation Projects.

180. This section is extremely confused. The overall organization and requirements are unclear. Many significant terms are introduced without being defined. How is commercial viability determined? How is "historically dominant economic activity" determined? What is leakage risk? How is Table 6.1 completed and how are the results used? **(NRDC)**

RESPONSE: Noted. The following two definitions are now included in the Glossary:

"Commercial Viability": Capable of success or continuing operations with an adequate return; practicable for the investor or landowner."

"Historically Dominant Economic Activity": Activity that has predominated on a specific landscape at a minimum of 15 of the last 20 years and provided some level of income for the landowner.

Leakage risk is a term used in the title of the flowchart in Section 6.1.2. This flow chart is an assessment of a somewhat *uncertain* potential increase in emissions that may be an indirect result of project activities, hence the term "risk." The FPP no longer includes the requirement for tracking entity acres by forest cover type to assess onsite activity shifting leakage for Reforestation Projects. Language in this section has been edited for clarity.

6.2 Improved Forest Management Projects

181. Re-title Section 6.2 as "Sustainably Managed Forest Projects," and make necessary conforming changes to this term throughout the document. This would bring this section, and its subsections, into alignment and harmony with the concerns and recommendations made concerning Section 3.1 Additionality, above, and with the comments concerning the estimation of the baseline, that follow below. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. Due to the wide variety of definitions for "sustainably," the work group has decided to stick with the title of "Improved Forest Management" for projects employing natural forest management practices and promoting and maintaining native forests. Improved Forest Management is a common name for forest management projects that provide project-level climate benefits.

182. The protocols state that with above average stocking levels cannot reduce stocking levels below the baseline high levels (6.2.1.1-2, p.14). The protocols require a 100 year agreement from the landowner and their heirs and assignees to continue practices that maintain and possibly increase stand stocking in order to increase carbon storage. The worksheet for the Leakage Risk Assessment for Improved Forest Management Projects (IFMPs) assumes that a harvest rate of 2% is the sustainable harvest that would lead to a high level of carbon storage. However, since much of the higher quality timberland in the state is growing at 3% - 5% or more per year, the assumed harvest rate would be significantly below a potential sustainable level. This means that the forest lands covered under an "improved forest management project" could quickly exceed healthy stocking levels. For nearly all forest types, there is a limit to the amount of biomass that can be grown on a parcel of land and once that limit is reached, tree and stand mortality may ensue. A mechanism for modifying the Leakage Risk Assessment worksheet would allow for the appropriate calculation of leakage risk. **(NorCal SAF)**

RESPONSE: The FPP definition of leakage is in agreement with the general concepts raised in the comment. However, it is assumed that additionality could be demonstrated by a harvest that was closer to growth rates associated with forest conditions managed near the point where overall growth of the forest declines, such as the culmination of mean annual increment. A growth rate of 2% (boardfoot volume across all forest stands in project area) will be used as a proxy for when this point is achieved. No leakage would be considered for forests with growth rates that exceed this value. Harvesting this growth rate would demonstrate a sustainable harvest level from a forest that is storing an assumed optimal level of carbon in working forests. A growth rate that is higher than this amount would indicate a forest that is younger than culmination of mean annual increment and not storing as much carbon as optimal in working forests. The leakage assumption is applied when forests are grown beyond the culmination of mean annual increment and no longer providing the volume of wood products that could be sustainably supplied, leading to an assumption that this volume is being harvested elsewhere.

183. We have two conflicting issues here. One the one hand, for an offset to be real it must be additional to what would have happened in the absence of the offset project. Two, we wish to reward landowners who do ecologically desirable forest management and sequester carbon in their forests.

Because motivation is inherently impossible to determine with certainty, it is better to implement policies that do not require determining the motivation of landowners. Determining the additionality of forest management is particularly problematic—much more so than for afforestation/reforestation. For forest management, avoiding having to assign motivation means using a policy approach other than offsets. Each land parcel could be assigned a baseline carbon stock and if the actual carbon stock goes above the baseline, the landowner would receive tradable credits. However, to avoid the necessity of determining motivation, if the carbon stock goes below the baseline, the landowner should have to surrender allowances for the lost amount of carbon stock.

It is not within CCAR's power to establish forest carbon crediting system where all lands are required to participate. So the question becomes whether it is possible to develop an acceptable accounting system for forest management projects where landowners voluntarily choose whether or not to opt into the offset system. In the absence of an effective method for determining the additionality of forest management offsets, I recommend that CCAR defer granting of forest management offsets until a reliable system can be implemented. [See Ecofor public comment submission for greater detail.] **(Ecofor)**

RESPONSE: Noted. The baseline methodology employs a modeling approach reflecting both site-specific economic and legal drivers as well as common practice within an appropriate geographic assessment area. Common practice is determined by an analysis of USDA Forest Service Forest Inventory and Analysis program (FIA) data. The approach is designed to yield an estimate of baseline carbon stocks that is appropriate and conservative when applied to individual projects, without attempting to assess individual landowner motivations. As an added conservative measure, landowners are required to maintain and/or increase stocks of live trees for the duration of the project. The FPP work group is confident that the baseline method provides a reasonable and credible system for establishing real and additional CRTs from forest management projects.

184. We suggest you provide greater clarity in this section regarding the extent to which projects with initial carbon inventories below the applicable FIA mean can receive CRTs for project-related sequestration. It is not clear to us if projects will produce credits between project initiation and the time at which stocks reach the applicable FIA mean. **(NF)**

RESPONSE: Noted. The section has been edited for clarity. Projects will be able to produce credits between project initiation and the time at which stocks reach the applicable FIA mean subject to demonstration that the baseline stocks exceed legal thresholds and have not been reduced more than 20% over the past 10 years.

185. A financial analysis is mentioned as a requirement of establishing a project baseline however little guidance is provided as to what constitutes an acceptable financial analysis. In these current tough economic times predicting (100 year model) economic rates of returns into the

future is speculation at best for traditional forest commodities such as wood and fiber. To further compound this speculation the project developer is required to financially justify the baseline using the new emerging carbon offset commodity which has no relative historical economic perspective. Furthermore, financial feasibility differs between entities. What may be feasibility to a non-profit organization may not be feasibility to a for profit organization.

Please provide guidance as to what constitutes the minimum standards of a Financial Feasibility Analysis.

Please define what constitutes a financially feasible project? **(FCO)**

RESPONSE: Determination of economic feasibility is required as part of the baseline analysis with Improved Forest Management projects to ensure that a baseline approach is a reasonable scenario within the assessment area. The analysis is intended to encompass flexible mechanisms to meet this test due to the variety of organizations, volatility of prices, and other points raised in the comment. Further guidance will be provided to clarify the approach in the final draft.

186. Emissions related to managed forests and land management should not be regulated or included under a cap and trade program. Forestry practices should be eligible to participate voluntarily in offset programs on a project basis. All existing GHG international protocols treat forestry in this manner. **(AF&PA)**

RESPONSE: Noted. This is beyond the scope of the FPP development.

187. We recommend that the FIA data idea be scrapped or made optional only for project years prior to 2009 (i.e., only in the limited instances of projects with historical start dates from 2001-2008) in determining the project baseline carbon stocks. Years covering 2009 forward should require site visits and annual reporting. **(TPL)**

RESPONSE: Noted. All projects require site visits and annual reporting. The FIA data is used as an unbiased and objective method to assess 'common practice,' which is useful in indicating whether baseline harvesting is probable, as well as providing a conservative lower bound on the estimation of baseline harvesting on sites with initially high stocks.

6.2.1.1 Private Forest Lands

188. My recent use of the FIA data in analysis of 1300 plots in oak woodland and forest types in California suggests that 38% of plots in those types include "non-forest inclusions" or understocked areas1. We also have documented that oaks woodlands are at risk throughout the state2, and that there are substantial efforts underway to restore oak woodland habitat. As part of my work with the California Oak Foundation we are always trying to encourage restoration of oak woodlands. Such efforts could be certified under the CCAR Forest Protocols as Reforestation, Improved Forest Management or Avoided Conversion, or, in some cases, under the Urban Forest Protocols. I therefore would hope that the new CCAR protocols are

designed to provide incentives that encourage the restoration, regeneration and protection of California oak woodlands and hardwood rangelands. **(T. Gaman)**

RESPONSE: Agreed. The FPP was revised with these forest types in mind. Oak woodlands will have their own measures of common practice which will assist in baseline determinations.

189. [Landowners is supportive of] An average per acre volume of carbon can be determined for all private ownerships in each forest type based upon Forest Service FIA plots throughout the state. **(Landowners)**

RESPONSE: Noted.

190. USDA FS Forest Inventory and Analysis (FIA) is not a very detailed data spread. Using this for a baseline may be difficult to apply on such a large scale. There are no national forest practice rules or standard to use as a baseline, but a good suggestion would be to make every state create forest practice laws. **(Terra Global)**

RESPONSE: Noted. It is impractical for the Reserve to expect state forest practice laws to provide a standardized baseline methodology. It took 40 years for California's Forest Practice Rules to reach the condition they are in today and attempting to export the rules to other states would be unworkable. The FIA data is not a "baseline" as stated in the comment. It is used for each assessment area as an objective and unbiased measure of common practice. Assumptions about additionality can be made by looking at project stocks above the FIA mean. These stocks are considered at risk of being reduced due to the value that could be obtained from harvest, provided the tests of economic and legal feasibility are met.

191. The statement "forests with above-average stocks", is this similar to the concept on p 15 for "projects whose initial project inventories exceed the applicable mean"? If so, use consistent terminology. **(Terra Global)**

RESPONSE: Agreed. The FPP has been edited to use consistent terminology.

192. Don't understand point 1, at the top of the page. What does "programmatically" assessing common management behavior mean? **(Terra Global)**

RESPONSE: The word "standardized" is more appropriate than "programmatic." This will be clarified in the final draft. The FIA mean for each assessment area is a standardized methodology for assessing common practice (or management behavior).

193. Replace ”standing live carbon stocks” by “standing live baseline carbon stocks” to avoid any confusion. **(Terra Global)**

RESPONSE: Noted. The final draft will consider how the description of baseline and references to standing live carbon stocks can be as clear as possible.

194. Clarify here whether the “applicable assessment area mean” is calculated solely based on the FIA data. **(Terra Global)**

RESPONSE: This is correct and further clarification in the document will be provided.

195. The “in addition” part allows one to choose between a or b, or must one go forth with the most conservative of the two options? This is unclear. **(Terra Global)**

RESPONSE: The paragraph beginning “In addition…” which describes further constraints for baseline characterization of Improved Forest Management projects whose initial project inventories are below the applicable mean, indicates that initial baseline levels of standing live carbon stocks must be modeled as the *higher* of the two options, a or b. Examples will be provided in the final draft to provide further clarity.

196. We recommend eliminating references to BAU modeled baselines in this section. Once completed, the “Required Modeling Procedures” may help clarify this section. In the meantime, inclusion of illustrative examples of baseline and creditable carbon stock levels would be extremely helpful to the reader. **(AF&PA)**

RESPONSE: Agreed. Examples will be provided in the final draft to provide further clarity.

197. Please clarify why is there a requirement that carbon stocks cannot go below certain levels? In section 6.2.1.1 there are additional constraints, described below, that depend on the initial forest inventory to ensure conservative calculations.

1. Forests with above-average stocks and forests and forests with below-average stocks have different baseline projections based on programmatically assessing common management behavior.
2. For forests with above-average stocks, the modeled baseline activity cannot deplete stocks below the landscape average established by Reserve, even if such activity might be legal and feasible.
3. For forests with below-average stocks, the average stocks for the baseline activity cannot fall below the initial stocks.

These requirements are unnecessary as the Reversals section (Section 7) requires that landowners must compensate the Reserve for reversals. **(AF&PA)**

RESPONSE: The intent of the language in Section 6.2.1.1 is to describe the characterization of a baseline analysis, which serves as the reference point against which project carbon stocks are compared for the purpose of calculating net sequestration and issuing CRTs. Landscape average stocking levels, as determined by FIA data, are considered an unbiased and objective measure of common practice. Project stocks that exceed this level are determined to have a high probability for harvesting activities in the baseline scenario that would reduce stocks; as a conservative measure, baseline carbon stocks may not be modeled to fall below this level. For projects where the initial stocks are below common practice, the baseline may be modeled as a continuation of the current stocking levels, subject to demonstration that there are no legal requirements to increase these stocking levels.

198. The language, "must maximize timber values" may conflict with common management practices in project assessment area outlined in section 3.1 - Additionality. Proposed language: Baseline stock changes must be modeled pursuant to all applicable laws, regulations, and permanent legally-binding commitments in effect at the project site at the time of project initiation. These legal constraints include:" **(Cantor)**

RESPONSE: Agreed. The language will indicate that baseline modeling shall be conducted pursuant to all applicable laws, regulations, and permanent legally-binding commitments in effect at the project site at the time of project initiation.

199. Proposed language change to page 15 under 'Additional constraints' change in italics [Please see justification in public comment document.]:

> Additional constraints must be applied to baseline projections to foster conservative estimates. These additional baseline constraints are as follows:
>
> > 1. For projects whose initial project inventories exceed the applicable mean (as defined in Section 10) for standing live carbon within the assessment area: The modeled standing live carbon stocks cannot go below the higher of:
> >
> > > a. the applicable assessment area mean of standing live carbon stocks, or
> > >
> > > b. the lowest level allowed by regulatory, physical, or economic constraints.
> >
> > 2. For projects whose initial project inventories are below the applicable mean: The modeled standing live carbon stocks cannot go below the higher of:
> >
> > > a. carbon in the current standing live stocks, or
> > >
> > > b. the lowest level allowed by regulatory, physical, or economic constraints.
>
> In addition, projects whose initial project inventories are below the applicable mean must document any changes in the project area's inventory over the preceding 10 years from

a starting point no earlier than April, 2008. Initial baseline levels of standing live carbon stocks must be modeled as the higher of:

a. the project area's initial inventory of standing live carbon stocks, or

b. 80% of the highest inventory levels documented for the preceding 10 year period *or since September, 2007 for projects within California, and April 2008 for projects outside California, whichever period is shorter.*

3. All projects must provide evidence of activities similar to the proposed activities in the baseline within the past 15 years in the assessment area undertaken on the subject property or on properties with similar legal, physical and biological conditions. This supporting evidence shall be subject to a test of reasonableness by the verifier.

(Cantor)

RESPONSE: The FPP will retain the 10-year look back as written as a standard for all projects. Additional objective criteria will be provided to facilitate demonstration of the financial test that requires identification of similar projects. These criteria will also assist verification review. The final draft will be revised to clarify that if a Project Developer is unable to meet the financial criteria, the project's baseline will be the starting stocks, or legal reference point, regardless of the project's relationship to 'common practice'.

200. The issues raised by the proposed FIA baseline approach go far beyond the cursory discussion in the Draft. In order to adopt this approach there needs to be an analytical basis that demonstrates how the FIA survey, which was developed to track national forestland trends, can be used to provide baselines for specific forest projects. In particular, the protocols need to show how FIA data can be used to define a representative baseline for a forest project given the particular forest type and site characteristics (e.g. elevation, aspect, slope, etc.). Assuming that a representative baseline can be defined, the protocols also need to provide a clear and unambiguous algorithm by which the baseline will be determined for each project to preclude the possibility of selecting a baseline that maximizes reductions. In other words, both "applicable mean" and "assessment area" need to have a complete operational definition that minimizes uncertainty and the potential for gaming. **(NRDC)**

RESPONSE: The FIA data provide an unbiased and objective indicator of common practice which is used in the baseline determination but is not the baseline itself. The write-up on the FIA baseline approach has been expanded and terms defined in the final FPP draft document.

201. How is economic feasibility defined and determined? Physical feasibility? **(NRDC)**

RESPONSE: Additional objective criteria will be provided to facilitate demonstration of the financial test that requires identification of similar projects. These criteria will also assist verification review. The final draft will be revised to clarify that if a Project Developer is unable to meet the financial criteria, the project's baseline will be the

starting stocks, or legal reference point, regardless of the project's relationship to common practice.

202. The FIA survey is designed to track forest trends at a national level rather than to provide baselines for individual stands. How does this proposal address the potential lack of statistical confidence from using FIA data to represent specific stands, particularly in heterogenous regions and/or where ownership is highly concentrated? A recent study (Nicholas Institute 2008) has shown that it is possible to obtain widely disparate results possible by adjusting the FIA sample used to determine the mean. More generally, how will the protocols ensure that the sample of FIA plots used to determine the mean for each project is accurate and unbiased? **(NRDC)**

RESPONSE: FIA data is used as a measure of common practice across a broad assessment area which is based on forest communities within geopolitical boundaries and defined by the Reserve. The FIA data is not referenced with stand-level data in the FPP. Analysis using sample plots is done with landowner data that must meet the confidence targets identified in the FPP.

203. Is the applicable mean fixed for each project over time based on the value at project initiation? Why? **(NRDC)**

RESPONSE: The applicable mean is derived from the U.S. Forest Service Forest Inventory and Assessment (FIA) data in the defined assessment areas. The FIA mean is determined by the Reserve for the assessment area as a measure of common practice and remains the measure of common practice for the crediting period. The FIA mean will be updated periodically for each assessment area and will serve as an updated indication of common practice for new projects. Also, the term 'applicable mean' will be phrased as common practice in the final draft.

204. Why must "additional constraints … be applied to foster conservative estimates?" Instead of conservative estimates, shouldn't the objective be to foster accurate estimates? **(NRDC)**

RESPONSE: Because there is always some uncertainty in modeling baseline carbon stocks, these constraints have been added to ensure that credited reductions are not overstated, using a comparison to common practice on similar lands in the same geographic area, as well as a legal analysis and economic feasibility analysis for each project.

205. Why are the additional constraints imposed only on "standing live carbon" stocks? Why aren't there constraints on the other carbon pools? **(NRDC)**

RESPONSE: The terms linked to the standing live carbon stocks (live trees) are set to ensure that the live trees are generally maintained and/or increased throughout the project life. The work group desires to demonstrate a high degree of transparency around the accounting of live trees, since many forest co-benefits as well as the permanency of forest carbon, is linked to live trees. Additionally, the condition of live trees is a good indicator for the health and the long-term recruitment potential of other carbon pools.

206. For the third requirement in this section, why is option b) set at 80% of the highest inventory levels? Why not 100% **(NRDC)**

RESPONSE: The work group concluded that fluctuations in forest inventories resulting from harvest and growth cycles do not constitute an intentional depletion in anticipation of a forest project, since fluctuations in forest inventories occur as part of background harvesting practices.

207. Estimating the Baseline, subparagraph 3.a, raises additionality issues by seeming to allow a project developer to ignore conservation easements and other binding legal restrictions entered into before project listing. Section 6.2.1.1, Estimating the Baseline, subparagraph 3.a, states: "Previously existing legally binding and irreversible requirements are accepted (sic) if they were put in place after the historical initiation dates as identified in Section 3.2." If the drafters intended the word "accepted" to be "excepted", then this provision raises the same additionality concerns discussed in the preceding comment. It is not clear what atmospheric benefit is obtained by allowing a landowner to ignore binding legal restrictions that constrain their management options. **(TCF)**

RESPONSE: Agreed. The language in Section 6.2.1.1 has been edited to read:

"Previously existing legally binding and irreversible requirements are excepted if they were put in place within a year of the project's start date."

Binding legal restrictions that were put in place up to a year prior to the project's listing date are considered a component of the project activity and not a constraint on what would have happened in the baseline.

208. The FIA inventory system is a national program, designed to provide basic policy level forest data. We are unsure how this FIA data will be applied to smaller regional areas; this is not spelled out in the draft protocols. As such, the issue of baseline is a difficult issue to comment on at this point since the FIA data, and the derivation of regional baselines have not been included with this draft protocol. NCRM recommends allowing two baseline scenarios for project developers to consider at this time. First, as stated above, we believe that the 2007 forest protocol baseline should be used in those instances where it is most appropriate and efficient. In certain instances, however, the FIA based baseline might be the most cost effective means to determine the baseline. **(NRCM)**

RESPONSE: Noted. In order to assure a consistent approach to baseline characterization of live standing carbon pool, the FPP will continue to require that all Improved Forest Management Projects use the methodology referencing the average stocks derived from the USDA Forest Service FIA data. The write-up on the FIA baseline approach has been expanded and terms defined in the final FPP draft document.

209. Interpretation of the FIA can however be subjective and complex. Fortunately the FIA program provides tools for this purpose. The major factor in establishing a baseline in any given forest type will be to select the most appropriate FIA plots among thousands obtained from throughout the state. I would hope that the final protocols would provide some guidance on this process. **(T. Gaman)**

RESPONSE: Agreed. The write-up on the FIA baseline approach has been expanded and terms defined in the final FPP draft document. Additionally, the FIA means for carbon in standing live trees will be provided by the Reserve.

210. The purpose of the new draft protocol is to reward forest landowners for changing their behavior, from "business as usual." As long as forest landowners "business as usual" complies with the project areas applicable forest practice rules, and laws then they should not be penalized from where their property is today. The purpose of the protocol is to encourage a change in behavior to sequester "additional" carbon over time. It should not penalize a landowner for past actions given that those actions were done in compliance with applicable laws and regulations. We do not believe that the protocol should penalize landowners for past practices; the only interest the protocol should consider is how landowner's actions will result in additional, quantifiable carbon sequestration in the future. Proposed language change:

> Additional constraints must be applied to baseline projections to foster conservative estimates. These additional baseline constraints are as follows:
>
> > 2. For projects whose initial project inventories are below the applicable mean: The modeled standing live carbon stocks cannot go below the higher of:
> >
> > > a. carbon in the current standing live stocks, or
> > >
> > > b. the lowest level allowed by regulatory, physical, or economic constraints.
>
> ~~In addition, projects whose initial project inventories are below the applicable mean must document any changes in the project area's inventory over the preceding 10 years. Initial baseline levels of standing live carbon stocks must be modeled as the higher of:~~
>
> > ~~a. the project area's initial inventory of standing live carbon stocks, or~~
> >
> > ~~b. 80% of the highest inventory levels documented for the preceding 10 year period.~~

(NCRM)

RESPONSE: Noted. The purpose of the FPP is to provide standards that ensure that any reductions calculated are real, additional, accurate (conservative where accuracy cannot

be perfected), permanent, and verifiable. The additional constraints on initial baseline levels of standing live carbon stocks are to prevent the FPP from creating an incentive for a landowner to take forest inventory levels down to lower levels prior to initiating an Improved Forest Management project. These additional constraints will remain in the FPP at this time to ensure reductions are additional and conservative.

211. The Baseline methodology is potentially too cumbersome and complex to be effectively applied widely in practice. In particular, the reliance on FIA data to represent an average carbon value for a given forest type is questionable. Not the data itself but the allocation of plots to particular forest types has not, in our experience, resulted in a good representation of that forest type. As its use is fairly limited within the proposed Baseline methodology, we recommend leaving out the FIA mean as an element and instead focus on the fundamental guidance for modeling the baseline stocks, i.e., modeling it consistent with all legal, physical, financial constraints, as described in the draft. **(BBW)**

RESPONSE: Noted. The FIA data provide a reasonable, unbiased and objective method to assess common practice. In order to assure a consistent approach to baseline characterization of live standing carbon pool, the FPP will continue to require that all Improved Forest Management projects use the methodology referencing the average stocks derived from the USDA Forest Service FIA data. The write-up on the FIA baseline approach has been expanded and terms defined in the final FPP draft document.

212. In order to avoid future pitfalls in the review of proposed project baselines, the criteria and methods for conducting financial analysis for project baselines should be fleshed out and be described in more detail. **(BBW)**

RESPONSE: Noted. Additional objective criteria will be provided to facilitate demonstration of the financial test that requires identification of similar projects. These criteria will also assist verification review. The final draft will be revised to clarify that if a project developer is unable to meet the financial criteria, the project's baseline will be the starting stocks, or legal reference point, regardless of the project's relationship to common practice.

213. It is unclear to me how to apply financial, legal, physical and biological constraints to baseline activities when calculating the baseline. **(T. Collins)**

RESPONSE: Noted. Examples will be provided to clarify this issue. The application of financial, legal, physical and biological constraints are meant to improve the accuracy of the baseline characterization. The intention of the FPP is to require the project developer to incorporate these types of constraints to ensure that the baseline scenario does not overstate what would have happened in the absence of the project. This allows for a credible determination of additional net sequestration due to project activities.

214. The terms 'simulation' and 'model' are generally used interchangeably in the document. We would recommend that the terms be clearly defined and distinguished. **(NF)**

RESPONSE: Agreed. The document has been edited for consistency of terms.

215. There are several elements of this subsection that should be expanded or modified to better reflect the nature of privately owned, managed forest lands, and to ensure that projects undertaken on such lands can be developed in a reasonable fashion, while still ensuring that all offsets are real, additional, and verifiable. These are: Reference Basis for Baselines (standing volume at project initiation, average stocks within the project's assessment area, base year approach), Regulatory Additionality, Harvested Wood Products, and Physical and Financial Limitations. [Please see NAFO et al. public comment submission for details.]

The draft document should be modified to (a) allow for the use of different options for determining the baseline of a managed forest project; (b) allow for the inclusion of set-asides when there are uncompensated external benefits; (c) enable all wood products from sustainably managed forests to be considered as additional; and (d) delete the financial limitations requirements in this section, but retain the physical feasibility element to ensure that proposed practices are reasonable. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. In order to assure a consistent approach to baseline characterization of live standing carbon pool, the FPP will continue to require that all Improved Forest Management projects use the methodology referencing the average stocks derived from the USDA Forest Service FIA data. The write-up on the FIA baseline approach has been expanded and terms defined in the final FPP draft document. In addition, Appendix A.5 has been expanded to explain how to account for carbon that accrues in wood products from harvesting.

216. We agree with the minority report submitted by Pacific Forest Trust that the baseline quantification using FIA means is too cumbersome and complex to be applied widely, and that CCAR should provide guidance on how the baseline should be modeled. This comment applies for all forest project types.

Protocol provides no guidance on how projects will be handled once growth slows down and additional carbon sequestration no longer offsets cost of registering with CCAR. Land owners are not likely to register projects if they know it will be a net cost over the long-run, and that the expenses are going to registries and consultants rather than back into the land. Although guaranteeing permanence is critical, reporting and verification requirements and registration fees must decrease over time to encourage greater participation. Or CCAR needs to create specific guidelines for aggregators or project developers who don't own the underlying land.

Modeling of smaller 200-1100 acre projects in the Sierra demonstrate that it is not feasible to continue paying to register, inventory, certify, and monitor annually.

In the Baseline section, this is extraordinarily difficult to understand, and to comment appropriately, we need more specific guidance on how to use FIA data. Will there be a comment period on Required Modeling Procedures? And on the applicable FIA mean?

Is the baseline adjusted every time FIA data is updated? What is the spatial area for calculating the average? How do we account for the unreliability or inaccuracies of FIA data?

Proving physical and financial feasibility poses another obstacle for small landowners. It's impossible to know exactly how these requirements will be to meet without more clarification on the assessment area, but we think this method will prove overly burdensome. Additionally, it seems this method would allow large landowners the ability to "game the system," while making participation by small landowners completely unfeasible/impossible. **(SBC)**

RESPONSE: In order to assure a consistent approach to baseline characterization of live standing carbon pool, the FPP will continue to require that all Improved Forest Management projects use the methodology referencing the average stocks derived from the USDA Forest Service FIA data. The write-up on the FIA baseline approach has been expanded and terms defined in the final FPP draft document. The baseline estimated for a project is valid for the duration of the project's crediting period. The FIA mean will be updated periodically for each assessment area and will serve as an updated indication of 'common practice' for new projects. See Public Comment # 212 for a response with further details on the evaluation of financial feasibility. The Reserve will develop a document that provides guidance for aggregation soon after completing this version of the FPP.

217. Is there a missing word at the end of this sentence? "All improved forest management project activities are analyzed in reference to the average stocks of the live standing carbon pool from within the project's assessment [area?]." **(WS)**

RESPONSE: Agreed. The document has been edited to reflect this suggestion.

218. While the intent of the modeled projected baseline is clear and defensible, the specific methods will need much better definition. Model results depend upon the structure of the model and the values assumed for its parameters. According to the text, "the management scenario must maximize timber values as determined by growth and yield analysis." Is this the value of timber revenues net of costs, or simply maximized timber value? Are these revenues and costs discounted, and if so what is the appropriate discount rate? What is the acceptable range of predicted future prices for timber and for costs of management and operations? Must growth models account for expected responses to climate change and the likelihood of major disturbances? These details can make a HUGE difference in determining the optimal silvicultural activities that define the baseline. Although imperfect in defining "business as usual" for individual properties, it might be preferable to define a standardized baseline by forest type and region and ownership that does not depend on modeling by an individual project applicant, which can be easily manipulated to produce a desired result. **(WS)**

RESPONSE: The approach to baseline determination incorporates a determination of a legal reference point for each project. This can only be determined by assessing the regulatory effects on project-specific inventories. For clarification, the term 'maximized timber value' will be removed and the language will simply indicate that baseline

modeling shall be conducted pursuant to all applicable laws, regulations, and permanent legally-binding commitments in effect at the project site at the time of project initiation. The result of this analysis is not a baseline, but a legal reference to which project stocks are compared to estimate baseline.

219. For projects with low stocks, an initial baseline of at least 80% of inventory over the previous 10 years is a good backstop to prevent gaming by drawing down inventory immediately prior to project initiation. **(WS)**

RESPONSE: Noted.

220. The USDA Forest Service Inventory Analysis (FIA) data used to estimate baselines for improved forest management projects may lead to delays in cases where the US Forest Service Research Station does not have immediate capacity to convert inventory data to carbon stock data. Equator recommends that CCAR allow for some flexibility in such instances, specifically allowing project proponents to use project specific allometric equations to convert FIA plot level dbh and tree height data to carbon**. (Equator)**

RESPONSE: Noted. The Reserve will continue working with the U.S. Forest Service to minimize delays, and manage data gaps and other challenges as they surface.

221. As a project developer, we need clearer guidance on the specific FIA data to be used (e.g. state, by forest type, by soil type, etc.) and where to find it. The data available through FIDO is aggregated by county and not normalized in a way that would be useful for this analysis (e.g. volume/acre or biomass/acre). The Forest Service or another agency should normalize and house the appropriate data so that it can be accessed for carbon offset project analysis. Finally, we would like to have the chance to review the decisions to ensure that the available data is relevant to regional circumstances, forests, and conditions in the northeastern US. **(CC)**

RESPONSE: Noted. The FIA measure of common practice will be provided by the Reserve for each assessment area defined by the Reserve. This is to maintain a standardized and consistent approach. The write-up on the FIA baseline approach has been expanded and terms defined in the final FPP draft document.

222. "There are additional constraints, described below, that depend on the initial forest inventory to ensure conservative calculations.3) the baseline assumptions cannot be assumed to fall below the initial stocks."

It would seem that there would be many cases where the baseline operations could fall below the initial stocks. In those cases where a harvest was planned but not yet executed, wouldn't the stocks fall below initial volumes? **(MGM)**

RESPONSE: The constraint on baseline characterization reads, "3. For forests with below-average stocks, the average stocks for baseline activity cannot fall below the initial stocks." The reason for this constraint is to prevent the modeling of a baseline that is extremely or artificially low. The methodology will result in reasonable baseline levels representative of what would happen in the absence of most projects, without the need to evaluate project-specific motivations.

223. If CCAR chooses to go ahead with granting offsets for forest management projects, the baselines should be different than what is specified in the draft protocol. The harm of issuing non-additional offsets should be lessened by at least requiring that these offsets represent actual tons of sequestration. Specifically, in Section 6.2.1.1 the "added constraints" on baselines should be that (a) if the starting carbon stock is above the "applicable mean" carbon stock, the crediting baseline should be the higher of the starting carbon stock on private lands and the legal minimum carbon stock under NPV maximizing management, and (b) if the starting carbon stock is below the "applicable mean" carbon stock, the crediting baseline should be the higher of the applicable mean and the legal minimum carbon stock under NPV maximizing management.

Also note that modeled predictions of management that maximizes net present value change as the absolute and relative prices of wood products change. Prices used for modeling should be the prices occurring in the year of the vintage of the offset (perhaps some sort of average prices through the year, or the prices observed during the main harvest season, or prices at the middle of the calendar year). **(Ecofor)**

RESPONSE: Noted. The standardized baseline approach is designed to ensure additionality across a wide pool of landowners within an assessment area. It is probable that many landowners, in the absence of the carbon project, would have experienced a decline in carbon stocks related to harvesting or natural events.

The work group sought an approach that considers that, in the absence of the project, project lands would have been managed like other comparable lands in the assessment area. The most unbiased and objective measure of common practice within the assessment area was determined to be achieved through US Forest Service Forest Inventory and Assessment (FIA) data.

The work group developed a policy to address that starting stocks below common practice would not be able to demonstrate a declining baseline regardless of any regulatory rights and economic motivations to do so. Therefore, for landowners below common practice the baseline is the higher of current stocks or any regulatory requirements.

The work group developed a related policy for projects with starting stocks above common practice. Such projects are able to demonstrate a declining baseline to the point of common practice but not lower, recognizing that it is reasonable to assume many landowners within the assessment area will harvest below the assessment area average or common practice. These project types are credited only to common practice, provided they can demonstrate any such decline is legal and economically feasible.

224. Estimating the Baseline (and Appendix A) - We support the baseline approach described in "Recommendations to RGGI for Including New Forest Offset Categories: A Summary presented

by the Maine Forest Service, Environment Northeast, Manomet Center for Conservation Sciences, and the Maine Department of Environmental Protection.

(http://www.maine.gov/doc/mfs/mfs/topics/carbon/docs/pdf/recommendations_to_rggi_0

61108.pdf) From a project developer's standpoint, this approach is more straight forward

(assuming consensus on appropriate FIA data) and incentivizes owners of degraded forests to participate in the carbon market. The approach has mechanisms to guard against gamming and in the long run, will meet the goal of increasing carbon storage capacity of forests. **(CC)**

RESPONSE: The workgroup feels the approach proposed in the FPP balances the need for consistency and clarity with the need to incorporate some site specific factors for accuracy. Also see the response to Public Comment # 223.

6.2.1.2 Public Lands Improved Forest Management Baseline

225. The proposed approach to defining a baseline for public lands fails to provide adequate guidance. The proposal to define baselines based on "common forest management practice" fails to recognize the dramatic changes, reversals and conflict that have characterized federal forest policy for decades. For example, using this guidance, what would be the appropriate baseline to use for a national forest where the USFS proposed a set of policies and regulations but those policies and regulations were rejected by a federal court? What if the decision is being appealed? What if the Obama administration adopts a different policy? Similarly, what are the appropriate budget and plans to use for a state forest for which the available funding has dropped precipitously from previous years? Rather than adopt abstract guidelines the protocols need to provide functional guidance that accounts for real world circumstances. **(NRDC)**

RESPONSE: Noted. The qualitative characterization of a baseline projection described in Section 6.2.1.2 is expected to incorporate the kinds of changes, reversals and conflict that typify public land management. Further, any baseline characterization on public lands is directed to make the assumptions that lead to the "most conservative" (i.e., higher) levels of baseline carbon estimates. Clarification will be added to the final draft that acknowledges that prior to submitting projects on federal lands, federal policy development most occur that includes a public review process. Additionally, the work group will evaluate the need to reduce the crediting period for federal projects to address policy fluctuations.

226. The draft states that the baseline for public lands must be a projection based on historical trends? But the historical trends for our public forests over the past few decades have been dominated by dramatic and frequent shifts and reversals in statutes, policies, plans and activity-based funding. At a minimum, any attempt to project a 100-year baseline would be fairly arbitrary. Given this uncertainty, how can the protocol that an accurate and unbiased baseline is developed for each project? **(NRDC)**

RESPONSE: See answer to Public Comment # 225.

227. Given that the relevant factors will almost certainly have materially changed over the preceding decade, why should the goal be the most conservative baseline? What does conservative mean in this context? **(NRDC)**

RESPONSE: The term "most conservative" in the context of Section 6.2.1.2 is intended to direct the project developer to choose the trend with assumptions that lead to higher levels of baseline carbon stocking rather than lower. This will ensure that net sequestration against the baseline is not overestimated and therefore that the Reserve does not over-issue CRTs. The text of Section 6.2.1.2 has been edited for clarification of this term.

228. While the use of USFS FIA plot data will not be without technical problems, the fundamental concept is legitimate. Presumably, once the data is interpreted, the results will be quantifiable and straight-forward. It will be a "clean" baseline from which to begin. If there is a question that there are not enough plots to generate statistically valid data, then more can be added through time. **(C. Blencowe)**

RESPONSE: Noted.

229. We caution that CCAR consider the long-term implications of the baseline for public lands improved forest management projects. The reliance on policy standards to establish the baseline could cause disproportionate attention to be paid to maximizing carbon sequestration on public lands at the expense of other forest management, ecological, and public benefits. We support promoting policy that holistically addresses ecological integrity and resilience across the landscape. Project future statutes, trends, regulations, plans, and funding is beyond the scope of human ability, and factoring future shifts into the modeling projections is too subjective. **(SBC)**

RESPONSE: Noted. The eligibility of forest-base GHG projects is not expected to cause disproportionate attention to be paid to maximizing carbon sequestration on public lands. If future research shows this is the case, the Reserve will review the impacts for the FPP on this issue.

The qualitative characterization of a baseline projection described in Section 6.2.1.2 is expected to incorporate the kinds of changes, reversals and conflict that typify public land management. The changeable budgets and policies that influence management of public forest lands can be reasonably used to determine baseline trends for the very reason this "predictable" variability has been going on for decades. Further, any baseline characterization on public lands is directed to make the assumptions that lead to the "most conservative" (i.e., higher) levels of baseline carbon estimates. Also see response to Public Comment # 225.

230. Text suggests that the effects of recently-changed policies that affect carbon stocks should be projected into the future to determine a public lands baseline. It seems reasonable that future

policies and legal requirements that affect carbon stocks should also be accounted for as determinants of the public lands baseline. If public lands are made eligible, the public lands baseline should be revised at frequent intervals as policies change, rather than being determined by policies in place at the time of project initiation. **(WS)**

RESPONSE: See response to Public Comment # 225. The work group will consider shorter crediting periods in which the baseline is re-calculated specific to public lands to address this concern.

231. This section should be reconsidered at a later date, after federal agencies have completed a public review process to determine whether it is appropriate for federal lands agencies to enter into offset contracts.

Projections of historic practice on public lands seem misleading as a baseline. Management goals on these lands are subject to public direction, which can change at any time, including in favor of higher carbon stores. In what sense would such a change be "additional" and hence marketable as an offset?

"In the event that such statutes, regulations, policies, budgets, and plans have changed to materially affect the project carbon over the past ten years, the policies outcomes that lead to the most conservative baseline carbon estimates should be used." You may want to clarify that "conservative" in this context means relatively high carbon stocks over time. **(WS)**

RESPONSE: See responses to Public Comments # 225 and # 227.

232. The requirement for project proponents to demonstrate the likely impacts of future legal and financial considerations is vague and does not provide adequate instruction for satisfactorily projecting the predicted effects. Equator recommends that CCAR revise the protocol to include additional instructions on how to properly incorporate these elements into baseline projections. [Please see Equator public comment submission for more detail.] **(Equator)**

RESPONSE: Agreed. The text of the final draft FPP has been edited to address this issue. Also see response to Public Comment # 225.

233. The management of public lands is much more dependent upon policy directives from government agencies than any long-term trend lines. We would suggest including the evaluation of public policy in the analysis rather than just performing calculated estimates of future trends. **(MGM)**

RESPONSE: Evaluation of public policy is expected to be included in the justification of any characterization of a baseline trends as described in Section 6.2.1.2. See response to Public Comment # 225. The work group will consider reducing the crediting period for public lands to manage for fluctuating policies.

234. Public Lands Improved Forest Management Baseline states that "the baseline qualitative characterization shall reflect common forest management practice for the agency and agency

project area." Common forest management practice for a majority of federal lands (e.g. those not in the wildland-urban interface) is continued fire suppression activities. From 2002-2006, with active fire suppression efforts, emissions from wildfire in the US were equivalent to 4-6 percent of anthropogenic emissions (Wiedinmyer and Neff 2007). Several of the forest types in the Sierra Nevada (e.g. mixed-conifer, ponderosa pine, Jeffrey pine) have high fuel loads from decades of fire suppression, producing large emissions if burned by wildfire (Hurteau et al. 2008, Hurteau and North 2009). Including wildfire emissions in the protocol would allow forest managers to reduce fuels and the risk of high-severity fire, which translates into an avoided emissions benefit (Hurteau and North 2009). While mechanical thinning does immediately reduce the live-tree carbon stock in a forest (Finkral and Evans 2008, North et al. in press), recent research has shown that over a relatively short period of time the understory community recovers, and the remaining trees sequester more carbon, bringing the carbon stock much closer to unthinned forest stocks (Campbell et al. 2008). Additionally, this reduction in carbon stocks makes the forest more resistant to high-severity fire (Finkral and Evans 2008, Hurteau and North 2009, North et al. in press). If treatments are strategically placed, only 25-30% of the landscape needs to be treated to reduce fire severity and spread, protecting high forest biomass locations and their carbon stocks (Brown 2008). The potential risk of loss due to high-severity fire can be quantified using publicly available data (Hurteau et al. 2009). The risk of loss due to fire can then be incorporated into planning to determine the carbon benefit and market value of fuels reduction treatments. **(Hurteau et al.)**

RESPONSE: Noted. The benefits of forest management treatments to reduce fire severity and spread are recognized in the FPP in the required risk assessment in Appendix C. On-site wildfire risk mitigation through activities such as mechanical treatments will lower a project's required contributions to the Reserve-administered buffer pool, which is designed to insure against reversals due to natural disturbances (including fire). The Reserve is gathering research to further develop and incorporate appropriate risk and risk mitigation assessment in the FPP.

6.2.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources

235. The percentages in this section are forest type and region-specific; there should be an option and guidance for use of other numbers for different forests and locations. **(Terra Global)**

RESPONSE: Noted. The percentages used are a reasonable proxy for growth rates across a wide variety of forest types and regions at culmination of mean annual increment.

236. Replace "board feet" by "timber", the unit of measurement does not matter, it is assumed that the "board feet" was added to distinguish timber masses from biomass? **(Terra Global)**

RESPONSE: Noted. The work group will consider the effect of replacing board feet with biomass. The 2% is based on board feet. Any change in terms will require further investigation.

237. Figure contains "standing live pool", is this equivalent to the "above-ground living biomass" defined earlier? Consistent terminology is required to minimize confusion. **(Terra Global)**

RESPONSE: Noted. "Standing live pool" explicitly references trees while "above-ground live biomass" includes herbaceous understory and shrubs. These terms are defined in the FPP glossary.

238. The test of harvest volume within the entity but outside the project is not a reliable test for leakage. There could be other reasons unrelated to the project results in an increase in harvest such as increased demand. **(Terra Global)**

RESPONSE: Agreed. The test of harvest volume within an entity will be removed from the final draft. It will be replaced with a requirement to demonstrate non-declining timber management, with some exceptions provided, through 3rd party certification, state or federally- sanctioned management plans that demonstrate non-declining timber management, or adherence to minimum canopy cover levels, as described in the revised criteria for natural forest management.

239. We address internal leakage in our comments above on entity-wide reporting. The current assessment test for external leakage is arbitrarily complex and does not address substitution away from wood products, as it claims in the introductory part of this section (6.2.2). As it is unlikely that a single project will affect supply at levels that could be readily discerned nor would it make sense for any project originator to have to evaluate its own effect and that of all other pending projects, external leakage should be addressed through market assessments at the state or regional level. We also note that the external leakage adjustment methodology for avoided conversion projects is inappropriate and does not reflect the real changes to the carbon to the atmosphere as development will likely relocate. **(AF&PA)**

RESPONSE: The FPP effort to define leakage is in agreement with the general concepts raised in the comment. However, it is assumed that additionality could be demonstrated by a harvest that was closer to growth rates associated with forest conditions managed near the point where overall growth of the forest declines, such as the culmination of mean annual increment. A growth rate of 2% (boardfoot volume across all forest stands in project area) will be used as a proxy for when this point is achieved. No leakage would be considered for forests with growth rates that exceed this value. Harvesting this growth rate would demonstrate a sustainable harvest level from a forest that is storing an assumed optimal level of carbon in working forests. A growth rate that is higher than this amount would indicate a forest that is younger than culmination of mean annual increment and not storing as much carbon as optimal in working forests. The leakage assumption is applied when forests are grown beyond the culmination of mean annual increment and no longer providing the volume of wood products that could be sustainably supplied, leading to an assumption that this volume is being harvested elsewhere.

We agree to the second point about external leakage adjustment methodology for Avoided Conversion projects. This leakage methodology will be adjusted to reflect the

higher risks (above county averages) associated with the Avoided Conversion project type.

240. Calculating emissions from mobile sources involved in forest management activities is administratively burdensome particularly given the minor impact on the net carbon project levels. We have been told by several companies that have examined these emissions that they represent around one percent (give or take) of a pulp and paper mill's direct emissions (but this will of course vary depending on how large the mill's direct emissions are). Furthermore, because the estimates our companies make are usually based on facility or corporate-wide fuel use data, these emissions, to the extent they are direct emissions for the company, are usually included in the emissions totals that we calculate. However, in most cases, these emissions are not direct emissions for the reporting company. Rather, these emissions are attributable to a portion of the supply chain. Collecting such disperse, detailed information for these activities, often contracted out, is unrealistic and unnecessary particularly if only increased emissions are relevant. For example, if longer rotations are proposed in a project, this logically means a net decrease in such emissions as fewer acres will be harvested and replanted annually on a fixed land base. In any case these emissions should be considered de minimis and subject to a threshold under which they are not required to be included in the baseline or annual reporting calculations. Furthermore, emissions associated with mobile sources will most likely be accounted for in the transportation sector of a cap and trade or other climate program. **(AF&PA)**

RESPONSE: Agreed. Emissions calculations are no longer required for Improved Forest Management projects and the FPP work group has developed some general rules of thumb for various levels of site preparation treatments for Reforestation projects available in a look-up table.

241. Since different forests grow at different rates, it is inconsistent to use a pre-determined number of 2%. Using a leakage number which is tied to growth makes the application of leakage more equitable across a multitude of diverse forest types. Although timber supply is inelastic, it is not perfectly inelastic which means a decline of one unit from one site does not result in the increase in production of an equal unit in another; therefore a leakage factor of 75% is proposed. Proposed language change to figure on page 17, change in italics:

> Creation of new non-regulatory No Harvest Zones -> *Determine the forest growth each year after the project start date and multiply by 0.75* (assumed sustainable annual harvest). Enter this value each year for the life of the project. This is assumed to be the annual sustainable harvesting level that has been shifted elsewhere.

(Cantor)

RESPONSE: See the response to Public Comment # 239.

242. Because leakage is highly specific, a single default number or calculation can be no better than an arbitrary estimate. Regardless of which leakage factor is chosen, there will be numerous exceptions to the default assumption. Therefore, project proponents with the means to do so in a well-supported manner should be allowed to propose quantitative, science-based support for

an alternative leakage assumption. Through doing so, it will not only improve the accuracy of project calculations, but will also provide CCAR with several case studies regarding how to handle leakage which will aid in future protocol updates to continue improving the accuracy and applicability of default assumptions. **(Cantor)**

RESPONSE: Noted. The Reserve is very interested in additional science-based approaches and case studies to improve the assessments of leakage. Over time, these will be incorporated in a consistent and standardized methodology.

243. This section includes an apparently unconnected set of provisions, including a requirement to account for process emissions, a leakage risk assessment requirement, and a statement about natural disturbances. **(NRDC)**

RESPONSE: These provisions were connected in Section 6.2.2 because they all address quantification for the secondary effects related to a proposed Improved Forest Management project. Secondary effects were previously defined in the FPP to include:

- **Increases in GHG emissions associated with machinery used in project-related forest management activities (these are no longer required in the final draft).**
- **Other increases in GHG emissions caused by a project outside of the project's geographic boundaries, the measurement of which can be impacted by natural disturbances (this is still required in the final draft);**

The text has been edited to reflect changes in the requirements and for clarity.

244. The leakage risk assessment process is confused, complicated and unsubstantiated. It needs to be simplified. A detailed discussion and explanation is needed. Quantitative requirements need to be justified and substantiated. **(NRDC)**

RESPONSE: See the response to Public Comment # 239. The final draft will contain improved descriptions of the rationale behind the leakage assessment approach.

245. It is unreasonable to make project developers accountable for mobile source combustion to the level of detail required in the protocol. A more practical approach would allow a project proponent to estimate emissions from machinery use using the same assumptions as the baseline, with data collection an option for proponents who prefer not to accept the baseline assumptions. The Protocol should also exclude emissions from machinery if they are reasonably expected to be below a threshold (e.g. 5%) of total carbon reductions expected. In addition, if mobile emissions are captured in another climate policy, they should not be required to be in a forest project. For example transportation fuels will be included in the Western Climate Initiative in the start of the second compliance period, January 1, 2015. The Protocol should allow for excluding these emissions once policies like this are in place. **(Weyerhaeuser)**

RESPONSE: Agreed. Emissions calculations are no longer required for Improved Forest Management projects and the FPP work group has developed some general rules of thumb for various levels of site preparation treatments for Reforestation projects available in a look-up table.

246. Revise the draft text to differentiate between internal and external market leakage, and require that project entities to provide evidence of3rd party certifications to recognized sustainable forest management standards for their non·project lands annually. This will address internal leakage. In addition, revise the draft text to inform project entities that the Reserve will undertake regular studies to monitor the extent to which projects are creating external leakage. The results of the studies should be used to adjust, as necessary, a market leakage discount factor, to which their annual offsets will be subject during the project crediting period. **(Weyerhaeuser)**

RESPONSE: Noted. The final draft will eliminate the requirement for assessment of internal activity-shifting leakage and replace it with confirmation of sustainable management from a third party certification program and/or an agency-approved long-term management plan.

247. The requirement for entity wide reporting to address internal leakage (if project lands are >10% or <90% of ownership) needs to be revised to more realistically reflect the risk of leakage. In reality, the risk of leakage attributed to a particular project is more related to geographic supply chains. For example, if an entity owns land in the west and the southeast, a project located in the west should only report inventories from non-projects lands for their western land and only the portion of western lands that could reasonably be assumed to service the same purposes (forest product mills, recreation, etc). The appropriate reporting boundaries should be commonsensical and can be assessed by the project verifier. The current approach is unnecessarily burdensome and provides no added value in terms of assessing leakage. **(AF&PA)**

RESPONSE: See the response to Public Comment # 246.

248. If the reporting entity includes manufacturing as well as timber growing operations, these activities would be combined and reported under rules comparable to the CCAR General (GHG) Reporting Protocol, in a voluntary consolidated account. Any increases in carbon stock should be considered credits and similarly, any reductions in carbon stock should be considered emissions. Consolidated registrations would be held to net changes (increases and decreases) from a consolidated baseline. Note that for an entity reporting under this scenario the Forest Project Protocol would be unnecessary. **(AF&PA)**

RESPONSE: Noted. The FPP explicitly addresses the emissions and reductions associated with forest management activities on forestlands. Consolidation of the reporting and accounting with non-biological emissions from manufacturing are outside of the current scope of project-level accounting in the FPP.

249. In order to avoid unnecessary and expensive carbon accounting, it is important that such entity-wide reporters have the option to be exempt from reporting carbon fluxes from forests (not included in a project) that are sustainably managed. This is based on the fact that carbon stocks on sustainably managed forests are likely to be stable or positive over time. This provision would allow entities to avoid expensive carbon accounting and verification procedures on land that likely will have de minimis changes over time. This reporting option for lands certified to a sustainable forestry standard, such as the Sustainable Forestry Initiative, Forest Stewardship Council, Canadian Standards Association Sustainable Forest Management certification, or the American Tree Farm System, has been adopted by the Department of Energy's Voluntary Reporting of Greenhouse Gases 1605b Program. **(AF&PA)**

RESPONSE: Noted. The purpose of the FPP is to account for specific project-level management activities that have climate benefits and can be used as offsets in a voluntary market. Also see response to Public Comment # 246.

250. The 2% estimate of leakage for the creation of preserves should be based on the carbon in the wood products (with calculations for decay) this growth would create rather than on the forest growth itself. **(J. Cathcart)**

RESPONSE: Noted. While we agree that there is a disparity between timber biomass and wood products biomass, any leakage effect would result in a timber shift of 2% equal to the same in wood products.

251. Section 6.2.2 should treat secondary effects separately from leakage. The text is confusing and it appears duplicated under Section 6.3.2. **(J. Cathcart)**

RESPONSE: Agreed. The text has been edited for clarity and to reduce duplication.

252. This leakage assessment tool provides for the use of good metrics, for example - increasing average harvest age of commercial species. (**WWF)**

RESPONSE: Noted.

253. The requirement to have a landowner submit inventory estimates for all other lands the entity owns that are not in the project is unnecessary, and simply adds a reporting cost to landowner operations, and a data management cost to the government. The requirement fails to recognize that forestland owners are already obligated to comply with sustainable forest management practice laws and rules and/or well-established best management practices. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: See the response to Public Comment # 246.

254. The benchmark of using a harvest volume increase of 0.5% within the entity outside the project area as in indicator of likely internal leakage is also too restrictive. It fails to allow for situations wherein landowners may have been increasing volumes above their standard rotation baseline on their non-project land as a business strategy, seeing to take that increased volume of larger, higher grade wood to market in the future. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: See the response to Public Comment # 246.

255. This internal leakage monitoring approach should be eliminated, and replaced with a requirement that project entities have their entity-wide lands subject to annual 3rd Party certification to recognized sustainable management standards. This alternative approach, in conjunction with the need to comply with state forest practice rules and/or BMP requirements, should be sufficient to ensure that non-project lands are not overharvested to compensate for volumes taken out of harvest by the project's requirements.

To complement this change, a supplemental assessment of statewide and/or multi-state regional harvest volumes to assess market leakage could be developed by the state on a biennial basis. The assessment could include:

Consideration of long term changes in an entity's harvest rates above and below the mean FIA values for the region,

Adjustments for changes in inventory methods and accuracy,

Force majeure events having a statistically significant effect on standing volumes, and

Land use changes outside of the project area but within the affected region that added and removed forest volume.

This type of biennial assessment should be carried out as part of a state's due diligence governance process for a forest-based offsets program. This would be particularly appropriate, in that such a program, as that described by the CCAR draft, would likely include publicly as well as privately owned forest lands. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: See the response to Public Comment # 246. State programs may be able to contribute to leakage assessments in the future. Until such programs mature, the FPP will estimate leakage through a risk-based approach.

256. Demand for wood products is not always inelastic relative to supply. This is not a safe assumption. However, *wood products as carbon sinks should be accounted for on the demand side of the equation, not as part of the forest project protocol*.

Only projects that constitute 10-90% of the entity's area are required to submit inventory estimates? This puts unfair excess burden on small landowners who are likely to register

projects of this size. Additionally, sampling activities are NOT likely to be an on-going activity for most forest landowners. The sampling requirements too, should be reduced for small non-industrial timber operators or other landowners who do not plan regular or any commercial timber harvests. **(SBC)**

RESPONSE: Noted. However, since mechanisms to address wood product carbon on the demand side currently do not exist; wood product accounting is included in the FPP. Excluding wood products from the "without project" baseline (which is usually more harvest intensive) may over-credit the offsets accruing to the "with project" forest management alternative. Ignoring wood products treats all harvest as emissions and credits all reduced harvest as avoided emissions stored on the stump. Accurate accounting of projects that provide climate benefits must account for carbon in wood products or inaccurate measures of reductions will result.

Also see response to Public Comment # 246.

257. A simple rule of thumb for estimating leakage does seem desirable, but the particular leakage formulas included here seem somewhat arbitrary. More background is needed here to understand how to apply leakage percentages.

Leakage Risk Assessment for Improved Forest Management Projects

Point 3: Sustained harvest at 2% of stocking seems like a conservative estimate for commercial operations. For smaller landowners or conservation owners who typically manage less intensively, on the other hand, annual harvest at 2% of stocking may be well above typical "business as usual" volumes, and a leakage formula based on 2% timber yield could penalize these less intensive managers.

Point 4: "The theoretical optimal carbon stocking on managed forestlands occurs when harvest takes place at the point that biomass accumulation in a stand begins to decline." The meaning of this sentence is unclear, it generalizes too broadly, and it is not necessary to the leakage computation. [See public comment submission for further detail here.] Culmination of mean annual increment of live above-ground biomass is often taken to define the optimum stocking that maximizes sustained timber yield (a very different matter from "optimal carbon stocking"). Given financial pressures and short-term management objectives, commercial timber operations often maintain stocking well below this level. So using this stocking level to represent "business as usual" most likely over-estimates the timber flow that is taken off the market due to reduced or delayed harvest. It might be preferable to use the FIA mean stocking by forest type and ownership and region as a standard, and compute "typical" sustainable harvest as 2% of that level. Or since it is really changes from past harvest volume on the project property that is relevant, it might be more appropriate still to use a rolling average of past harvest volumes on this property as a benchmark, and consider reductions below this level to be subject to leakage deductions at some level calculated using market elasticities.

The leakage formulas in the worksheet assume that 100% of reduced harvest is shifted off-site. This would be true only if demand was perfectly inelastic or supply was extremely elastic compared to demand. If this is intended to be a very conservative assumption, that should be stated in the explanatory text, but it will selectively penalize projects that involve reduction or delay of timber harvest, and these projects are most likely to provide important co-benefits.

This worksheet also needs a rule for selection harvest systems. To be comparable to other rules, perhaps as long as annual harvest volume averaged over "x" years equals at least 2% of volume at full stocking (defined consistently with even-aged systems), there is presumed to be no leakage. (**WS)**

RESPONSE: See the response to Public Comment # 239.

Point 3: forest growth of 2% (based on board foot volume) is indicative of a fairly mature forest. The 2% growth rate is a proxy for a favorable balance (for carbon purposes) between sustainable harvest and onsite live tree carbon levels in working forests. Most landowners (intensive and otherwise) are well above this growth rate.

Point 4: The reference to optimal carbon stocking is associated with a working forest landscape. A project that takes a working forest landscape and does not harvest is more likely to shift harvesting to other locations over the long-term than a project that increases the forests stocks closer to a desired carrying capacity for carbon and harvested carbon.

The intent of the approach is to consider leakage as broadly as possible from a timing perspective, such that delaying harvest is not penalized as long as it results in increased production, both of carbon in the forest and harvested carbon, compared to baseline conditions. This interpretation was determined by the work group to be an incentive to increasing ages of forests, without compromising integrity. The approach is designed to work under any silviculture method.

258. Leakage Risk Assessment Flow Chart - Is the assumption that 2% harvest rate (based on board feet) applicable for all forest types? A different percentage should be developed for species and bioregion. **(MGM)**

RESPONSE: See the response to Public Comment # 239. The percentage growth rate will be adjusted on a regional basis by the Reserve with additional data.

259. On Page 17: it should be specified what the 10% means, or a reference should be added to the statistics section**. (Terra Global)**

RESPONSE: Agreed. The text has been edited for clarification.

260. The leakage assessment test and discounting should be eliminated or made more consistent. Internal leakage can be controlled if the rest of the entity's area is certified to a sustainable forest management standard. External leakage should be assessed through market assessments at the state or regional level. The current assessment test is arbitrary and complex and does not address substitution away from wood products as claimed in the introductory part of this section. **(Weyerhaeuser)**

RESPONSE: Noted. The assessment of secondary effects is included in the FPP to provide assurance that any registered GHG reductions reflect a true net reduction in CO_2.

Since secondary effects, such as a shift in harvest or conversion activities will essentially negate the climate benefits of a forest project, it is important to make an estimate of these impacts at the project level. The methodology in the FPP is the result of work group discussions over what kind of assessment would be both a reasonably accurate representation of project leakage and a feasible calculation for the project developer from readily available sources of information. This methodology considers state and regional market factors with a focus on assessing secondary effects to avoid over-crediting.

6.3 Avoided Conversion Projects

261. The 'Avoided Conversion' metrics in Section 6.3 lack the transparency provided by the FIA statistics used in the enhanced forest inventory approach. There is no data provided to show that the ratios provided in Tables 6.2 and 6.3 will provide accurate estimates of the lost forest inventory involved in conversion projects. For example, a forest conversion where the future development will have less than one house per acre may have a fairly limited impact on the amount of the pre-existing forest inventory, or carbon stocks, that are permanently removed. Without any data to support the metrics, it would appear that they could be overly generous in estimating the amount of guaranteed inventory. The 'total forestland acres' in table 6.4 and used in the denominator of the conversion probability seems to include federal forest acres even though any conversion process on federal lands is far less probable than on private forest lands. **(B. Stewart)**

RESPONSE: Regarding Tables 6.2 and 6.3: The work group will review the validity of this methodology and may consider postponing this approach until such date exists where this risk can be substantiated scientifically. The approach is based on the merits of an avoided conversion project that extinguishes or reduces risk associated with conversion.

Leakage estimates associated with Table 6.4: The work group will revise this table to indicate the increased risk of conversion on forestlands suitable for conversion rather than all forestlands combined.

262. Avoided conversion projects should use the adaptive approach where "conversion rates" are set by the reserve by region and the baseline decreases at this rate. Permanently maintaining (and possibly increasing) forest carbon stocks above this baseline as long as it is voluntary (regulatory surplus) should be considered additional. **(T. MCAbee)**

RESPONSE: Noted. The challenge is in developing conversion rates with scientific integrity.

6.3.1 Primary Effect – Estimating On-Site Baseline Carbon Stocks

263. Add guidance on conservation easements. We request more flexibility in the timing of easements and an allowance for projects under conservation easement, where the easement

specifically states that the project is being conserved for climate benefits or carbon sequestration. **(SBC)**

RESPONSE: Noted. The FPP must ensure that project activities are additional. The work group considers the one year period between conservation easement completion and project listing as adequate in terms of demonstrating intent. The FPP allows post-dating to 2001 for one year following the adoption of the updated FPP by the Reserve's Board.

6.3.1.1 Baseline Characterization for Immediate Site-Specific Threat of Conversion

264. The requirement to provide a 100-yr baseline without revising the baseline seems unrealistic. Consider a required baseline adjustment every 20 yr or so. **(Terra Global)**

RESPONSE: Noted. The work group will consider adjusting the crediting period that will re-evaluate baseline conditions periodically for public lands. No discussions have occurred within the workgroup to readjust the crediting period on private lands.

265. For projects with legal restriction but have had illegal activities of degradation and deforestation that will be reduced due to project actions these should also be able to be included. **(Terra Global)**

RESPONSE: Noted. The protocol addresses site specific immediate threats and lands at risk of conversion as project types. Illegal logging is considered a risk to permanency of projects but avoiding illegal logging is not identified as an explicit project type, due to the challenges of meeting project level rigor (additional, verifiable, permanent, etc.) Mitigation activities can take place that reduce the risk profile for projects that are at high risk of degradation from illegal logging. The risk factors and the related mitigation factors are identified under Appendix C.2., 'Management Risk.'

266. Estimated rate and effect of conversion for the project area- Needs more guidance. Since this is a hypothetical situation, it is difficult to measure effects of development and build out. CCAR needs to develop some type of % tool to determine the expected rate of conversion depending on location, similar areas, development plans, etc. **(SBC)**

RESPONSE: Noted. The work group will consider the validity of this methodology and may consider postponing this approach until such date exists where this risk can be substantiated scientifically. The approach is based on the merits of an avoided conversion project that extinguishes or reduces risk associated with conversion.

267. The State of Vermont, through the Vermont Department of Taxes, offers forest landowners the opportunity to enroll their forest land in the Use Value Appraisal (UVA) Program. This Program "enables landowners who practice long-term forest management to have their enrolled land appraised for property taxes based on its value for forestry, rather than its fair market value. In this situation, would it be permissible to use the UVA price in comparison with the recent purchase price (fair market price) to show a disparity in value**? (CC)**

RESPONSE: Noted. The work group is considering the merits of the risk-based approach and understands the logic of using the appraisal process to identify discrepancies in value between forest management and conversion. The risk-based approach will be revised or eliminated.

268. Section 6.3.1, Option 1 - the "immediate threat of conversion" seems similar to "planned deforestation" under the VCS; while option 2 – "assessment of the risk …" is similar to "unplanned deforestation" under the VCS. Consider mentioning these terms for compatibility reasons, with the caveat that "unplanned" means "not immediate planned", as at the most detailed level every conversion is planned. **(Terra Global)**

RESPONSE: Noted. These edits will be considered.

6.3.1.2 Baseline Characterization for Avoided Conversion Baseline, Based on Risk of Conversion

269. Disparity in Value: the threshold of 25% is quite high. We understand the need for a set (conservative) threshold, but 25% seems too high, this is going to exclude many projects and is not consistent with how investment decisions are made, the test should lower and expressed as a percentage of current interest rates. **(Terra Global)**

RESPONSE: Noted. A threshold of 25% was chosen for the FPP because of the need to establish a hurdle for a threat of conversion that parallels actual market behavior. The work group determined that 25% was a reasonable minimum rate when considered with other requirements. A significant disparity in value is required for a forest land owner to make the decision to pursue forest conversion complete with the associated financial risks.

270. This table outlines a set of fixed drivers of deforestation (conversion), but it also excludes important ones that may be specific to an area such as recreation appeal and other factors. The FPP should allow project developers to submit other risk factors and it should provided guidance for incorporation of these into the conversion risk. **(Terra Global)**

RESPONSE: See responses to Public Comments # 261 and # 267.

271. Table 6.3 Even if projects scored maximally on all indicators in Table 6.2, projects are still discounted with 40%. This seems overly conservative. This means that maximally 60% of the gross credits that are potentially available can become carbon offsets, which is a very steep discount. **(Terra Global)**

RESPONSE: Noted. The cap on potential credits available for registered CRTs is reasonable given the uncertainties associated with conversion risk assessment scenarios.

272. Are the credits from avoided conversion projects always spread over 10 years, or can project participants choose this period with documentation? What if during the 100-yr project implementation period the risks to conversion increase; can the "extra" credits be claimed, or are they fixed? **(Terra Global)**

RESPONSE: Credits from avoided conversion are distributed over 10 years for the risk-based approach to avoided conversion. Avoided Conversion projects using the site-specific immediate threat project the estimated effects (including timing of effects) of the conversion that was avoided. There is no consideration for a re-evaluation of risk of conversion during the project life (after the baseline has been defined).

273. The criteria used in the risk of conversion analysis need to be defined in a way that is unambiguous and relatively straightforward to determine. For example, the criteria on proximity to local provisions needs to specify how the proximity will be determined (e.g. 30 minutes at what speed? Starting from where?) and what exactly qualifies "provisions" (e.g. a gas station with warm sodas? Starbucks?) **(NRDC)**

RESPONSE: See responses to Public Comments # 261 and # 267.

274. The current draft provides no substantive support for the proposed criteria and conversion rank values. Are these criteria and values based on a quantitative (or even qualitative) data-based analysis or are they simply based on the working group's judgment? There needs to be adequate support for the proposed criteria and conversion rank values. **(NRDC)**

RESPONSE: See responses to Public Comments # 261 and # 267.

275. The conversion uncertainty only allows a project to achieve the lowest discount if it is judged highly likely to be converted in every category. Even for those projects that achieve this rank there is a discount of 40%. This appears arbitrarily restrictive and inconsistent with the site-specific threat of conversion approach which allows 100% credit. The maximum discount of 60% for a modest change in ranking from the minimum level appears equally arbitrary. **(NRDC)**

RESPONSE: See responses to Public Comments # 261 and # 267.

276. Overall, the risk of conversion approach appears arbitrary and completely without substantive support. It needs to be much better justified, substantially revised, and/or deleted. **(NRDC)**

RESPONSE: See responses to Public Comments # 261 and # 267.

277. A 'bona fide offer' should not be listed here as evidence of demonstrating market value. The requirement for an appraisal is the best approach since it addresses value and is conducted by a third party. **(J. Cathcart)**

RESPONSE: Agreed. For Avoided Conversion projects that use the site specific immediate threat: A bona fide offer helps to substantiate a site-specific immediate threat. The offer can be evaluated in comparison to an appraisal as evidence of fair market value.

For Avoided Conversion projects that use a risk-based approach: A risk of conversion analysis will be substantiated by conversion risk elements identified in the protocols and an appraisal.

278. In areas which timber harvest is permissible, "land use value" could be significantly high. In order to determine this, the landowner would have to perform a timber cruise in addition to the carbon inventory. This will add costs, even if the land is already zoned and appraised for development. CCAR should provide more guidance on how to calculate this if it is necessary.

The table used to calculate risk of conversion should be the sole instrument for calculating rate of conversion. Estimating similar rates of conversion in the area prove extremely time intensive and costly, and in some cases impossible (if one cannot access or analyze historic forest cover data). Table 6.2 (if the below comments are considered) could be used to create a conservative, but accurate rate of conversion. Table C.4 provides are fairly accurate (but conservative estimate of total carbon reductions based on type of forest land conversion). A set rate of conversion, leading to total conversion to the amounts identified in Table C.4 over ten years would hugely simplify and standardize this calculation. **(SBC)**

RESPONSE: Noted. The carbon inventory, specifically the sampling required for above-ground living biomass, should provide the project developer with most of the data needed for an appraisal of timber values on a property.

279. Although the proposed risk discounting (given in tables 6.2 and 6.3 in Section 6.3.1.2) is a creative and interesting proposal, I expect that the proposed method will not stop the problem of crediting avoided deforestation on land parcels that would not have been deforested during the crediting period. I suggest considering econometric analysis of the elasticity of supply of development (similar to leakage analysis of afforestation/reforestation projects), any applying this leakage rate to avoided deforestation projects.

A project could avoid leakage by doing development, but having lower emissions per dwelling unit (or other development "product") than average. If CCAR chooses to credit reducing emissions from on-site development, I suggest investigating the feasibility of promulgating average emissions per unit or per square foot of building, similar to the calculation of "applicable mean" forest carbon stocks proposed by the draft forest project protocol. **(Ecofor)**

RESPONSE: Noted. See responses to Public Comments # 261 and # 267 regarding the risk-based approach. Discussions with experts on the econometric modeling related to leakage have not resulted in definitive approaches at this time. The concept of adopting standardized estimates of emissions associated with specific conversion activities will be considered as the data becomes available.

280. [In regards to Table 6.2] Proximity to population center and to local provisions: With all the second home development in the Sierra, proximity to population centers doesn't seem to determine the rate or risk of conversion. The size of population centers is arbitrary. There is only one town in the entire Sierra Nevada that has over 50,000 people, yet the Sierra has some of the fastest growing counties in California. 3 hours, 30 minutes, etc. are not accurate measures—is this driving time? By air? Total? **(SBC)**

RESPONSE: See responses to Public Comments # 261 and # 267.

281. [In regards to Table 6.2] These formulas may need refinement to fit individual area circumstances. Proximity in hours (assumed by car?) and size of nearby urban areas does not fully capture popularity of some remote second home locations, for instance. Ski areas may experience rapid development even with single-season access. Number of new structures in a defined surrounding area during the recent past seems like a more direct measure, if available. Some of the other criteria might be useful predictors of future development pressure. **(WS)**

RESPONSE: See responses to Public Comments # 261 and # 267.

282. [In regards to Table 6.2] Distance from major road, distance from minor road, urban growth rates, new home starts, lack of urban growth boundaries, lack of urban planning. **(MGM)**

RESPONSE: See responses to Public Comments # 261 and # 267.

283. [In regards to Table 6.3] The risk of conversion % discount is very high. Even if it is very likely that the property will be developed, a large portion of the tons is lost. If there is not specific, immediate threat, then over 10 years, CCAR does not recognize almost ½ of the reductions. Without the project, and with proper zoning, the entire property could be deforested for agriculture or development. This reduction should be eliminated altogether. This section should be restructured to provide guidance on calculating rate of conversion. If conversion is very unlikely, the rate would be very low or zero.

Comparing a proposed conversion to others in the area is unnecessarily onerous, time consuming, and financially unfeasible. **(SBC)**

RESPONSE: See responses to Public Comments # 261 and # 267.

284. [In regards to Table 6.3] Conversion trends must take into account the forest type and conversion rates for each type of forest cover, not just county by county analysis. **(MGM)**

RESPONSE: Agreed. The county conversion rates display conversion percentages across all forestlands and is used as an estimate of leakage. The work group will revise this table to indicate the increased risk of conversion on forestlands suitable for conversion rather than all forestlands combined.

6.3.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources

285. On "planned conversions": allowing project participants to leave out conversions for which the lack of a causal link can be established by the project participants is opening a potentially significant back door to erode leakage. The demonstration of the causality must be specified in further detail, so that only a limited number of specific exceptions are allowed. **(Terra Global)**

RESPONSE: Agreed. The "Planned Conversion" exception for on-site activity shifting leakage has been expanded for clarity.

286. It is unclear what is the requirement expressed in the first paragraph in this section. Are project proponents required to account for emissions from the equipment that would have been used if the development hadn't been avoided? **(NRDC)**

RESPONSE: Agreed. This will be revised to indicate the appropriate assessment of secondary effects.

287. Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources: states that "fires, disease, and pests are examples of agents that reduce forest carbon stocks and are often beyond the control of humans." While we agree that these carbon stock reduction events are often beyond the control of humans, fire severity can be altered through management activities. To count carbon stock reductions resulting from high severity wildfire as beyond human control for all forest types in the state of California is a misrepresentation. **(Hurteau et al.)**

RESPONSE: Noted.

288. The land use conversion table raises many questions. Why is it appropriate to use recent trends to forecast future leakage? Shouldn't the appropriate factor be the fraction of total land converted that is forestland rather than the fraction of total forest that is converted? Why is the rate cited for Alameda County as an example different than the rate in the table? What factors are going to be used for the rest of the country? **(NRDC)**

RESPONSE: Noted. The recent trends are the best available indicators of activities in the near future. The county conversion rates display conversion percentages across all forestlands and is used as an estimate of leakage. The work group will revise this table to indicate the increased risk of conversion on forestlands suitable for conversion rather than all forestlands combined. The Alameda County error, resulting from a previous version, will be corrected.

289. Why is a decrease of 5% of forest acres for an entity used as the threshold to determine whether within-entity leakage is occurring? Given the large size of the holdings of some forest landowners, this seems like an extremely high hurdle. Also, how will this threshold be applied? Over what time period will the 5% be measured? Will the decrease be applied retroactively? What is meant by "converted acres that exceed this figure must be multiplied by the project's average carbon stocks?" **(NRDC)**

RESPONSE: Noted. The work group will consider eliminating the requirement for assessment of internal activity-shifting leakage and replace it with confirmation of sustainable management from a third party certification program and/or an agency-approved long-term management plan.

290. The example provided in the paragraph above Table 6.4 is incorrect. It doesn't match the value in the table. Additionally, the values in the table are generalized across all forestland acres and don't reflect the higher risk associated with lands that may have attributes that lend themselves to conversion. **(J. Cathcart)**

RESONSE: Noted. The work group will revise this table to indicate the increased risk of conversion on forestlands suitable for conversion rather than all forestlands combined. The purpose of the table is to assess the risks of development shifting conversion to another location and to avoid overestimation of the GHG reductions from the project area. The Alameda County error, resulting from a previous version, will be corrected.

291. Second paragraph seems out of place in this section**. (WS)**

RESPONSE: See response to Public Comment # 286

292. [In regards to Table 6.4] The table is missing several counties, including all those that begin with the letters, "N" and "U-Z", and maybe others. The protocol also does not provide guidance on how this table would be used for a project that falls into two counties. **(SBC)**

RESPONSE: Noted. The missing counties include: Mono, Monterey, Napa, Nevada, Tuolomne, Ventura, Yuba, and Yolo. The table and text in Section 6.3.2 will be edited to add these missing counties and guidance for a project that falls into two counties.

293. [In regards to Table 6.4] Alameda forest conversion rate in table differs from figure cited in text. **(WS)**

RESPONSE: See response to Public Comment # 288

294. [In regards to Table 6.4] The use of recent past conversion rates, as proposed in the protocol draft, captures the likelihood that areas with rapid development are more likely to experience leakage as pent-up demand for building finds other suitable properties nearby. But it is difficult to justify us of these specific numbers to estimate leakage. Annual county-wide conversion rates represent the total risk that non-project properties will be developed, which is not the same as the risk of development that results specifically from protection of an offset project property. It is changes in conversion rates from pre- to post-project that would actually capture leakage**. (WS)**

RESPONSE: Noted. The FPP work group determined that a reasonable way to assess off-site leakage for avoided conversion projects was with data available from USFS/Cal Fire research on land cover changes. The work group will revise this table to indicate the increased risk of conversion on forestlands suitable for conversion rather than all forestlands combined. Assessing the true leakage from the effects of an avoided conversion project is impossible. Regional monitoring will eventually improve the ability to quantify leakage effects. Until such monitoring is developed, it is the work group's intent to avoid overestimated the reductions associated with the project activity.

295. Page 23 - tropical forest growth models will likely be less reliable than in the US, what is the minimum time requirement for monitoring inventories when there's no models used? Annually? Or only when the monitoring report is verified. **(Terra Global)**

RESPONSE: The FPP allows for plots to be up to 12 years old and requires the use of growth models to update plots to a current condition. In the absence of an adequate growth model, plots will have to be monitored the year verification occurs.

6.4 Quantifying Total Net GHG Reductions

296. On quantifying total net GHG reductions: if baseline predictions need to be made for a period of 100years, do net GHG reduction predictions also be made for 100 years. Is there a requirement to periodically updated these upon a new inventory of carbon stocks? **(Terra Global)**

RESPONSE: Yes. Reductions are based on actual stocks compared to baseline conditions. Initial predictions of project activity are useful for portraying intent, but only ex post facto reductions can be verified.

297. Step # 5 – this includes wood products; this should be removed until the fully drafted protocol with the inclusion of wood products is developed. **(Terra Global)**

RESPONSE: The final draft of the FPP includes guidelines for wood products.

298. It is great to see that a system is in place to deduce QRs according to the uncertainty of the measurements. However, the current approach seems flawed. Since the QR's are based on a difference of year y and year y-1: [AC(y)-AC(y-1)], the uncertainty-penalty must also happen based on the uncertainty of this difference. To calculate the uncertainty of the difference, error propagation rules are used:

sqrt(U(AC(y))^2+ U(AC(y-1))^2

where "U( )" indicates the "uncertainty of a random variable", which is equal to CD(y)*AC(y). The error propagation rules hold in case there is no correlation between U(AC(y)) and U(AC(y-1)). This happens when temporary measurement plots are used. In the formula used in the draft protocol, the QRs are discounted according to the difference of the uncertainties (AC(y-1)-AC(y)). This seems inherently flawed. It is not some statistical detail. The difference between the two approaches becomes obvious in the use of permanent sampling plots vs. temporary sampling plots. The error on biomass changes over time calculated by permanent sampling plots will be MUCH less than the error based on non-paired temporary plots. The authors seem to be aware of this as on p 40 it is stated "permanent plots, which are statistically efficient for stock change estimates". In the current version, there is no advantage in using permanent sampling plots, which is inherently wrong. Even when the argument is made that this formula is not a statistical rigorous deduction, but a practical way to penalize project proponents who have inventories with low accuracies, there must be a mechanism in place to favor permanent sampling plots. In fact, since all carbon offsets are based on differences in stocks over time, it should be obliged to use permanent sampling plots. **(Terra Global)**

RESPONSE: Noted. Reductions are based on change over time related to baseline, not to the previous year. The efficiencies of the sampling methodology (temporary plots, permanent plots, 100% measure) must be considered by the project developer. Every method must have an ability to compute statistical confidence. There may be valid situations where permanent plots are more efficient in terms of generating statistical confidence. The difference in carbon stocks over time is in reference to the baseline conditions of the forest, not each plot, and not the sum of plots at project initiation since

they do not represent baseline without other considerations. The point that the comparison of accuracy should be between the estimate of the project inventory and the baseline assumption is valid and worth additional consideration but it doesn't indicate that the chosen deductions are incorrect.

299. Only the project activity stocks have a deduction for confidence, there is no equivalent mechanism for baseline stocks, which seems arbitrary. **(Terra Global)**

RESPONSE: See the response to Public Comment # 298. Confidence can only be determined for baseline at year 0. Otherwise it is a counterfactual scenario with modeled data to support it. This is why the deduction assessment is not a simple comparison of statistical confidence between project stocks and baseline stocks.

300. Top right corner text is hard to read. Charts that were nearly impossible to read were in the last two revisions as well. A final edit looking at tables and charts alone would fix this. **(Terra Global)**

RESPONSE: The tables and charts in the final draft of the FPP have been edited for ease of reading.

301. Long-lived wood products should be treated as another carbon pool. Carbon in long-lived wood products (over 100 years) is not emitted so requiring a debit when the trees are harvested overstates the carbon going to the atmosphere. For managed forests, carbon credits should be awarded on the amount of carbon that is sequestered in all carbon pools (including long-lived wood products) above the established baseline. This baseline should not include an assumption that there will be harvesting in the future.

We disagree that BAU should be used as a baseline. Landowners have the option to convert their land to other uses, to not regenerate, or to discontinue harvests altogether, so to assume a baseline based on continued forest management and continued harvests is not appropriate given the options most land owners have to manage their land. We propose that if landowners can show that they are sustainably managing their forest (most likely with third party certification), that this is a practice that is above and beyond normal practice and should be sufficient to meet the additionality test. The baseline should be the amount of carbon in the project at its inception.

DOE 1605(b) tables provide net additions (new carbon sequestered minus old carbon emitted) of carbon to the long-lived wood products carbon pool. The DOE 1605(b) protocol also provides tables for 100 year carbon sequestration at both the harvest level (at the landing) and the manufacturing level (at the loading dock) that negate the need to track the carbon pool year by year on individual projects. Landowners should be able to use the harvest level tables in order to simplify record keeping. In addition, landowners should be able to transfer the long-lived carbon rights to the entity manufacturing the long-lived wood products, who in turn can claim credits using the manufacturing level tables.

We hope that the forth coming draft section on Harvest Forest Products expected later this month will make the necessary changes to value this important carbon pool appropriately. **(AF&PA)**

RESPONSE: Noted. Appendix A.5 has been expanded to explain how to account for carbon that accrues in wood products from harvesting. In order to assure a consistent approach to baseline characterization of live standing carbon pool, the FPP will continue to require that all Improved Forest Management projects use the methodology referencing the average stocks derived from the USDA Forest Service FIA data. If a landowner plans to convert land to other uses, a project developer can choose to submit an Avoided Conversion project.

302. Step 5 requires that, in determining the quantity of wood products that can be included in the annual inventory as "additional", that the project entity must: "Add the difference between actual and baseline carbon in wood products produced in the current year that will remain sequestered for at least 100 years." This language, left unchanged, would preclude most, if not all harvested wood products (HWP) – in use and land-filled – from existing commercial forests from being an eligible source of offsets. This provision fails to acknowledge the nature of privately owned managed forests, and the climate benefits that are derived from wood harvested from such lands. As noted previously in this document, the annual growth increment of volume (and carbon stocks) on forest land, whether harvested or left on the stump, should be considered additional so long as (a) the land is sustainably managed and (b) that standing forest carbon stock volumes at the beginning of the year are not below the project's established baseline. [Please see NAFO et al. public comment submission for details**.] (NAFO et al.)**

RESPONSE: Noted. Wood products accounting must be conducted in both baseline and project activity to determine additionality. Appendix A.5 has been expanded to explain how to account for carbon that accrues in wood products from harvesting.

303. Before line 24 in the spreadsheet, text states that wood products carbon is not subject to a confidence deduction since the initial value is measured directly rather than sampled. This may be true of harvested roundwood volumes, but the portion of wood carbon remaining in year 100 is based on very small data samples across broad geographic areas, and also makes assumptions about future product technology and consumer behavior, so a substantial confidence deduction is entirely appropriate. It will be difficult to develop a confidence interval, given the multiple sources of data and accompanying uncertainty in these estimates, so consistent with elsewhere in the protocol assumptions should lead to conservative carbon estimates.

This table should also include a line for transport and processing emissions and landfill emissions associated with wood products processing (including methane at its global warming potential in CO_2-equivalents). **(WS)**

RESPONSE: Noted. The FPP bases the crediting of wood products on the average amount of carbon likely to be stored in wood products over a 100-year period. This

method was chosen as a means to simplify calculations, address permanence, and ensure a conservative approach. Accounting for landfill carbon is conducted for thoroughness but is ignored in determining net sequestration for the purpose of issuing CRTs. Because of this, and because the approach uses conservative assumptions about the amount of carbon that would likely remain in wood products, confidence deductions were deemed unnecessary. Furthermore, discounting for uncertainty could result in overestimation of net sequestration in cases where baseline harvesting is greater than project harvesting.

304. Section 6.4 states that the amount of wood products left after 100 years should be counted during offset calculations. This may be reasonable for forest management projects (as long as the sequestration is not double counted elsewhere, by the entity that owns the wood, or some other accounting such as counts of GHG sequestration based on landfilling wood products). However, for avoided deforestation projects a much earlier time point is needed to avoid over crediting the project. **(Ecofor)**

RESPONSE: Noted. All projects, including Avoided Conversion projects, use the standardized approach to account for wood products. See the response to Public Comment # 303.

305. Ultimately, all carbon sequestration from the atmosphere takes place in the forest via photosynthesis, then is stored in three basic pools: the trees in the forest, the long-live wood products in our homes, and the wood that after use, reuse and recycling ends up stored in a landfill. Because of concerns about inter-sector transfer of carbon from the forest through to a landfill, the long-term carbon storage in a landfill has been proposed to be disproportionately discounted to a level of insignificance from a carbon credit perspective. We believe it is critical to fully account for all long-term carbon storage pools over time, which requires the development of procedures for the transfer of carbon from one industry sector to another. This is an issue that encompasses more than just forestry and wood products. **(Bischel et al.)**

RESPONSE: Noted. Until sector level accounting is available, the FPP will use the provisional approach described in Appendix A.5 to account for carbon that accrues in wood products from harvesting.

7 Ensuring Permanence of Credited Emissions Reductions

306. [pg. 27] This provision is an improvement over prior drafts, as it moves away from the single reliance of placing a conservation easement on the land, a requirement that actually did little or nothing to ensure that reversals would necessarily be remedied. It begins to provide landowners with a broader array of options for managing the long term risks associated with reversals that could affect carbon stock inventories, a position the industry has sought to achieve for some time. However, it remains unnecessarily narrow.

The provision does not allow for the use of bi-lateral contracts or carbon market positions for forward delivery contracts or options which would allow a landowner to purchase emission allowances and/or other offsets at a known cost for future use in the event of a loss from a reversal. Also, the wording of this section is not clear as to whether a project developer/owner, even if insurance is in place, still has to make a Climate Reserve Ton (CRT) contribution to the state carbon forest offset buffer pool.

The language of this section could be improved by including language that clearly expands the array of alternative mechanisms that can be used by a landowner to ensure the permanence of offsets that are registered whether there is a reversal or an early termination of the project for any reason. Including these options in the protocol will also signal the financial and insurance markets that it will be worth their while to develop the instruments needed to make these options available. The options should include, but not be limited to:

- Insurance from a state authorized firm;
- Contracts evidencing participation in like kind (forest offset), third party insurance pools;
- Self insurance through the setting aside of a portion of qualified offsets;
- Forward contracts for the purchase of, or the right (options) to purchase offset allowances or emissions allowances held in a qualified GHG allowance or offset registry account of a third party.
- A performance bond, similar to those used in major construction contracts.

Re-enforce the concept that permanence is a liability of the project entity, the landowner, not the land. **(NAFO et al.)**

RESPONSE: Noted. All Project Developers must (for the time being) make contributions to the Reserve administered buffer pool in order to insure against losses due to natural disturbance. This requirement does not preclude, however, the use of futures or options contracts to cover losses in the case of reversals due to other causes

A project developer will be required to make a CRT contribution to the Reserve's buffer pool based on the project's risk assessment as described in Appendix C. Section 7 has been edited and expanded for clarity with examples. As stated in Section 7.2.3 the Reserve expects an array of alternative mechanisms to insure against reversals will develop in the future. These will be incorporated in future versions of the FPP as they are reviewed and available.

307. 100 years is not "effectively permanent". This period has apparently resulted from two separate influences. One, it is difficult to induce landowners to make a commitment of longer than 100 years. This is really an admission that forest offsets cannot be fully equivalent to emissions reductions, rather than a reason to consider 100 years as fully equivalent to permanent reductions. Two, the majority of CO_2 released today (perhaps 70-80%) will possibly be reabsorbed over the next 100 years as the content in the atmosphere re-equilibrates with the much larger ocean sink. There is strong evidence, however, that the ocean sink may be failing due to acidification, changing currents, biodiversity loss, etc., so emissions may last much longer in the atmosphere than has been true in the recent past. **(WS)**

RESPONSE: Noted. The justification of stating that 100 years is effectively permanent is related to the rate of re-absorption through sequestration. The FPP requires that for each ton considered a reduction to be wholly out of the atmosphere for a period of 100 years. In contrast, a ton of CO2 emitted in the atmosphere at time 0 has approximately 50% of the same ton remaining in the atmosphere at 100 years. The over-compensation during the first 100-year period is managed by under-compensating the period carbon remains in the atmosphere beyond 100 years. Since forest carbon offset projects are considered a bridge to new energy sources, over-compensating early emissions is considered a conservative strategy.

308. 100 years is not permanent (sections 3.3, 8.1, and 7). Voluntary greenhouse gas (GHG) emission offsets have been repeatedly criticized (sometimes justly, and sometimes unjustly) for not being real. We need to be truthful about what we are claiming. If offsets are being offered for a fixed time period, with no assurance that they will be maintained after that time period, the offsets should be represented as temporary. Being truthful would head off criticisms that CCAR offsets are not what they are claimed to be. Buyers may decide that 100 years is long enough and choose to purchase 100-year CCAR offsets, but CCAR needs to be clear about what it is claiming and endorsing.

A corollary point is that if the carbon sequestration underlying an offset is reversed and not replaced, the offset should be cancelled (Section 8.1).

In my opinion, there are ways to provide sufficient assurance that forest carbon sequestration is permanent, without requiring monitoring go on forever. However, this monitoring question is separate from the issue of counting impermanent offsets as permanent. **(Ecofor)**

RESPONSE: Noted. See the response to Public Comment # 307. Clarity will be added to the final draft to ensure transparency on this approach.

309. In contrast to earlier versions of the forest project protocol and the previous adherence to SB 812, the draft revision fails to require that forestland registered as part of a forestry project must be dedicated permanently to forest use through the use of a perpetual conservation easement. Instead, the draft revision requires a project implementation agreement to be filed with CCAR, setting forth: “the landowner's obligation (and the obligation of its successors and assigns) to comply with the forest project protocol established by the Reserve for a term of 100 years.” Obviously, a term of 100 years falls far short of permanence. Perhaps more important, 100 years is within range of harvest rotation age for many forest types. The draft revision offers no justification for eliminating the requirement for a perpetual conservation easement.

The draft revision attempts to address this deficiency by assigning ratings to various risks to the conservation of the forestland, as discussed in Appendix C. However, it is clear that many legal devices are not comparable to conservation easement with regard to permanence and enforceability. The draft revision raises more concerns with the lack of permanent conservation easements, in the discussion in Section C.2.3 of the risk that “favorable timber values…may motivate some project managers to realize timber values at the expense of managing obligated [emissions] reductions.” Rather than estimating the risk of defaulting on the project implementation agreement, the protocols should continue to require perpetual conservation easements.

If the draft revision intends that the implementation agreement will extend 100 years past the date of the last reduction verified for the project area, then that should be more clearly stated, along with a detailed description of the conservation requirements of an implementation agreement. **(Diversity)**

RESPONSE: Noted. "Permanence" of forest carbon offsets is achieved by ensuring that the sums of the carbon stocks that are used to mitigate an emission are maintained for 100 years. The work group followed the IPCC guidance for defining the time period of maintenance as 100 years. See response to Public Comment # 307.

The maintenance of the carbon stocks used in offsets can be reversed by many biological and non-biological agents, both natural and human-induced. Natural agents include fire, insects, wind, and wind; human-induced agents include conversion and over-harvesting which may be exacerbated by financial problems and political instability and so forth. These agents, and more, are identified in the FPP. Risks have been determined for the agents along with actions that can help to mitigate the risks. Conservation easements are an effective tool in mitigating the risk of conversion. They do not address other forms of reversals, which is why the work group adopted the risk-based approach that includes a buffer pool set-aside.

Another key component of managing permanence is detecting a reversal through monitoring. The FPP has explicit requirements for monitoring and verification. Verification must be conducted by third-party auditors who are trained in assessing forest inventories, growth and yield models, and the use of equations in the carbon assessments. The Project Implementation Agreement (PIA) ensures that monitoring will occur throughout the 100-year period.

A credited reduction generated in any year other than year 0 will extend beyond the initial 100-year Project Implementation Agreement (PIA) term. The PIA will include language that requires renewal should project reductions extend beyond the initial period. This will effectively extend the project life.

Section 8.1 states "…the 100 year project length and ability to terminate does not eliminate the independent requirement of reductions to be maintained for 100 years, measured from the year in which the reduction is first measured and reported…" The texts of Sections 7 and 8 have been expanded for clarification on this issue. A sample Project Implementation Agreement (PIA) will be made public on the Reserve's website as soon as possible.

310. Climate Reserve Tons (CRTs) need to be defined prior to this section. **(WS)**

RESPONSE: Agreed. Climate Reserve Tons (CRTs) are defined earlier in the text and also added to both the list of Abbreviations and Acronyms, and the Glossary.

311. The protocol offers buffer pools and insurance contracts as options for addressing the risk of reversals. As we have seen recently, purely financial insurance can fail catastrophically. There

should be a requirement that any insurance mechanism is backed by a physical pool of emissions reductions or new offsets. It may be advisable to require geographic and forest type diversity in the buffer pool, to reduce the risk that catastrophic natural events will destroy the entire pool. **(WS)**

RESPONSE: Noted. Currently each project will be required to contribute to a CRT buffer pool. This contribution represents a physical pool of emissions reductions with the quantity determined by the risk assessment described in Appendix C. Other insurance options will be considered and the issues of geographic diversity and physical emissions reductions requirements will be an important part of the deliberation.

312. As an organization with the long-term goal of forest conservation, we are in favor of the perpetual easements to ensure permanence. Easements are widely accepted, legally binding, and attached to the property deed. With everything that there is to learn about carbon markets, understanding an unfamiliar legal instrument might just push a small landowner (500-2,000 acres) over the edge. Our concern is that in 40, 60, or 80 years a non-standard legal instrument might not be understood and abided by. That said, we are interested in learning about other vehicles that would ensure permanence over a project's 100 year lifetime. **(CC)**

RESPONSE: See the response to Public Comment # 309. A sample Project Implementation Agreement (PIA) will be made public on the Reserve's website as soon as possible.

313. The use of a reserve pool by CCAR should only be viewed as a temporary approach to permanence. As AB 32 clarifies how FPP offsets can be used to meet regulatory requirements, the cap and trade rules, not the project protocol, should specific that the regulated entity is responsible for any reversals of past offset used for compliance. This would allow the market factors to determine the price for forest offsets as a function of risk. A reserve pool managed by CCAR can be used as an interim step but it is not the most efficient way to insurance permanence. **(Terra Global)**

RESPONSE: Noted. Currently, the Reserve will use the buffer pool requirements along with the Project Implementation Agreement, and the required monitoring, reporting, and verification regimes to ensure permanence of the credited GHG reductions. Alternative mechanisms, including insurance that landowners can use to ensure permanence, will be considered by the Reserve in the future.

314. The FPP should allow for other forms of risk reduction besides only commercial insurance such as an entity's own pool of credits or structured insurance products. It should be clear who estimates and verifies the extent to which the project developers can do hedging and insurance solutions can be applied to reduce/eliminate the amount the project must contribute to the reserve pool. **(Terra Global)**

RESPONSE: Noted. The FPP currently utilizes a variety of tools to manage permanence including required monitoring, reporting, and verification regimes, a 100-year Project Implementation Agreement, and required contributions to the buffer pool. The Reserve is currently considering how the management of the buffer pool could be enhanced through third-party insurance. Alternative mechanisms, including insurance that landowners can use to ensure permanence, will be considered by the Reserve in the future.

315. It should be clearly defined that reversals are not simply lower net GHG from one year to the next (which could be due to a number of planned factors), but reduction in carbon stocks due to fixed set of perils. **(Terra Global)**

RESPONSE: Reversals are the loss of verified reductions regardless of cause. A project developer must surrender CRTs back to the Reserve for reversals not caused by a natural disturbance. If reversals are expected due to planned factors, the project developer can opt to retain enough previously issued CRTs to cover them.

316. The language of this section should be improved by expanding the alternative mechanisms landowners can use to ensure the permanence of registered offsets against either reversals or early termination. Including these options in the protocol will also signal to the financial and insurance markets that it is worth their while to develop the instruments needed to make these options available. The options should include, but not be limited to:

- Insurance from a state authorized firm;
- Contracts evidencing participation in like kind (forest offset), third party insurance pools;
- Self insurance through the setting aside of a portion of qualified offsets;
- Forward contracts for the purchase of, or the right (options) to purchase offset allowances or emissions allowances held in a qualified GHG allowance or offset registry account of a third party.
- A performance bond, similar to those used in major construction contracts.

(Weyerhaeuser)

RESPONSE: See the response to Public Comment # 314.

317. While The Conservation Fund has addressed permanence and permanence risk in its contracts with buyers, the permanence mechanism described in Section 7 is an important additional tool for ensuring permanence of CRTs and we urge its inclusion in the final form of the Draft Protocol, subject to the following recommendations.

1. The form of Project Implementation Agreement should be subject to public review and comment before final approval of the Draft Protocol.

2. To insure fairness, transparency and its utility to the underwriting of a CRT insurance product there should be a single form of Project Implementation Agreement

for use by all forest projects. The final form of the PIA should be included as an appendix to the final version of the Draft Protocol.

3. The mechanism for implementation of the buffer pool and the consequences to a project of an unintended reversal needs to be clarified. Specifically:

a. The provisions of Section 7.1 and 7.2.2 are hard to reconcile. Section 7.1 suggests that a project owner will be liable to replace all reversed CRTs, even if that amount exceeds the project's aggregate contribution to the buffer pool. On the other hand, the first paragraph of Section 7.2.2 suggests that the buffer pool will provide full compensation for a loss. In addition, the second paragraph of Section 7.2.2 suggests that a project that has experienced a reversal may continue4 and does not have to rebuild the project stocks, and its only obligation is "restoring the buffer pool for any remaining (non-reversed) reductions." It is unclear how these latter two provisions can be squared with Section 7.1, which seems to leave the project owner on the hook for all reversed CRTs. Finally, it is unclear what is meant by "remaining (non-reversed) reductions". Are they reductions remaining in the project's account on the Reserve after the reversal? Do they include reductions previously transferred to 3rd parties?

In light of these ambiguities, the mechanism for implementing the buffer pool, and the consequences of a reversal should be mored clearly state. Our opinion is that buffer CRTs contributed by a project should (1) be given a designation by the Reserve indicating their status, (2) transferred irrevocably to the Reserve for administration of the buffer pool, and (3) constitute the project owner's sole obligation for an unintended and unavoidable loss of CRTs.5 If the risk assessment matrix in Appendix C is well calibrated, the total of the buffer CRTs should exceed the reversals experienced by the participating projects.6

Two additional measures would strengthen the reliability of the buffer pool mechanism. First, CCAR should require projects at the time of their initial verification to make an additional contribution to the buffer pool equal to 100% of the contribution required by application of the risk assessment mechanism proposed in Section 7.3 of the Draft Protocol. For example, if a project's initial risk assessment prescribes a buffer contribution of 20%, the project's contribution for the first year during which CRTs are issued would be 40% of the CRTs issued. This additional contribution would be reimbursed to the project after its first required re-verification if the project had no reversals during the period and no change in its overall risk rating.

Second, CCAR should allow projects verified under the Current Protocol to elect to participate in the buffer pool on the following conditions:

The project is otherwise in good standing with the Reserve.

The project executes and delivers the Project Implementation Agreement.

The project contributes buffer CRTs equal to the total amount that would have been assessed under Section 7.3 from the date of

project initiation to the date of execution of the Project Implementation Agreement.

The project commits to seek verification under the forest protocol in effect on the date of execution of the Project Implementation Agreement within 6 years.

(TCF)

RESPONSE: Noted. A sample Project Implementation Agreement (PIA) will be made public on the Reserve's website as soon as possible. The uniformity of the Project Implementation Agreement for all projects has yet to be determined. Sections 7.1 and 7.2.2 have been edited for clarity and to address the issues raised in 3(a) of this comment. Currently the buffer pool requirements will remain as described in Section 7.3. All projects will be required to execute and deliver a PIA to be listed on the Reserve. In addition, all projects require verification prior to registration. The final draft will provide increased clarity in the use of the buffer pool.

318. With the exception of large entities that own forest land in various locations, it is impossible for CCAR to certify with certainty that a registered amount of sequestered carbon can be guaranteed over a century. Third party 'crop insurance' policies, which typically have annual payments based on recent actuarial estimates of loss, are the typical mechanism used in similar contracts in the United States. Alternative models would be cooperatives where many members could cover losses that may be experienced by a few members or government guarantees. It is unclear that the 'Climate Reserve' managed by CCAR will have sufficient capitalization or physical assets to cover losses. As long as CCAR protocols are a voluntary system this is not a problem as it is up to the buyer to decide on what they think a project is worth. However, if CCAR projects are explicitly or implicitly guaranteed by a state entity such as CARB, then there will be questions of financial liability and rules on default and bankruptcy. Greater clarity on the capitalization of any insurance component would appear necessary. [Please see B.Stewart public comment submission for details.] **(B.Stewart)**

RESPONSE: Noted. The capitalization and financial liability requirements of any insurance component related to reversals is under discussion at the Reserve.

7.1 Definition of a Reversal

319. The language in this provision should be further clarified and expanded to provide more flexibility to the project entity (land owner) in the use of registered offsets that have not been sold to a third party.

The text is confusing, and suggests that any reduction in total volume and carbon stocks over time, even if the balance in the project account remains over baseline, would be considered a reversal. As written, it would seem to preclude a landowner from "withdrawing" unsold-credits/offsets from his/her Reserve account, and freeing up wood volumes for harvest and sale. So long as a landowner does not reduce carbon volumes below the sum of the baseline and any sold offsets, withdrawing unsold offsets would, and should not be a "reversal." Rather, it

would just lower the landowner's balance in the "additionality" account. Actually, sold offsets would transfer out of the landowner's account, and be in the buyers account in a recognized registry. So the balance in a landowner's registry account will always be the unsold offsets that are in excess of the baseline levels on the land, unless the account is overdrawn by an intentional withdrawal transaction or a true reversal that exceeds the balance. This change would allow landowners to have more flexibility in addressing the uncertainty of future market values for both carbon and wood, and allow for some risk management and value optimization over time.

A fundamental premise of this approach is that under a project, annual offsets claimed by the landowner, even when registered with the CCAR Reserve, are still assets of the landowner, until the offset is sold. Thus, the landowner should have the right to withdraw those offsets from the Reserve, so long as the withdrawal does not "over draw" the landowner's account: i.e., the withdrawal can not cause the total number of offsets to be negative (under the baseline amount). [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. If net project stocks relative to the baseline are lowered for any reason other than an unintentional natural disturbance, the project developer must surrender CRTs to compensate for the 'reversal.' In the case of unintentional reversals due to natural disturbances, the Reserve-administered buffer pool will be drawn down to compensate. If a landowner wishes to free up wood volumes for harvest and sale, they will be free to surrender CRTs to the Reserve to compensate for the associated reversal. Any CRTs may be used to meet this obligation, including CRTs procured from other projects or CRTs issued to the landowner's project still residing in the landowner's Reserve account.

The language in Section 7.1 has been revised to address and clarify the issue of reversals.

7.2 Insuring Against Reversals

320. Expand the terms of this provision to clarify the options that should be available to address the permanence risk management needs of project entities. Re-enforce the concept that permanence is a liability of the project entity, the landowner, not the land. **(Weyerhaeuser)**

RESPONSE: Noted. The Project Implementation Agreement (PIA) requires Project Developers to commit the reductions to the project area identified at the project's start date.

321. The concern here is that a large disturbance or catastrophic claim on a particular project could deplete not only the project buffer, but also the central reserve of pooled buffers. What is the expedient method to re-build the central buffer when a catastrophic loss is incurred, especially in the earlier years before the central reserves are large? What is the project developer's liability beyond his own project buffer? There needs to be greater assurance that a deficit can be restored quickly. **(TPL)**

RESPONSE: Noted. This sort of loss would indicate a poorly managed and capitalized buffer pool. After a reversal, the Project Developer is responsible for restoring their own contribution to the buffer pool, based on the project's current risk assessment.

7.2.1 Establishing a Buffer Pool Account

322. A private insurance option vs. a buffer pool would put more carbon on the market, creating more incentives for additionality. **(N. Kent)**

RESPONSE: Noted. Section 7.2.3 allows for other options, including direct insurance, that could be used to reduce the calculated reserves required for a project. These options are currently being explored.

323. The single most important factor of this protocol is the proposed risk buffer pool. It is critical to market confidence and ease of trade of resulting CRTs. To expect markets to handle the risk of accidental reversals contractually places an unreasonable risk in the market and would ultimately result in severe price discounting of forestry offsets. For no reason should CCAR remove this mechanism through the public comment period unless another equally credible insurance mechanism is proposed. **(Cantor)**

RESPONSE: Noted. The use of the proposed risk buffer pool will remain a part of the FPP unless a more robust third party insurance mechanism is developed to address this issue.

324. The proposal that buffered reductions will be pooled among all forest projects raises significant issues. First, it is unclear why risk should be pooled for forest projects rather than borne individually by project proponents. Second, if risk is pooled then there needs to be clear mechanisms for drawing down and replacing buffer pool credits. For example, if there is a project reversal and buffer pool credits from other projects are used to compensate, then are those other projects required to make up the deficit in future years? Over what period? How is the deficit allocated among projects? Are newly registered projects required to contribute to previous deficits? **(NRDC)**

RESPONSE: Pooling is a more efficient method of managing risk than each Project Developer managing it individually with different assumptions and non-standardized methodologies. Managing risk over time will require periodic adjustments to the risk factors and how they're quantified. The initial buffer pool will be 'stocked' with reductions by a capital investment to create the pool and/or project buffer contributions based on an assessment of project-level risk that is initially conservative. The initial set of project contributions is expected to be commensurate with the associated risk. A reversal that exceeds an individual project's buffer will draw proportionally from other project contributions. All projects are required to contribute at the first verification of reductions. Project Developers are required to restore their buffer pool following a reversal.

325. The risk of reversal assessment test and requirements for permanence are overly restrictive. **(Weyerhaeuser)**

RESPONSE: Noted.

326. In the interests of credibility and the strong reputation of forest carbon offsets, New Forests would support including in this section a modest minimum buffer requirement (e.g. 5%) for all projects due to the complexity of accurately estimating the risk of reversal over a lengthy time span.

Also, it is not clear from the text if buffer credits can ever be recovered by the project over time. **(NF)**

RESPONSE: The FPP work group will consider a minimum buffer. The Reserve will consider how buffer credits might be distributed over time and address this in future updates to the protocol.

7.2.2 Use of the Buffer to Compensate for Reversals

327. In the event that a reversal reduces the Carbon stocks by more than is contained in the buffer, do I understand correctly that the Project Owner can go forward from there maintaining what is left and establish a new buffer for the reduced Carbon stocks of the same percent that was used for the original Carbon stocks? **(T. Collins)**

RESPONSE: Projects will depend on the buffer pool (or an insurance instrument developed at a future date). In the event that a reversal exceeds the project's contribution to the buffer, the project can go forward and continue to claim reductions for sequestration since the reversal is compensated by the buffer pool. The project must continue to contribute to the buffer pool on an annual basis.

328. The project may terminate if a reversal reduces the stocks below baseline. Who decides whether the project will in fact terminate? Do the project proponents have the option to terminate the project? **(Terra Global)**

RESPONSE: The FPP language will change to 'must terminate.'

329. Use of the Buffer to Compensate for Reversals: states that "a project may terminate if a reversal reduces the project activity's live standing forest carbon stocks below the standing live stocks established for the baseline." Allowing a project to terminate because of a reversal runs counter to the purpose of capitalizing on the climate mitigation potential of forested systems. Projects that experience a reversal due to disturbance should not be allowed to terminate.

Instead, these projects should be required to participate in reforestation thus allowing the project to restore the buffer pool for remaining reductions not covered by the initial buffer CRTs. **(Hurteau et al.)**

RESPONSE: Noted. Projects do not terminate for reversals other than in cases where the reversal reduces stocks below the baseline. A reversal that reduces stocks below baseline is indicative of a situation where the original baseline is no longer valid. The baseline will need to be re-evaluated prior to continuing or implementing further project accounting. For example, a Reforestation project following such a reversal would incorporate a new baseline. Any reversal resulting from gross negligence will be compensated through reductions outside of the buffer pool.

330. The term "reduction" is potentially confusing in a sentence with the word "reversal"; suggest changing this to "creditable GHG reductions". The following statement is rather cryptic "other than restoring the buffer pool for any remaining reductions". Consider adding "to restore the buffer pool according to the initial risk of reversal percentage". This may be important if pooled buffer CRTs from other projects are used to compensate project reversals, and the risk reversal percentage is gradually eroded, so that the "actual" buffer percentage is lower than the initially determined risk reversal. **(Terra Global)**

RESPONSE: Agreed. Clarification will be added to this section including edits to ensure the term 'reduction' is understood.

331. If CRTs from pooled buffers of other projects had to be used, the proportion of "available" buffer pool CRTs to released CRTs decreases for all CCAR projects, and the CRTs of projects are no longer backed up by buffer pools according to the "risk of reversal". Isn't this a problem? If the reversed project continues, don't they first have to restore any used pooled buffer CRTs from other projects to ensure that buffer pools are still available to the proportion determined by the risk reversal. **(Terra Global)**

RESPONSE: Noted. The overall risk buffer approach is designed to be conservative, such that contributions will create a surplus of reductions over expected claims against it. Once a large buffer pool has been created, the Reserve will consider how to redistribute this surplus based on further refinement of the assessment of risks.

332. If buffer CRTs are used to compensate reversals, they start representing a carbon offset that was purchased by a buyer, and therefore should be buffered again to avoid potential reversal of the used buffer CRTs. What mechanisms are in place to guarantee this? **(Terra Global)**

RESPONSE: The project with the reversal is obligated to rebuild the project buffer pool commensurate with the current project risk before it can begin receiving CRTs for any further net gains in sequestration going forward. The overall buffer pool combined from all projects will continue to grow as described in the response to Public Comment # 331.

333. For fire risk, it would be better to have an actual Fire Risk Reduction Management option for landowners. The risk reduction would be insurance in itself. **(Terra Global)**

RESPONSE: Noted. Management actions that reduce the risk of wildfire will reduce a project's risk rating. The project will be responsible for a larger buffer contribution in absence of these management activities. Estimates of the risk of wildfire and the effective mitigation of this risk through management activities are being updated based on recent research and identification of available public tools to support risk management.

334. There is no mechanism in place to release the buffer pool after project start, e.g., upon a demonstrated good and low-risk project management. **(Terra Global)**

RESPONSE: Assessment of risk must occur with each verification. Verification cycles may vary and will be defined in the updated verification protocol. Therefore a landowner can reduce their risk profile through actions that mitigate the risks of their project. Once a large buffer pool has been created, the Reserve will consider how to redistribute any surplus based on further refinement of the assessment of risks. The risk accounting mechanisms need to be flexible to respond to changes in risk profiles at the project level or globally due to warming conditions.

335. When a project draws on buffer pool CRTs contributed by other projects, there should be a requirement to repay those credits if the buffer pool manager or insurer can show that reversals were due to negligence or intent of the project developer. Otherwise the sharing of risk could encourage "free riding" by projects intent on gaming the system (again real estate markets provide a precautionary lesson).

This section needs clarification.

"If the reversal exceeds the buffer pool for the project, the Reserve will draw proportionally from other pooled buffers to fully compensate the loss." [If the buffer pool is insufficient, then what?]

"As described in Section 8.1, the expected project life is 100 years, and a project may terminate if a reversal reduces the project activity's live standing forest carbon stocks below the standing live stocks established for the baseline." [If a project terminates, then presumably CRTs are withdrawn from the buffer pool sufficient to meet the project's full commitment, as described in the previous paragraph.]

"If the project is not terminated, the project can begin creating reductions immediately". [Presumably the reversal described is not intentional, in which case allowing a project to create new reductions may be inadvisable. Clarify that these reductions will be creditable only if the buffer pool was sufficient to fully compensate for all prior reversals by the project.] **(WS)**

RESPONSE: Any reversal due to a natural disturbance that results from gross negligence will not be covered by the buffer pool.

An individual project's contribution to the buffer pool may prove insufficient to compensate for reversals from that project, just as premiums for homeowner insurance may be insufficient to rebuild a home. In both cases, managing the risk is based on distributing risk to increase the efficiency and lower the costs of risk management.

Clarification will be added to describe project activities that can follow an intentional reversal. In all cases, reversals will be compensated from the project buffer and the overall buffer (combined projects). Financial damages will be sought from intentional reversals, as described in the Project Implementation Agreement.

336. It is unclear what is meant by, "the Reserve will draw down proportionately from other pooled buffers to fully compensate the loss". Each project must be accounted for separately from the pool for each landowner and ensures strict liability for any landowner carbon stock reversals. Define an enforceable process that will be triggered if/when the landowner converts the project to another land use. A reversal of this magnitude will not be covered by the buffer pool. **(WWF)**

RESPONSE: The buffer system is designed based on other insurance vehicles, where pooling risk reduces liabilities to any one individual. In the case of the FPP, each project contributes to the buffer pool based on the project's risk profile. Should a reversal exceed the project's contribution to the buffer pool, the buffer pool will be used to ensure that the reversal is compensated and the project owner will only be required to restore their own contribution going forward.

The calculation of risks is designed to be conservative in order to ensure that overall risks are managed and reversals can be compensated. The assessment of risk must be adaptable to changes in actuarial findings. Additionally, the Reserve is considering how a distribution of buffered reductions could be distributed if and when the overall risk profile of managing the project is reduced and when the buffer pool has been built to adequate levels through increased participation.

7.2.3 Other Insurance Options for Reversals

337. Language should be added to address what the process will be for recognizing these other permanence (loss) risk management alternatives as they evolve and to clarify the extent to which individual landowners/project developers and third parties may create and propose models for use. Listing a minimum set of acceptable risk management instruments, such as those listed above, would also be desirable, so as to signal the financial and insurance community of the need and value of creating such instruments. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. The Reserve is exploring other options for managing the buffer pool, as indicated in Section 7.2.3. The buffer pool managed by the Reserve is the method identified as a starting point for managing claims with offsets that are equivalent to the offsets that were reversed. Should third party insurance instruments arise to manage the risks of reversals and settle claims, the Reserve will still require that claims

be met using Reserve-approved offsets. The Reserve is currently engaged in discussions with 3rd party insurance carriers.

338. The draft forest protocol refers to the expectation that other options for meeting emissions reductions commitments and compensating for reduction reversals will develop in the future. The draft forest protocol requirements are designed to ensure GHG emissions reductions and removal enhancements. Stipulating that certified emissions reductions have the same atmospheric impact regardless of the year that they are created would allow project proponents to hold onto or "bank" certified emissions reductions in order to fulfill project commitments whereby strengthen their ability to meet reduction or removal obligations. The atmospheric benefits of these reductions or removals are the same and therefore should be treated the same with respect to meeting project commitments. This will encourage early action and give market participants further confidence to invest in GHG reduction projects. **(Equator)**

RESPONSE: All tons will be considered of equal value in terms of meeting claims.

339. Is CCAR working on developing a standardized insurance contract or new insurance policy that can cover carbon stocks? **(MGM)**

RESPONSE: See the response to Public Comment # 337.

340. Other Insurance Options for Reversals: has the potential to provide an efficient mechanism for dealing with risk of CRT loss. However, trading money for a reserve of CRTs will only provide climate mitigation benefit if the insurer is required to replace the lost CRTs. **(Hurteau et al.)**

RESPONSE: Agreed. Any other insurance options will need to be backed with CRTs (or possibly other offset instruments approved by the Reserve).

7.3 Risk Assessment for Reversals

341. In order to err on the side of caution and guard against potential shortfalls, projects should be subject to a minimum requirement of entering 10% of CRTs into the insurance buffer pool. It is critical to the credibility of forestry in the marketplace to never have a negative balance in the insurance pool; therefore, CCAR should choose a conservative approach in order to maintain a robust reserve. Proposed language change in italics:

> A risk assessment must be used to determine the quantity of CRTs issued to a project that must be set aside in a buffer pool, as described in Appendix C. Each year a project is issued CRTs, a risk rating is calculated and a corresponding percentage of CRTs is placed in the buffer pool. For example, a project has a verified increase in its carbon stocks relative to baseline levels equivalent to 10 tons of CO_2. The project's risk assessment yields a 10% risk for reversals. Thus, 9 CRTs are issued to the project owner's account and 1 CRT must be deposited in the Reserve's buffer pool. *All projects*

will be subject to a minimum risk assessment of 10% regardless of the calculated risk assessment.

(Cantor)

RESPONSE: Noted. A minimum buffer will be considered for all projects for the reasons stated in this comment.

8 Project Monitoring

342. [pg. 28] CCAR does not provide guidance on how the registry fees are related to annual monitoring, project life, and permanence requirements. Improved forest management projects may slow in accrual of reduction tons as management activities take place and baseline does not change. The protocol should describe annual costs related to registering, monitoring, and selling credits within the protocol. The fee structure plays an important role in whether or not the project is financially feasible over a 100 year term. More guidance is needed on how account maintenance fees are handled for projects with shorter project life and registered reductions. **(SBC)**

RESPONSE: Noted. Each project is unique. Project development costs and verification costs will vary greatly by project. Details and guidance to the fees and their application can be found in the Climate Action Reserve's Getting Started Guide for Project Developers (http://www.climateregistry.org/resources/docs/offsets/Project-registration/Developerguide.pdf) and the Climate Action Reserve's Operating Procedures (http://www.climateregistry.org/resources/docs/offsets/operatingprocedures.pdf). These two documents will allow the project developer to understand the application of fees under a variety of scenarios and how they relate to financial feasibility of a specific project. For example, an account can be deactivated if all the CRTs in that account have been transferred or permanently retired.

343. Such high levels of project tracking and reporting are not feasible (time and cost wise) for smaller projects. We recommend a simple monitoring report to be submitted each year, in lieu of registration and more onerous activities, as an option for smaller landowners. We recommend the annual monitoring as described to be completed and submitted over 3 years or with the verification cycle for smaller projects. **(SBC)**

RESPONSE: Noted. The updated verification protocol that will follow the adoption of the updated FPP will include revisions related to cost-effectiveness. The projects that have been verified to date have contributed greatly to learning about costs and provided significant feedback about scheduling and requirements related to verification.

8.1 Crediting Period and Required Duration of Monitoring Activities

344. The costs of monitoring and reporting over a 100 year period, though necessary, can be excessive. Therefore, CCAR should take care to balance rigor with reasonableness when taking into account what requirements projects will have to meet. Many projects may only produce CRTs for a period less than 100 years. After a project ceases to accumulate CRTs, or a project developer chooses to no longer submit a project for CRTs because it is no longer cost effective to do so because costs exceed their market value, it should be allowed to submit evidence it has maintained stocking levels at which it ended accumulation of CRTs. This can be done through remote imagery such as satellite or aerial photos and a landowner affidavit, which can be done at a minimal cost. In order to spot-check reliability of such reporting, projects electing to do so should be allowed to contribute a one-time contribution to an endowment to fund CCAR officials to randomly select participants to ensure compliance for the remainder of project commitments. **(Cantor)**

RESPONSE: Noted. Longer-term monitoring and verification issues are currently under discussion and will be incorporated into the updated verification protocol to be developed upon completion of the updated FPP.

345. The proposal to allow developers to terminate a project in response to a significant disturbance needs to be much more thoroughly considered. Why is this proposal focused only on standing live carbon stocks? What about other stocks? How will the lost reductions be made up? Given all the other proposed mechanisms to account for and compensate for the possibility of reversal, why is this exemption needed? Doesn't it provide developers an incentive to ignore the risk of natural disturbances? **(NRDC)**

RESPONSE: Baseline modeling does not include stochastic events, such as wildfire, nor is it appropriate to do so since it would tend to overstate credited reductions when incorporated in baseline assumptions. A reversal that lowers stocks below baseline conditions invalidates the baseline assumptions. Since a project is defined largely by its baseline case, the invalidated baseline in these conditions will need to be redefined prior to reinitiating project activities.

Standing live carbon is the focus throughout the FPP, specifically as a measure of environmental integrity. The focus on live trees ensures that forests of live trees will be maintained and increased, rather than shifting carbon stocks to harvested carbon pools.

See responses to Public Comments # 321 – # 338 which address the question of how reversals will be compensated.

The FPP has no intention to provide incentives for project developers to ignore the risks of natural disturbances. In fact, any risk mitigation strategies that reduce the project's natural disturbance risk profile are rewarded in terms of reduced contributions to the buffer pool.

346. This section reiterates the earlier expectation that the project period is for 100 years. However, when the language in the emphasized text is considered in full, the real liability period of

duration will be up to two hundred years. Credits sold each year, including those sold in year 100, will have to be protected against reversal for a full 100 years.

Further, the inventory uses a FIFO (first in, first out) approach for replacing offsets lost to reversals. This penalizes the developer/owner, who then must replace new offsets for the old, which will further extend the duration period. Further, it complicates the tracking of credits, as it would have the de facto effect of having a younger offset covering the 100 year duration period of an older emission. Thus, much of the climate change benefit of the new credit would be wasted. For example, if a 75 year old offset that was sold the year it was created, is suddenly ruled reversed, and a new offset is used to take its place, that new offset would have to be supported for 100 years under the rule, rather than the remaining twenty five years left on the first offset's tenure. This is also an example of why offset contracts should be allowed to be for different durations, and that offsets, if not sold (or reclaimed by the project owner's account when a short term sale expires) should be considered unencumbered and subject to withdrawal. A critical component will be the need for standardized contracts, as occurs in most if not all commodities markets, and the inclusion of a requirement in such contracts that the buyer will have to replace the "credit" when the offset contract expires.

This provision should be revised to allow for a broader set of mechanisms to manage reversals. Further, the provision should allow landowners/project developers to end their project at any time, so long as mechanisms are in place to ensure the permanence (or replacement) of any offsets already registered. This should be accomplished by allowing the project entity to: (a) substitute the use of offsets from other projects or (b) substitute emissions reduction allowances purchased from the "carbon market" to replace all sold offsets that have been registered, and (c) to "withdraw" unsold offsets they have registered. This will ensure the integrity of the offset system, allow for more liquidity in the overall carbon markets, and help to encourage landowners to participate without having to feel that they cannot opt-out for over two centuries.

If all offsets are given a serial number (which is contemplated in most if not all cap and trade programs), landowners will be able to manage the long-term maturity of their offset portfolio, again, adding to the ability to limit the two-century exposure without undermining the integrity of the offset program. And, again, this type of approach would add to the liquidity of the carbon markets and create conditions that would encourage landowners to participate.

[Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Noted. Section 8.1 states "…the 100 year project length and ability to terminate does not eliminate the independent requirement of reductions to be maintained for 100 years, measured from the year in which the reduction is first measured and reported…" The texts of Sections 7 and 8 have been expanded for clarification on this issue. The key issue of tenure and replacing offsets is justified because if a CRT is incapable of lasting the full 100 years, all previous years of reduction are rendered valueless. A reduction it is not considered permanent or an effective "offset" to an emission unless is lasts the full 100 years. That is why the test of permanence is so critical. With this as a key concept for any mechanism managing reversals, the Reserve is still considering alternatives that will allow for liquidity in the carbon markets and greater landowner participation. All registered offsets on the Reserve will receive a serial number. (See Climate Action Reserve Operating Procedures found at: http://www.climateregistry.org/resources/docs/offsets/operatingprocedures.pdf).

Proposals for credit replacement and/or contract renewal to address the 100-year permanence requirement will be considered for the final draft.

347. Obligated reductions in year 99 – carbon sequestered in year 99 for which CRTs are issued – must be maintained until year 199 after project initiation. However, the term of the PIA between the project developer and CCAR (see comment above) is stated to be a 100-year term. We suggest that CCAR require a 200-year term to the PIA (page 5) to match the true length of the commitment by a landowner to maintain obligated reductions.

We would also recommend that there be provision for landowners to 'buy out' their obligations by buying and extinguishing CCAR credits equal to their total balance of CRTs. **(NF)**

RESPONSE: Noted. Proposals for credit replacement and/or contract renewal to address the 100-year permanence requirement will be considered for the final draft.

348. While defining permanence as carbon stored for 100 years is a supportable objective, having forest landowners contractually obligated for 100 years may be problematic. We encourage the continuing development of a public reserve or insurance option that protects landowners from the liability of an unintentional loss, and developing options for contracts that are shorter than 100 years. **(Bischel et al.)**

RESPONSE: Noted.

349. On the paragraph under monitoring, starting with "To promote transparency…": consider changing this sentence to "you must include a history of the ownership". This will provide potential buyers of ALL of the owners of the area, and not only the owners at the time of verification. This may be important for liability reasons. **(Terra Global)**

RESPONSE: The annual monitoring reports are available to the public once they have been verified. These reports will list the current owner(s) of the project area over the project life. Historical verification reports will provide transparency related to previous ownership titles. The Project Implementation Agreement will include language that indicates that liability can only be associated with the current landowner. Please see the following webpage to review the annual monitoring reports that have been verified to date: https://thereserve1.apx.com/myModule/rpt/myrpt.asp?r=111.

8.1 Annual Monitoring Requirements

350. Are the annual monitoring reports publicly available? **(Terra Global)**

RESPONSE: The annual monitoring reports are available for public viewing under the 'Reserve' tab on the Reserve website. These reports are available once they have been

verified. For more information about public reports and account holder reports, please see the Climate Action Reserve's Operating Procedures (http://www.climateregistry.org/resources/docs/offsets/operatingprocedures.pdf) as well as the Program Manual (http://www.climateregistry.org/resources/docs/reserve/Climate_Action_Reserve_Program_Manual_Feb_23_2009.pdf).

351. Clearly state in the beginning of the monitoring section that there are two levels of monitoring: (1) "plain" annual monitoring, reviewed by a verifier (and upon which the release of CRTs is based), which contain non-field-verified data and (2) a field review accompanied monitoring, done every 6 year, which will contain much more data and narrative. **(Terra Global)**

RESPONSE: Section 8.2 has been edited for clarity on the monitoring requirements. Currently, reductions can only be verified (and CRTs issued) with a field review.

352. Field data should be collected more frequently than once every 12 years. **(NRDC)**

RESPONSE: Noted. Forestry field data is a labor-intensive process. The requirement that field data is *"no older than 12 years"* is a reasonable standard as it is typical and practical for forestry field data across an entity to be collected every 10-15 years. Forest inventories have long been managed with data 'grown' in growth models to maintain a current estimate. Data are often grown for longer periods than 12 years in practice. The FPP maintains this standard to ensure plot data remain fresh.

353. Confidentiality should not be addressed piecemeal. **(NRDC)**

RESPONSE: Agreed. The document has been edited and expanded to address the issue of transparency and confidentiality.

354. Are there any requirements imposed on allowable forest growth models? **(NRDC)**

RESPONSE: Requirements for allowable forest growth models are outlined in Appendix B.

355. Why does the "disturbances" bullet point use the verb "should" when every other bullet uses words like "needs" or "must?" **(NRDC)**

RESPONSE: Section 8.2 has been edited for consistency and clarity.

356. In the absence of natural disasters, forests do not change rapidly from one year to the next. Verification efforts should acknowledge this and simplify annual reporting and verification efforts. Field verification of annual reporting should be done at intervals of no less than 5 years. **(J. Cathcart)**

RESPONSE: FPP's monitoring and verification requirements are based on reasonable and practical application of inventory methodologies that balance reporting efficiency and costs with the need for credibility in the GHG data reported on the Reserve.

357. Before explaining the monitoring process, some description of how additional carbon is actually credited would be helpful. Explaining project life as 100 years is a bit confusing for projects that claim new carbon credits in later years of the project. Is the following description accurate?

Project carbon minus baseline carbon for a given year is considered additional, and permits the project developer to register CRTs. If project carbon in Year 2 exceeds baseline by the same amount as in Year 1, this situation merely meets the first year of the 100-year permanence obligation for Year 1 CRTs. No new carbon is credited in Year 2, and monitoring will merely continue to confirm that project carbon exceeds baseline carbon by at least this amount every year for the next 100 years.

If Year 2 carbon exceeds baseline carbon by more than the Year 1 CRTs, however, then new credits could be claimed in Year 2 if the project developer is willing to maintain and monitor that carbon until 101 years after project initiation. CRTs claimed in later years essentially extend the life of the project to 100 years after CRTs are claimed, rather than 100 years after project initiation. (This pattern of new CRTs credited each year would be typical for reforestation/ afforestation projects which depend on increasing stocks over several decades). **(WS)**

RESPONSE: The example in this question is correct. Section 8.1 states "…the 100 year project length and ability to terminate does not eliminate the independent requirement of reductions to be maintained for 100 years, measured from the year in which the reduction is first measured and reported…" The texts of Sections 7 and 8 have been expanded for clarification on this issue.

358. Section 8.2 requires annual monitoring reports. Will a project's credits (or at least its credits held in its buffer account) be cancelled if the project fails to report? **(Ecofor)**

RESPONSE: Failure to report will result in a material breach of the terms of the FPP and default under the Project Implementation Agreement (PIA) and will lead to a series of steps outlined in the PIA possibly including the posting of a notice of default, freezing all transactions, and other remedies.

359. To understand the ongoing project costs and financial feasibility, we would like to get a sense of what will be required in the "field review" require every six years. **(CC)**

RESPONSE: Field review requirements are explained in Chapter 2 of CCAR's Forest Certification Protocol Entities and Projects found at http://www.climateregistry.org/resources/docs/protocols/industry/forest/forestcertprotocol_may2007.pdf . This document will be revised to match the revised protocol.

360. Confidence limits and errors are available only at the time the inventory is taken. From this time, as growth models are used to forecast carbon stocks, the CI and error over time move in directions that cannot be estimated. Will an inventory "true up" be required periodically? **(WWF)**

RESPONSE: Yes, as stated in Section 8.2, forest growth models can rely on field data that are not older than 12 years.

8.2 Rationale for Verification

361. I am concerned with the cost of updating inventories subject to third party verification for small landowners. The high cost of periodic verification for carbon sold up to 100 years prior is enough disincentive to scare most landowners under 2,500 acres away. Is there a way to lower this cost, or require less frequent inspections? Possibly with lower cost lidar review in the future? Aggregation is a good concept but basicly creates business partnerships among landowners that may not want to be tied to each other. Aggregation needs to be described better, and such that each party in an aggregation is responsible for their carbon only and not others in the aggregation group. **(N. Kent)**

RESPONSE: At this time, the work group has made decisions on reporting and inventory requirements for the FPP based on tradeoffs between reporting efficiency and costs with the need for credibility in the GHG data reported to the Reserve. It is expected that further efficiencies will be developed with experience. The Reserve will develop a document that provides guidance for aggregation soon after completing this version of the FPP.

362. It is a strength of the protocol that it requires annual verification. **(WWF)**

RESPONSE: Noted.

9 Reporting Requirements

9.1 Forest Carbon Inventory

363. The acceptance of non-permanent inventory plot data up to 12 years old is a very positive change. This permits landowners to take advantage of data they already possess and negates the need and expense to perform new inventories. The 12 year statue is reasonable, as most

conscientious landowners tend to update inventories every 10-15 years anyway. **(C. Blencowe)**

RESPONSE: Noted.

364. "All credited reductions for a project are assumed to be reversed if a project developer, or subsequent landowner, chooses not to undergo verification…"

This citation should be clarified, and preferably modified. It would automatically negate an entire project's offsets for a one-year gap in filing, assuming that nothing is done to remedy the matter.

The language in this section should be modified allowing the Reserve to establish a set of policies, practices and procedures for addressing failures to file an inventory. It should not start with the assumption that the entire inventory has been lost. Further, the Reserve should have its own independent program of random auditing to check on the viability of relying on 3rd party verifiers. The Reserve could also institute a simple annual check system to track filings, and where one is missing, to trigger an inquiry. This inquiry can be used to determine whether the failure to file is one of a paperwork nature, or that it reflects a reversal, and if the latter, whether it is a major or minor reversal. Depending on what is found, steps could then be taken to remedy the matter, including some sort of commensurate penalty for the actual transgression.

Further, there should also be a mechanism that allows a project owner to gain an automatic extension of up to 6 months for filing an inventory. This will allow for shortages of qualified inventory experts and 3rd party certifiers, especially in the early years of the program. Like the federal IRS process, such automatic extensions could come with caveats. In this case, these could take the form of withholding offsets in the project's account from sale until the inventory is submitted and/or a requirement that a bond be posted in the amount equal to the average annual increment of offsets that would be expected, times the current market price of offset allowances. [Please see NAFO et al. public comment submission for details.] **(NAFO et al.)**

RESPONSE: Section 9.1 has been expanded to bring additional clarity to this issue. The PIA will contain remedies for projects and Project Developers whose reductions are no longer monitored.

9.2 Attestation of Title

365. We need more guidance for aggregating projects. The project developer should not have to own the actual trees, just the right to register and sell carbon reductions from those trees**. (SBC)**

RESPONSE: The Reserve will develop a document that provides guidance for aggregation soon after completing this version of the FPP.

9.3 Transparency

366. The proposed disclosure requirement that "forest entities must disclose all forest activities that may impact their C stocks" could easily be interpreted pretty broadly. **(NRDC)**

RESPONSE: Section 9.3 has been edited for clarity on interpretation of the need for disclosure.

10 Glossary of Terms

367. Fix capitalization of terms. Some are capitalized some are not. This suggests as if some of these are more significant than others. **(Terra Global)**

RESPONSE: The Glossary of Terms has been edited for consistency with capitalization.

368. Non-forest use would require a reduction of canopy cover to below 10%. Forest conversion may occur where a forest is converted and the canopy may still be greater than 10%; proposed language change in italics:

Avoided Conversion	Specific actions that prevent the conversion of native forest to a non-forest *or sub-optimal forest use*, i.e. residential or commercial development or agriculture. This activity is also a type of project that may be registered in the Reserve.

(Cantor)

RESPONSE: Agreed. This edit has been made to the document.

369. A clarification is necessary to ensure it is understood that not harvesting is an acceptable management strategy that can result in net GHG reduction reductions compared to the baseline; proposed language change in italics:

Improved forest management	Changes in forest management to increase or maintain overall forest carbon stocks. This activity is also a type of forest project that may be registered in the Reserve. *No-harvest Management Practices are included in this definition.*

(Cantor)

RESPONSE: Agreed. This edit has been made to the document.

370. The glossary needs to be reviewed to ensure that the definitions are consistent with terms that are relevant to other sectors and project types (e.g. additionality, de minimus, optional reporting, etc.) **(NRDC)**

RESPONSE: Agreed. The Glossary has been reviewed, expanded, and edited for consistency with other sectors and project types.

371. The definition of 'Assessment Area' should include how the regulatory and political stratification is done at a high resolution (state – level), and subsequent levels of stratification are conducted to a point that retains a reasonable level of statistical confidence. **(J. Cathcart)**

RESPONSE: Noted. Additional guidance has been added to the text of Section 6.2.1.1 to define "Assessment Area."

372. Assessment Area: The definition of the assessment area will prove critical for evaluating the financial viability of IFM projects, and yet the text gives no guidance as to how these assessment areas will be defined by CCAR. We suggest CCAR specify a procedure in the text by which it will define assessment areas. **(NF)**

RESPONSE: Noted. Additional guidance has been added to the text of Section 6.2.1.1 to define "Assessment Area." The Assessment Areas will be provided as an addendum to the FPP on the Reserve's website, along with the FIA mean for the assessment area.

373. What is the project's assessment area? The definition in the glossary is not specific enough. Is the assessment area to be determined on a case-by-case basis? More clarity and guidance—or even a map—would be helpful. **(SBC)**

RESPONSE: Noted. Additional guidance has been added to the text of Section 6.2.1.1 to define "Assessment Area."

374. Project Life: Due to the expenses of implementing a project: CCAR registration, monitoring/inventorying, and verifying a project, there should be different standards for simply ensuring permanence and registering additional CRTs. Ensuring permanence could be a simple monitoring report submitted over few years, completed by a third party, familiar with monitoring methodology, such as a land trust. Annual registration and monitoring, and periodic inventories and verification activities are unnecessarily onerous and expensive if the project developer is not registering additional credits. The annual reporting requirements present an insurmountable obstacle for small landowners. Project life should be defined as the term for which additional tons continue to be registered, and permanence period is 100 years beyond the year for which the latest CRTs were registered. For example, one could register a 10 year avoided conversion project, registering additional tons according to the baseline and model of build out, and maintain permanence for 110 years. **(SBC)**

RESPONSE: At this time, the work group has made decisions on reporting and inventory requirements for the FPP based on tradeoffs between reporting efficiency and costs with the need for credibility in the GHG data reported to the Reserve. It is expected that further efficiencies will be developed with experience. Monitoring of reductions must continue until each reduction meets the definition of permanency (i.e. 100 years), even if new reductions are no longer accrued.

375. Reversal: Needs more clarity to understand the relationship of reversal to permanence, termination, project life, etc. **(SBC)**

RESPONSE: Additional guidance has been added to the text of Section 7.2.2 to clarify the relationship of reversal to permanence, termination, project life, etc.

Appendix A Developing a Forest Project Carbon Inventory

A.2 Measure Carbon Pools in the Project Area

376. In the second paragraph, I don't know if I understand the sentence, "Pools may only be excluded if doing so will have no deleterious effect on total quantified GHG reductions." Does that mean that if I anticipate the change in Soil Carbon, Litter Carbon or Shrub Carbon will be de minimis in future operations, I don't have to monitor those? How would I establish that? **(T. Collins)**

RESPONSE: The final FPP will clarify the requirements by carbon pool. Instead of demonstrating that the carbon pool is deleterious and/or de minimus, required and optional carbon pools will be identified in the FPP based on project type and project conditions.

377. The draft revision identifies eight categories of carbon stocks at a project site, but then excludes seven of these carbon pools—below-ground living biomass, shrubs and herbaceous understory, standing dead biomass, lying dead wood, litter, soil, and wood products—from mandatory reporting. Appendix A at page 39 states that "pools may only be excluded if doing so will have no deleterious effect on total quantified GHG reductions. The cumulative net GHG emissions from all excluded pools over the project lifetime must be less than 5% of total quantified GHG reductions/removals for the project."

The carbon contained in soil organic matter changes in response to management activities, and substantial losses from soil carbon stocks may continue for decades after harvesting. By making the soil (and other) carbon pools voluntary, the draft revision underestimates the carbon emissions and lower sequestration rates associated with soils in intensely harvested forests, and obscures the potentially significant differences between forest management scenarios. This is especially important because the soil carbon impacts are likely to be concentrated at the front

end of a project, long before the benefits of the greenhouse gas removals of the project may be realized, regardless of whether the emission is equal to 5% of the greenhouse gas emissions/removals over the lifetime of the project. **(Diversity)**

RESPONSE: The final FPP will state which carbon pools are required and which are optional, based on project type and project activities. These determinations are based on investigations into the emissions/reductions associated with typical project activities relative to their baseline activities.

378. How do you know if the excluded pools are less than 5% over 100 years if you don't measure them? **(NRDC)**

RESPONSE: Agreed. The final FPP will state which carbon pools are required and which are optional, based on project type and project activities.

379. Requiring a project to measure a previously excluded pool is of limited use since the earlier measurements won't be available for comparison. **(NRDC)**

RESPONSE: Agreed. The final FPP will state which carbon pools are required and which are optional, based on project type and project activities.

380. [In regards to Table A.1] These pools should be required or optional, but not required "unless justified". We need more guidance to ensure the protocols are rigorous and respectable. **(SBC)**

RESPONSE: Agreed. The final FPP will state which carbon pools are required and which are optional, based on project type and project activities.

381. [In regards to Table A.1] Is there a requirement for soil type? **(MGM)**

RESPONSE: There is not a requirement for soil type.

A.3 On-Site Forest Inventories

382. [Landowners is supportive of] The use of old inventory data up to 12 years old will be permitted for a limited time. **(Landowners)**

RESPONSE: Noted. The intent of allowing plot data up to 12-years old is to recognize prevalent sampling methodologies that are based on a continuous sampling process and to minimize reliance on growth models for extended periods of time. Plot data is

expected to be 'grown' in a growth model to a reporting year for annual reporting and determination of confidence statistics.

383. The example of the calculation of below ground biomass from above ground biomass density shows 346.874 metric tons per hectare for ABD and 36.211 metric tons per hectare for BBD. I came up with 80.9185 metric tons per hectare for BBD and wondered if I applied the formula from the previous page correctly. Here's how I calculated it:

BBD tons/ha = exp(-.7747+.8836(LN ABD tons/ha))

=2.71828182845904^(-.7747+.8836(LN ABD tons/ha))

=2.71828182845904^(-.7747+.8836(5.848961602))

=2.71828182845904^4.393442471

=80.91849961 tons/ha of below ground biomass

(T. Collins)

RESPONSE: Noted. The work group is in contact with the U.S Forest Service's Pacific Northwest Station to ensure that the FPP contains the best equations possible. The final draft will include these equations and examples displaying how they're used.

384. On forest inventories: there does not seem to be a requirement for having permanent sampling plots. This means that changes in carbon stocks are MUCH harder to quantify. **(Terra Global)**

RESPONSE: Noted. Forest inventory measurements can be statistically valid with the use of sampling methodologies that include permanent plots and temporary plots or one or the other. Many cost-effective strategies that utilize temporary plots combined with growth models, remote sensing, and stratification are very effective at quantifying inventories through change associated with forest growth and disturbance (including harvest).

385. Permanent plots are not required, and the FPP 2.1 had semi-permanent plots that must last at least six years. This revision only requires temporary flagging at plot center. It seems that every version is moving farther away from permanent plots. **(Terra Global)**

RESPONSE: Correct. Although, permanent plots are allowed, there are many other effective inventory strategies that do not require permanent plots.

386. [Example A.3] It is obvious that allometric relations are used to go from DBH and height per tree to biomass (column 7). However, interpreting column 8 is impossible. The term "Weight" is confusing, as it relates to the effect of gravity on mass. I prefer "expansion factor", with as unit "ha^-1". What is the formula for calculating this factor? **(Terra Global)**

RESPONSE: The final FPP draft will include updated equations along with examples that display their use. Definitions and names of terms have been edited and expanded for improved clarity.

387. Verifiers should not be given the authority to grant approval for use of different allometric equations. All allometric equations should be reviewed and approved by the Registry. **(NRDC)**

RESPONSE: Noted. Common practice for IFM projects is determined by the carbon in live trees with defined assessment areas using data and analysis provided by the USFS. To ensure consistency of reporting between and among project types and consistency with estimates of common practice, the equations provided by the Reserve must be used. The equations provided by the Reserve are the same as those used by the USFS for determination of common practice. Therefore, only the equations provided by the Reserve can be used.

388. 12 years is too long without any field sampling, particularly for improved forest management projects. **(NRDC)**

RESPONSE: Noted. Forestry field data is a labor-intensive process. The requirement that field data is *"no older than 12 years"* is a reasonable standard as it is typical and practical for forestry field data across an entity to be collected every 10-15 years. Forest inventories have long been managed with data 'grown' in growth models to maintain a current estimate. Data are often grown for longer periods than 12 years in practice. The FPP maintains this standard to ensure plot data remain fresh.

389. (Step 2) The Protocols should not open the door to accepting biomass equations that a project claims are more accurate. Instead projects should be required to use equations that have been reviewed and approved by the Registry. **(NRDC)**

RESPONSE: Noted. Common practice for IFM projects is determined by the carbon in live trees with defined assessment areas using data and analysis provided by the USFS. To ensure consistency of reporting between and among project types and consistency with estimates of common practice, the equations provided by the Reserve must be used. The equations provided by the Reserve are the same as those used by the USFS for determination of common practice. Therefore, only the equations provided by the Reserve can be used.

390. In Step 1, the draft states that the methods of Cairns et al. should be used to estimate root biomass as a function of aboveground volume. I suspect that the methods of Jenkins et al., 2003, in Forest Science, 49(1): 12-35 are more reliable than Cairns, but I do not have definitive

evidence for this. At minimum, the Jenkins methods should be recognized and allowed. **(Ecofor)**

RESPONSE: Noted. The Reserve will continue working with the U.S Forest Service to provide the most up-to-date and standardized equations possible. It is our goal to be consistent with the FIA methodologies.

391. Step 2 talks about using allometric equations that use both tree height and diameter to estimate biomass. This approach is correct, and vastly more reliable than using only diameter. However, the bole biomass equations given in Table A.3 use volume, not height and diameter. A variety of equations are available for North American tree species that use both height and diameter to estimate biomass. See the following for a relatively broad set of equations, and for guidance on adapting equations for one species to another species:

> Smith, Gordon R., Bruce A. McCarl, Changsheng Li, Joel H. Reynolds, Roel Hammerschlag, Ron L. Sass, William J. Parton, Steven M. Ogle, Keith Paustian, James Holtkamp, and Wiley Barbour. 2007. Harnessing farms and forests in the low-carbon economy: how to create, measure, and verify greenhouse gas offsets. Edited by Zach Willey and Bill Chameides. Raleigh, NC: Duke University Press, Nicholas Institute for Environmental Policy Solutions. 229 p.

(Ecofor)

RESPONSE: Noted. The Reserve will continue working with the U.S Forest Service to provide the most up-to-date and standardized equations possible. It is our goal to be consistent with the FIA methodologies.

392. Paragraph 2 (pg. 42) states: "The bole total volume (VOL) is calculated first and then multiplied by the specific gravity value for each species. This result is divided by 2.204622 to convert from pounds to kilograms." Then in "Table A.3. Sample of the Equations for Tree Species Biomass Estimates" there is the following equation for completing this step: Douglas-fir (VOL * 28.70) /2.204622.

First it is unclear, but we are assuming that the "VOL" referenced is cubic foot volume? Second 28.70 is not the specific gravity of Douglas-fir that appears to be the Pounds per Cubic Foot, is that correct? Our assumption is that the 28.70 is the specific gravity (approx. 0.45 or a similar number for Douglas fir) multiplied by 62.4?

Some guidance is being request for a chart with acceptable specific gravity values for common species or species groupings. If that is not possible, we would request that the references section provide acceptable sources for finding specific gravity values. **(FCO)**

RESPONSE: Noted. The final draft has been edited and expanded to present the use of the equations with more clarity.

393. In the chart (pg. 43) "Example A.3. Quantification Example (Part III – Tree Biomass)" column 8 in the chart refers to the "Weight (Expansion per Hectare)" with the following methodology in the subsequent paragraphs: "The plot in this example was measured using a 30 square foot basal area factor prism" and "The basal area factor and each tree's diameter (breast height) are used to determine the expansion factor, or weight, of each tree (column 8)"

We are having troubles replicating the numbers that are given in column 8 of the chart, so how were those numbers determined? Please, provide a detailed example**. (FCO)**

RESPONSE: The final draft will utilize the most up to date equations provided by the US Forest Service FIA program. Additionally, examples will be included to demonstrate their use.

394. Finally a minor issue is on page 42 at the end of paragraph two there is the statement: "The appropriate volume function for each species is cited in the references, which are Means et al. (1994) and Waddel and Hiserote (2005)."

The references are not included in the draft; please ensure that they are available when the final version of the protocol is released.

Additionally, because scientific articles are often out of print or require a subscription to websites are needed (these two listed papers couldn't be found with a simple Google search as Waddel appear to have been misspelled and should be Waddell); the formulas should be listed in chart in the appendix section. **(FCO)**

RESPONSE: Agreed. The final draft will ensure that all references are available and correctly presented.

A.4 Account for Confidence of Estimates

395. It isn't clear how the confidence deduction works. How can the confidence interval be calculated in a year in which there is no new field data? What is used in those years? Is the confidence deduction kept constant between sampling periods? This would be perverse, since the actual confidence in reported results would be decreasing. Since a sampling plan can only project, rather than ensure, a particular confidence interval, what happens when a project's confidence interval is in the unacceptable range? Are the confidence interval requirements applied to total carbon stocks or to estimated reductions? **(NRDC)**

RESPONSE: The confidence statistics are computed annually from all field data that may have been sampled up to 12 years in the past. Computer growth models 'grow' the live carbon pools to a current date prior to computing the confidence statistics. Plots older than 12 years are dismissed to ensure plots remain fresh. The confidence statistics are derived for all of the required carbon pools that are based on an estimate (harvested carbon is measured instead of estimated). The computed confidence statistics are compared to the deduction tables in the FPP to determine the amount of deductions that are applied to the projects estimates.

396. Allowing the deduction to be based on the actual error of the estimate provides an economic incentive to have a more precise inventory. **(WWF)**

RESPONSE: Noted. The methodology in the FPP provides a similar incentive, only slightly different than what is suggested in the comment, to develop a more precise inventory.

397. [In regards to Table A.2] Requirements for soil sampling are missing. **(SBC)**

RESPONSE: The document has been edited to provide guidance for soil sampling.

398. [In regards to Table A.2] Are plot-level allometric equations for below-ground biomass sufficiently accurate for very old forest stands? Very large old trees are generally under-represented in the data sets used to develop these equations. Should the protocol at least allow single-tree equations at the discretion of the project developer? **(WS)**

RESPONSE: Available allometric equations for below-ground biomass are limited. Having stated this, the work group has determined that standardizing equations is a priority. This is to allow for comparisons between baseline and project activity on any given project and inventories from project to project and project to state-wide/nation-wide wherever possible. The FPP utilizes equations from the US Forest Service Forest Inventory and Assessment (FIA) methodologies.

399. [In regards to Table A.4] What level of statistical confidence is required? Can confidence intervals be reported by carbon pool? **(SBC)**

RESPONSE: The deductions based on confidence levels are displayed in Table A.4 and are based on the combined carbon pools.

A.5. Estimate Carbon in Wood Products

400. Without commenting substantively at this time, CIWMB believes that if landfill sequestration of wood products is being discussed as part of this protocol, then the relative greenhouse gas emissions from alternative uses of such material should also be evaluated. As such, CIWMB suggests that meetings need to be set up during the 45-day comment period with a range of stakeholders who would have differing perspectives on this particular issue. These stakeholders would include compost and mulch facilities, landfill operators, biomass to energy facilities, and recycling entities. **(CIWMB)**

RESPONSE: Noted. The discussion related to accounting for wood products continued after this public draft was released for public comment on December 5, 2008, with acknowledgement that a public workshop would be held to state conclusions achieved by the work group related to wood products accounting. The meetings that were held after December 5th, 2008 engaged the California Integrated Waste Management Board and the Californians Against Waste. The work group proposed a solution to accounting for wood products that was shared with the public on February 3rd, 2009. The public was asked to comment on the work group's effort by February 20th, 2009.

401. The wood products section is incomplete and it should clearly state that a new version will be completed and published for public comment. **(Terra Global)**

RESPONSE: See the response to Public Comment # 400.

402. Wood products are a legitimate carbon pool and should be credited according to the 100 year method and using accepted methodology and default tables outlined in the forestry technical guidelines DOE 1605b GHG Registry, or any updated revisions to the default tables. **(Weyerhaeuser)**

RESPONSE: Agreed. Wood products crediting is included in the current draft.

403. The fatal flaw with the current protocol in making wood products optional is that by excluding wood products from the "without project" baseline (which is usually more harvest intensive) will overcredit the offset accruing to the "with project" forest management alternative since ignoring wood products treats all harvest as an emission and credits this as avoided emission stored on the stump. In other words, the emphasis should not be in attempting to credit wood products, but rather how to account for forest carbon benefits appropriately for forest management projects. Inaccurate measures of reductions will result otherwise. **(J. Cathcart)**

RESPONSE: Agreed. Wood products crediting is required in the current draft.

404. The California Registry's draft Revised Forest Project Protocol, December 2008, recently released for public comment, incorrectly uses the term "EPA 1605(b)" throughout the document (List of Tables, pp. 47-49). The Voluntary Reporting of Greenhouse Gases Program, or "1605(b)" Program, is a program of the U.S. Department of Energy's Energy Information Administration (EIA), not the U.S. Environmental Protection Agency (EPA) as is implied by the document. When referring to 1605(b) it should be listed as an EIA program. **(P.McArdle)**

RESPONSE: Agreed. The final draft has been edited to correct this reference.

405. The reference to the 1605b guidelines should be to the DOE, not EPA. **(J. Cathcart)**

RESPONSE: Agreed. The final draft has been edited to correct this reference.

406. The reference to Section 1 should be to Part 1 Appendix: Forestry. **(J. Cathcart)**

RESPONSE: Agreed. The final draft has been edited to correct this reference.

407. There is a reference to the wood products within your 'entity' which should be project area. **(J. Cathcart)**

RESPONSE: Agreed. The final draft has been edited to correct this reference.

408. Change the term 'discounted' (best used in financial analysis) to 'adjusted'. **(J. Cathcart)**

RESPONSE: Agreed. The final draft has been edited to correct this sentence.

409. The guidelines are not accurately described in the protocol. There are incorrect units, no guidance on converting log volume to lumber volume, incorrect guidance on computing specific gravity (the units of measure (ft^3, for example, must be balanced with the weight of water for the same volume- 1 ft^ of H2O = 62.41 pounds. This is not described here). The roundwood conversion from 1605b is not described in the protocol. Mill efficiency is introduced as a concept, but is not really a concept in the 1605(b) guidelines. Example 1.4 on pp. 25-26 of the 1605(b) technical guidelines for forestry is the methodology that should be used – since it converts growing stock volume to wood products storage directly – bypassing the need to convert growing stock volume to wood products scale volume. **(J. Cathcart)**

RESPONSE: Agreed. The work group will consider the recommendations described in the comment and ensure accuracy and clarity, both with regards to the issue raised on specific gravity and the issue raised regarding mill efficiency.

410. Defenders supports the inclusion of wood products as a "transfer" pool for forest carbon at the time of timber harvest. However, the issues around counting wood product carbon for forest management projects are still far from resolved. CCAR needs to consider the perverse effects of an accounting system that, in effect, encourages wood to be harvested and ultimately buried in landfills, potentially at the expense of forest ecosystems. Crediting waste wood in landfills conflicts with the suite of public policies that are seeking to divert wood and other waste to other uses, including recycling programs, composting and biomass energy. To assess the contribution of wood products to emissions reductions, wood products should be accounted for at the 100-year end value of their useful life to the point of discard, with an appropriate discount for uncertainty. Any assumed landfill value should be eliminated entirely. **(DW)**

RESPONSE: Noted. The FPP bases the crediting of wood products on the averaged 100-year in use value. Accounting for landfill carbon is conducted for thorough accounting but is not credited. Discounting for uncertainty would be contradictory to ensuring that accounting for climate benefits is conservative, particularly for projects that harvest more in the baseline approach than the project activity.

411. An uncertainty discount needs to be applied to the calculation of wood product carbon storage. There is still a considerable lack of knowledge in all of scientific literature as to actual wood uses and lifetimes. While it is possible to track the log into a certain kind of wood product through documentation of mill production, from that point the chain of custody and fate of the wood becomes uncertain and unverifiable. Until the fate of wood products in use can be independently verified, a discount for uncertainty should be applied to wood product carbon. **(DW)**

RESPONSE: Noted. Discounting wood products can have the effect of over-estimating the climate benefits of certain projects. The FPP approach with wood products accounting is to focus on complete accounting.

412. Utilize and develop life-cycle sequestration rates for other options besides landfilling, including in the case of the forestry protocol sequestration to soil through composting/mulching and 'sequestration' for extended life-cycle thru re-use, as well as re-cycling into MDF and other wood products. **(RGWC)**

RESPONSE: Noted. The protocols include required accounting for carbon in landfills but this carbon pool is not credited. Although data exists from the U.S Department of Energy 1605(b) about the quantity of carbon from wood products that goes to landfills, there is still too much uncertainty about future trends and the sequestration rates for other options such as composite wood products and composting/mulching.

413. Re-evaluate the assumption that in the future wood 'wastes' will end up in landfills. With the decreased availability in general of forest products (shrinking resource pool), more wood products are already coming from recovered wood - as a walk down the plywood products aisle at Home Depot will reveal. **(RGWC)**

RESPONSE: Noted. The FPP includes required accounting for carbon in landfills but this carbon pool is not credited. Although data exists from the U.S Department of Energy 1605(b) about the quantity of carbon from wood products that goes to landfills, there is still too much uncertainty about future trends and the sequestration rates for other options such as composite wood products and composting/mulching.

414. Offering any amount of credit for wood products that are ultimately discarded in landfills contradicts the general purpose of the forest project protocol, and obstructs efforts to reduce the emissions associated with landfill waste. Crediting the sequestration of wood in landfills threatens the integrity of the entire forest project protocol by offering credit for what is in most cases the worst conceivable end-use for wood products. There is a high potential for perverse incentives associated with this credit, and it is completely inappropriate to provide credits for converting California's forests into landfill waste. Perhaps even more important, the landfill credit in the revised protocols threatens to complicate and obstruct the development of policies in the waste and recycling sectors to divert wood and biomass from being discarded in landfills. **(Diversity)**

RESPONSE: Noted. The purpose of the FPP is to provide measurement and accounting guidance so that management activities can be assessed in terms of the climate benefits they produce. This obligates accounting for wood products. The exclusion of wood products can lead to an over-estimation of the climate benefits for projects that assume more harvest activities in the baseline than the project activity.

The comment was provided prior to the full recommendation by the work group that was shared with the public on February 3, 2009. At that meeting, the work group explained how crediting will include only in use wood products. Landfill carbon will be reported for complete accounting but not be credited.

415. 1605(b) methods taken as a whole are insufficiently precise for purposes of registering tradeable offsets. Regional averages are based on very limited data, with interpolations and extrapolations very common. Infrequent mill surveys and logging residue surveys, for instance, are used to derive percentage losses applied to harvest volumes. Mill efficiencies vary tremendously from one facility to the next, and among specific product types within the very broad categories used in the USDA Forest Service publication GTR NE-343 (the basis for the 1605(b) methodology). Secondary processing losses (from production of flooring, doors, windows, cabinets, etc.) assumed in these tables are too low and there is no accounting for disposal of wood prior to expected product lifetime due to renovations. The form of equation used to estimate products in use results in larger estimates of 100-year wood remaining compared to alternative assumptions [see reference in public comment submission document]. Landfill emissions are calculated based on carbon accounting alone, without addressing the much higher global warming potential of methane released from landfilled wood.

Additional region-specific research should be conducted to determine the expected lifetimes of products in particular regions using particular construction techniques and to update other assumptions about wood loss through the product chain. Construction methods, consumer preference for renovations, and disposal habits also change over time, so it would be important to update these assumptions frequently. Landfill decay parameters were already revised recently to reflect faster and more complete decomposition of wood products than initially assumed in the GTR NE-343 publication.

We highly recommend requiring some level of project-specific sampling to determine appropriate carbon loss estimates for wood products. The draft protocol calls for determining end uses by surveying the mills supplied by a project. If this type of survey is practical, then gathering data on mill efficiencies should not be too onerous. Generic estimates of GHG

emissions associated with processing and transport and disposal of wood products should also be included, based on more detailed life-cycle research. **(WS)**

RESPONSE: Noted. Determining the climate benefits of forest management activities requires an accounting system that addresses key sources of sinks and emissions. The 1605(b) data were determined to be the best data available for performing a life-cycle analysis of carbon in wood products. This regional and national data will be supplemented with mill efficiencies and product generation wherever possible to improve the resolution of the data. Landfill carbon will be accounted for, but not credited, due to the potential alternative end uses of landfill carbon. This approach was chosen to maintain both accounting and crediting integrity.

416. Process 2 – Accounting for Mill Inefficiencies - Are there mill efficiencies for other regions of the country that are readily available? **(MGM)**

RESPONSE: The Department of Energy/EIA 1605b Program data display mill efficiencies that can be used across the country in the absence of data from within an assessment area.

Appendix B Modeling Carbon Stocks

B.1 About models and their eligibility for use in the Reserve

417. Additional models should be demonstrated to the verifier, not a state forester. **(Terra Global)**

RESPONSE: Noted. The Reserve will approve all models through collaboration with state foresters, universities, and other experts using the criteria outlined in Appendix B1.

418. The Reserve should review and approve all models. **(NRDC)**

RESPONSE: Agreed. The Reserve will approve all models through collaboration with state foresters, universities, and other experts using the criteria outlined in Appendix B1.

419. Are there any models approved for any other state? How many models meet or are close to meeting the proposed requirements for other states? **(NRDC)**

RESPONSE: Models exist, such as Forest Projection System (FPS), that have potential applicability across many of the western forests. The Reserve will collaborate with state agencies, foresters, and universities to determine a list of models that meet the criteria in the FPP.

420. Requirements for the approval and use of models are reasonable. **(WWF)**

RESPONSE: Noted. Approved models will be added as they are developed and/or reviewed for each region.

Appendix C Determination of the Risk Rating for Forest Projects

421. A general comment about this entire Risk Section is that the numbers are far too high and often very arbitrary or theoretical. When adding these unmitigated risks together, you will reduce the project credits far beyond that which is likely given all these things are unlikely to happen. This area should be further refined to collective represent a better estimate of the likelihood of overall risk of reversal and proper calibration of the reserves on a project. **(Terra Global)**

RESPONSE: Noted. While tests with actual projects have been limited, the results to date track appropriately with the calculated risks. The work group focused on developing a conservative framework based on professional judgment that can be improved with experience and data.

422. Does the risk calculation from Appendix C need to be re-done annually in the monitoring report? If not, this should be the case as risk may change drastically over the course of a project's lifetime, both negatively and positively. Obviously, this will introduce more uncertainty in the credits that will be released over time. A revision of the risk should be done at a time the baseline is revised. **(Terra Global)**

RESPONSE: Agreed. The project's risk rating is to be re-computed at each verification. The frequency of verification cycles will be defined in the updated verification protocol. Edits have been made to the document and monitoring forms to clarify this requirement.

423. The risk analysis included here seems unnecessarily complex, given the many unknowns associated with levels of risk over 100 years. Perhaps a continuous adjustment of risk assessments would be possible, based on observed losses across project types . A climate risk estimate should be included – changes in climate could affect forest viability by affecting fire, insect/pest/disease outbreaks, and weather events. **(WS)**

RESPONSE: Noted. The risk assessment is a required project activity to be undertaken at each verification. Changes in risk and changes in the risk assumptions will reflect the current status of the project and knowledge of risk. Climate is an environmental variable

that may predispose forests to higher natural disturbance risk and is expected to be incorporated in risk factors for wildfire (ND7), pests (ND14), and other (ND21).

424. What does it mean for "project proponents and verifiers … to recommend mitigations" for the risk calculations? **(NRDC)**

RESPONSE: The risk matrix will be refined with time, data, and experience. Project developers and verifiers are in the first line of critiquing the risks and the associated mitigations. Their input will contribute to improving the risk matrix over time.

425. What is meant by the statement that "the adjustments to these risk elements needs to be severe." What adjustments? To what risk elements? **(NRDC)**

RESPONSE: The basis of the Risk Rating described in Appendix C is an assumption that all risk determinations and associated mitigations are linked to a project life of 100-years. The language referenced in this comment refers to adjustments to projects with less than a 100-year life which is no longer possible because all projects require a Project Implementation Agreement with a 100-year commitment. Therefore, this language has now been removed from the document.

C.1 Financial Risk

426. FR 1 – The criteria of using the number of years that the investment is "recouped" should clearly state that what is meant by that. Does that mean it is has a cumulative cash flow that is positive? Does this mean that the IRR meets a risk adjusted test? It should also provide guidance for the assumptions that can be used for the prices of timber and carbon. In addition, this should specify how donor-based funding can be used in the financial analysis. **(Terra Global)**

RESPONSE: Agreed. The document has been edited to include an expanded definition of 'recouped' that provides clarity on these issues.

427. FR 1 & 2 – It is unclear where the number of 40% comes from. This value is very high; some background should be provided. In addition, the FPP should provide for some sort of interpolation for breakevens below 10 years instead of two buckets. **(Terra Global)**

RESPONSE: Noted. While tests with actual projects have been limited, the results to date track appropriately with the calculated risks. The work group focused on developing a conservative framework based on professional judgment that can be improved with experience and data.

428. The criteria in the financial risk analysis are vague, the process is unclear, and the quantitative risk adjustments seem large and arbitrary. The analysis is biased towards improved management projects. **(NRDC)**

RESPONSE: Noted. The financial risk analysis is undergoing editing where vague criteria was used in the first draft. These risks will be identified and merged into a 'minimum risk buffer contribution.' Where risks utilize objective criteria that are unique to each project, the risk matrix will utilize this more resolute approach, as it was determined that quantification of risk and mitigation will provide a more equitable system of establishing buffer requirements than simply applying a default value. While tests with actual projects have been limited, the results to date track appropriately with the calculated risks. The work group focused on developing a conservative framework based on professional judgment that can be improved with experience and data. Reforestation projects require significant investment and long periods of maintenance prior to recouping the investment in the form of timber harvest. Improved Forest Management projects may not require the same level of investment, which is the rationale for difference in the current risk assessment.

429. Organizations should show that the assumptions they have made on income generated by carbon credits are valid. **(MGM)**

RESPONSE: The comment appears to request a test for financial additionality. Additionality in the FPP is determined through baseline eligibility criteria (which includes a legal test, an economic feasibility test, and a common practice test) rather than a financial barriers (project would not have happened but for the investment of carbon funding) test.

430. A potential opportunity for dealing with risk is changing who is responsible for carbon loss. Currently, the risk of carbon loss is internalized (i.e. held by the forest project owner). Requiring project owners to internalize that risk places a great deal of emphasis on the accuracy of the financial risk assessment in Table C.1. If the risk were placed with the purchaser of the CRTs, FR1 and FR2 would be less of a hindrance to project investment. Large organizations may be willing to invest in projects that have a longer payback period under current carbon market prices as a hedge against future increases in the market value of carbon. Assigning risk to the CRT purchaser would also address FR4-6. This would reduce the barrier to small land-owner and conservation group involvement in project development. **(Hurteau et al.)**

RESPONSE: Noted. The work group decided that it is preferable to standardize risk quantification to improve fungibility among project reductions. Financial risks will be defined and merged into a default minimum buffer pool contribution.

C.2 Management Risk

431. The criteria in the management risk analysis are vague, the process is unclear, and the quantitative risk adjustments seem large and arbitrary. **(NRDC)**

RESPONSE: Noted. Wherever vague criteria are used, the risks will be identified and merged into a 'minimum risk buffer contribution.' Where risks utilize objective criteria that are unique to each project, the risk matrix will utilize this more resolute approach, since a more resolute quantification of risk and mitigation will provide a more equitable system of establishing buffer requirements than simply applying a default value. While tests with actual projects have been limited, the results to date track appropriately with the calculated risks. The work group focused on developing a conservative framework based on professional judgment that can be improved with experience and data.

432. [In regards to Table C.1] This requirement unfairly penalizes small landowners or new conservation organizations. **(SBC)**

RESPONSE: Noted. The work group focused on developing a conservative framework based on professional judgment that can be improved with experience and data. If an unfair bias against small landowners or new conservation organization proves to be the case, the risk assessment will be adjusted.

433. [In regards to Table C.2] The mitigation measures identified (gated roads and patrols) should provide higher level of mitigation than 25%. We would recommend 80%. **(SBC)**

RESPONSE: Noted. This risk will be defined and merged into a default 'minimum risk' category.

[In regards to Table C.2] Unlike in other countries where land tenure and management authority are not as well defined, illegal logging is not such a common problem within the United States that it would justify a 50% reduction in overall carbon stocks associated with a project. **(MGM)**

RESPONSE: Noted. This risk will be defined and merged into a default 'minimum risk' category.

C.2.2 Management Risk II – Conversion of forestland to other uses that impact current carbon stocking and future sequestration

434. For projects that do not meet the three zero-conversion criteria, the risk of conversion should take into account the opportunity costs of potential conversion, i.e. how much will be made if converted. In addition, the "mission of the land owner" should be considered and the ability of the land owner to financially support the on-going conversation. **(Terra Global)**

RESPONSE: Noted. The suggestion to include opportunity costs, landowner missions, and financial capacity to convert is under consideration by the work group.

435. Isn't this section duplicative with Section 6.3.1.2? Why are there different conversion rankings based on the same criteria as the earlier section? How is the "likely conversion strategy" identified? **(NRDC)**

RESPONSE: While Appendix C has the same logical elements determining risk of conversion as Section 6.3.1.2, these two assessments are performed for different reasons. In Appendix C, the risk assessment is utilized to determine risk of reversal and to calculate an appropriate buffer contribution for all project types. In Section 6.3.1.2, the risk assessment is used to determine conversion uncertainty and a discount value associated with the analysis of GHG reductions claimed in an Avoided Conversion project.

436. The text here notes that "Projects that are found within the following categories are considered to have a zero risk of conversion . . . Land units that have current (and for the foreseeable future) legal restrictions that disallow conversion activities. (e.g. conservation easements, deed restriction, or third party contract)."

This section continues a general conflation within the text of contracts with real property instruments (see our comment on section 3.3 above). A 'third party contract' might not specify an injunctive remedy for breach, and in general contracts do not have the same ready access to injunctive remedies as property rights. Land subject to a 'third party contract' that disallows conversion activities should in no way be considered to have a "zero risk of conversion" – the risk compared to an enforceable conservation easement is considerably higher. We suggest that CCAR exclude projects with third party contracts as the legal restraint against conversion not be allocated a zero risk of conversion in assessing the risk of reversal. **(NF)**

RESPONSE: Agreed. The intent is identify that the risk of conversion is zero when a deed restriction that explicitly addresses development is recorded for the project area for a minimal term equal to the project life. The language in this section has been edited to address this issue.

437. [In regards to Table C.3] See comments for Table 6.2. **(SBC)**

RESPONSE: See response to Public Comment # 278.

438. [In regards to Table C.4] We recommend using this table to calculate total carbon reductions for Avoided Conversion projects, and the rate of carbon reductions from such projects. **(SBC)**

RESPONSE: Noted. The work group will consider this suggestion as a standardized methodology to develop an avoided conversion baseline.

439. [In regards to Table C.4] The distinction between housing at different size allowable lots seems unrealistic. A better approach may be to categorize housing development by percentage of development envelope that is to remain intact forest for riparian or wetland buffers or through conservation reserve. **(MGM)**

RESPONSE: Noted. The work team standardized guidance wherever possible in order to reduce gaming and confusion between project developers and verifiers. This particular guidance is intended to frame the discussion between verifier and project developer. This methodology can be updated over time with the acquisition of new data.

440. [In regards to Table C.5] The risk chart here implied a major distinction between a "carbon easement" that is not monitored by a third party, and one that is monitored annually by a third party. What entities do you envision acting as third parties to monitor the carbon easement? Is that something CCAR wishes to take on, or is that to be left to verifiers or outside conservation non-profits? **(MGM)**

RESPONSE: Noted. Table C.5 has been edited for clarification and to reflect the adoption of a required Project Implementation Agreement (PIA) for all projects.

C.2.3 Management Risk III – Reducing obligated reductions through over-harvesting

441. Are risk ratings based on development potential, timber value and financial risk superseded by a restrictive contract or deed restriction? **(T. Collins)**

RESPONSE: The work group developed risk ratings by identifying and categorizing all forms of risk. These risk categories are listed along with elements (strategies) that could mitigate all or a portion of the risks. For example, the risks in C.2.3 are focused on high values in timber being exercised through timber harvest and reversing reductions created through a carbon project. Each risk is assessed as a separate additive element contributing to the total overall risk rating for the project. Table C.5 has been edited for clarification and to reflect the adoption in the FPP of a required Project Implementation Agreement (PIA) for all projects.

442. How can the timber value over a century be estimated with any accuracy? Given that all the projects affected by these protocols are participating in the Climate Reserve, how could they possibly occur in a manner where climate issues are not directly assessed? **(NRDC)**

RESPONSE: Noted. The risk assessment is a required project activity to be undertaken at each verification cycle. Therefore, changes in risk and changes in the risk assumptions will reflect the current status of the project and knowledge of risk. Climate is an environmental variable that may predispose forests to higher natural disturbance risk and is expected to be incorporated in risk factors for wildfire (ND7), pests (ND14), and other (ND21).

443. [In regards to Table C.6] This table should note "inflation adjusted" dollar values. A more accurate reflection of risk would be a comparison between carbon values and timber values on a per acre basis. Instead of relying on the highly variable estimate of 100-years of timber values, it would be better to reflect this risk in terms of current ratio between timber prices per acre and carbon prices per acre. The assumption being that a property that has a current ratio of timber prices to carbon prices of 2:1 would be lower risk than a project where that ratio is 10:1.

There also seems to be double counting for deed restrictions. Management Risk Items 28-30 are the same as MR 13-15 – although with some different percentages. Is it the intent of the protocol draft to count these twice? If so, what is the justification? **(MGM)**

RESPONSE: See the response to Public Comment # 442 for the first part of this comment as an alternative method of addressing this risk.

The use of the Project Implementation Agreement (PIA) as a deed restriction addresses different risks and mitigates them in different ways. The PIA is explicit in its terms related to reversals of carbon. While the PIA contains remedies for any kind of reversal regardless of cause, a conservation easement typically contains explicit restrictions associated only with reversals related to conversion. In this case, the conservation easement eliminates the need to exercise the remedies in the PIA and is considered to have further assurances against reversals in areas of high development risk.

C.3 Social Risk

444. Describing social risk is an important part that has been basically left out of the FPP. I would commend CCAR for their work on this. **(Terra Global)**

RESPONSE: Social risks will be noted and combined into a single default value that reflects a minimum contribution to the buffer pool.

445. The entire discussion of social risk needs far more specificity and rigor. Minor deductions of 0.5% to 1% appear arbitrary and unnecessary. **(NRDC)**

RESPONSE: Noted.

446. It is my impression that there is way too much discussion around the social risks which amount to a very small risk indeed (especially anywhere in the developed world). My advice is to

reduce this discussion to a paragraph, require a 3% buffer for social risk, and be done with it. **(J. Cathcart)**

RESPONSE: Noted. Social risks will be noted and combined into a single default value that reflects a minimum contribution to the buffer pool.

C.3.1 Social Risk I – Risk of government changing climate policy

447. These are arbitrary and insignificant, and the overlook changes daily. It is recommended to remove these reductions. **(Terra Global)**

RESPONSE: The intent of the inclusion of social risks is to acknowledge that the FPP is being developed with the assumptions that an offset market will continue to evolve. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

448. It is unclear why the adoption of a carbon policy by a local government should result in a reduction in credited benefits. **(NRDC)**

RESPONSE: Agreed. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

C.3.2 Social Risk II – Frequently changing regulations or guidelines on GHG accounting

449. It is totally unclear to me what the risk is that is addressed in this section. Why are we setting a standard for “smaller local registries?” **(NRDC)**

RESPONSE: Agreed. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

C.3.3 Social Risk III – Monetary decisions that impact, hinder or enable CER projects

450. This section is theoretical. In this unclear emerging regulatory market, it will not be able to be applied in a sound way for many years; therefore, remove it. In addition, the use of CER is not defined. **(Terra Global)**

RESPONSE: Agreed. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

451. It is totally unclear to me what the risk is that is addressed in this section. What do other registry's accounting standards have to do with our protocol? **(NRDC)**

RESPONSE: Agreed. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

C.3.4 Social Risk IV – Environmental Justice (health)

452. This risk is inadequately defined and/or justified. **(NRDC)**

RESPONSE: Agreed. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

453. Is there a common definition CCAR is using for "EJ community"? How should this be calculated in the assessment area? **(SBC)**

RESPONSE: Agreed. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

C.3.5 Social Risk V – Effects on employment

454. This risk is arbitrary and unjustified. Implementation of a forest project should lead to an increase in the demand for businesses and workers that can meet the project's needs. **(NRDC)**

RESPONSE: Agreed. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

455. We are trying to create and restore jobs through forest carbon projects, and most of the Sierra Nevada is over 25 miles from a population center of 100,000 or 500,000. What does the size of the population center have to do with skilled labor for forest related work-- job replacement? This risk might not make any sense, but at a minimum, the population figures need revision. **(SBC)**

RESPONSE: Agreed. The work group is considering methods to consolidate these forms of risk and applying them in more of a generalized methodology due to the difficulties in definition.

C.3.6 Social Risk VI – Environmental perceptions

456. This risk is arbitrary and unjustified. Implementation of a forest project does not provide an exemption from local, state, or federal protections. There should be no basis for significant environmental harm from a forest project. **(NRDC)**

RESPONSE: Noted. The FPP is explicit in that projects must be above legal requirements in order to be considered additional. However, certain forest management activities may encounter public resistance and conflict despite their adherence to all local, state and federal regulations and/or evidence of any environmental harm. Therefore, the work group considered this a viable risk. The work group is considering methods to consolidate these forms of social risk and applying them in more of a generalized methodology due to the difficulties in definition.

C.4 Natural Disturbance Risk

457. This section appears to duplicate the goal of the buffer pool. The entire discussion of risk of reversal needs to be consolidated and coordinated. The statements that "reforestation is the fastest way to return a damaged site to net sequestration" and "removal and off-site storage can lessen the total amount of obligated ton reductions reversed over time" are both unsubstantiated and inappropriate. **(NRDC)**

RESPONSE: Agreed. The language in this section will be reviewed as to its focus on risks and risk mitigation and will be revised accordingly.

458. Natural Disturbance Risk: states that "removal and off-site storage can lessen the total amount of obligated ton reductions reversed over time." This is a broad generalization. The benefits of post-fire salvage logging are likely to vary by site. Additionally, there is evidence that post-fire salvage logging can be an impediment to regeneration, has the potential to increase fire risk, and slows ecosystem recovery (Lindenmayer et al. 2004, Donato et al. 2006, Thompson et al. 2007). **(Hurteau et al.)**

RESPONSE: Noted. The language related to this issue will be reviewed as to its focus on risks and risk mitigation and will be revised accordingly.

459. The discussion of natural disturbance risk on page 63 states that "if a natural occurrence occurs that stops or damages the current forest's ability to sequester carbon, reforestation is the fastest way to return a damaged site to net sequestration. Removal and off-site storage can lessen the total amount of obligated reductions reversed over time." This statement is unaccompanied by

citation or scientific justification for these statements. In fact, salvage logging in many cases is not the best option with regard to forest health, biodiversity, or long-term carbon balance, and can greatly increase soil erosion and the associated loss of soil carbon. Also, natural regeneration may be preferable to reforestation after natural disturbance in many cases. The protocol should not implicitly or explicitly encourage these practices when they contradict ecological objectives. These statements need to be clarified and the protocols need to provide a detailed explanation of what process would be used to evaluate a "well designed and implemented disturbance recovery plan," and "appropriate recovery of trees killed following natural disturbance." **(Diversity)**

RESPONSE: Noted. The language related to this issue will be reviewed as to its focus on risks and risk mitigation and will be revised accordingly.

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C.4.1 Natural Disturbance Risk I – Wildfire

460. Natural Disturbance Risk I – Wildfire: states that "a well designed and implemented disturbance recovery plan can rapidly help to mitigate the continued reversal of obligated reductions and restore carbon losses through management activities that sustain and reclaim the growth potential of the forest." We agree with this statement. However, a well-designed management plan to reduce the risk of loss from high-severity fire would be more beneficial than a well-designed recovery plan in forests that were historically maintained by frequent, low severity fire. In light of the projected increase of fires in California resulting from changing climatic conditions (Westerling and Bryant 2008, Miller et al. in press), managing forest structure to reduce the risk of high severity fire in these forest types would reduce the risk of sequestered carbon being emitted to the atmosphere in the first place. Additionally, just because a disturbed site transitions from a source to a sink as a result of reforestation does not mean that the carbon stock reduction resulting from the wildfire will be recovered in the near-term. Typically, regenerating the pre-disturbance stock will take approximately the same amount of time that the disturbed forest grew prior to the disturbance event (Schulze et al. 2000). **(Hurteau et al.)**

RESPONSE: Noted. Additions to published literature on this issue will allow the work group to improve the wildfire mitigation assessment. This will be incorporated in the final draft.

461. [In regards to Table C.13] More specific guidance on defining an area as high, moderate, or low risk (for fire and insect /pathogen outbreaks) would be appreciated. Mitigation measures, such as fuels reduction and restoring the forest ecosystem to a more resilient state where catastrophic losses are unlikely should be identified as a more effective mitigation (avoidance) measure that 75% mitigation. If a landowner makes significant investments in this and registers a lower amount of CRTs as a result, he/she should not also be penalized with a higher risk rating. Is the "disturbance recovery plan" required at the time of project registration? **(SBC)**

RESPONSE: Noted. Recent advances in wildfire risk and mitigation research have enabled improved methodologies in determination of risk for different nationwide forest communities (Hurteau et al). The work group will incorporate this research in the final

draft. This methodology will allow for the assessment of risk on an annual basis and will replace the requirement of a 'disturbance recovery plan'.

C.5 Summarizing the Risk Assessment

462. Country-based deforestation risks from the FRA assessment could be used instead of the county conversion rates. **(Terra Global)**

RESPONSE: Noted. The work group will review the table and choose the most resolute data that is accessible.

463. This section states that one should add the risks to get the cumulative risk. I believe that you wish to compound the risks, multiplying

$(1\text{-Risk}_1) * (1\text{-Risk}_2) *\ldots * (1\text{-Risk}_n)$

for risks 1 through n. **(Ecofor)**

RESPONSE: Noted. The FPP will be revised to indicate the compounding of risks.