

# SUMMARY OF PUBLIC COMMENTS: Q2 2022 VCS PROGRAM UPDATE PROPOSALS

## 1 INTRODUCTION

This document summarizes the main points of feedback received during the 7 February – 8 April 2022 consultation on proposed VCS Program updates. Verra received input from nearly 30 stakeholders, including project proponents, professional developers, corporate buyers, environmental organizations, and the general public. Verra would like to extend its sincere thanks to all who submitted comments.

During the consultation, Verra sought input on the following questions:

1. Updates to the *Agriculture, Forestry and Other Land Use (AFOLU) Non-permanence Risk Tool* and *Jurisdictional and Nested REDD+ (JNR) Non-permanence Risk Tool*;
2. Updates to uncertainty requirements;
3. Introduction of tonne-year accounting;
4. Clarification of rules around the subsequent registration of project instances in other VCS projects;
5. Clarification on how to manage non-permanence risk when instances leave in grouped projects and those with multiple activity instances; and,
6. Refinement of requirements for qualifying acceptable peer-reviewed literature.

Verra analyzed consultation comments concerning each of the questions asked and general comments received. The feedback received provided a range of useful perspectives on the varied updates proposed. This document summarizes the conclusions we drew from the consultation, summarizes the comments, and presents the comments with Verra's responses.

## 2 CONCLUSIONS

Verra is committed to strengthening and expanding the scope of the VCS Program while ensuring that registered projects deliver real, additional, and permanent emission reductions and removals (ERRs). The collection of proposals that comprised this Q2 2022 program update encompassed a range of new developments, both pragmatic and aspirational. Verra believes firmly in the value of testing new approaches and solutions with the goal of scaling up climate action. The potential to design innovative mechanisms that drive carbon finance is one of the voluntary carbon markets' contributions to climate

change mitigation. The VCS Program continues to host some of the more novel and impactful developments. As with all innovations, Verra ensures that that new program rules, requirements, and functionalities are clear, workable, and will lead to high-quality ERRs.

The following section provides a synthesis of comments received relating to each of the six proposals from this consultation as well as Verra’s responses. For many of these development items, public comments converged and Verra was able to finalize updates to the relevant VCS Program documents, many times incorporating valuable adjustments or additions to each original proposal.

For other items, including tonne-year accounting and subsequent project instance registrations, the comments made clear that these ideas are worth further consideration. Verra will refine its approach to tonne-year accounting before opening a second public consultation on the topic at some point in the future. Similarly, Verra will fine-tune the proposal for subsequent project instance registrations with a tentative goal of enabling the transfer of instances between projects in Q4 2024.

Since the consultation, the following updates have been made and integrated into the latest version of the corresponding program documents.

Topic	Summary of Updates
<i>VCS Methodology Requirements, v4.2 Section 2.4</i>	Updated requirements and methods for estimating uncertainty, based on the IPCC definition
<i>VCS Standard, v4.3 Section 3.2.15</i>	The introduction of requirements to mitigate non-permanence risk in grouped projects with multiple activity instances
<i>VCS Methodology Requirements, v4.2 Section 2.5.2</i>	Revised requirements to eliminate the ambiguity of what constitutes peer-reviewed literature and to enhance assurances around the scientific integrity of default factors derived from peer-reviewed literature

## 3 SUMMARY OF COMMENTS

The summary of comments below highlights some of the main inputs received as part of the consultation.

Topic	Summary of Comments	Response to comments
<p><b>1) AFOLU and JNR non-permanence risk tools:</b> proposal to incorporate predicted future impacts of climate change and sea level rise and Agricultural Land Management (ALM)-specific risks and mitigation options</p>	<p>There was general support for this proposal, with some suggestions for additional guidance and clarity. Respondents agreed that the proposed climate impact drivers used to determine the amplification factor for predicting future climate change impacts are appropriate and comprehensive.</p> <p>Some respondents suggested additional options to mitigate sea level rise (SLR).</p> <p>Most respondents agreed that the newly proposed ALM-specific risks and mitigation options are appropriate and comprehensive.</p> <p>There was one suggestion to reconsider the mitigation option for landowners or project participants to be represented by an aggregation firm.</p> <p>Respondents agreed with the proposed scores for new risks and mitigation options, with additional suggestions.</p>	<p>Verra has implemented the proposed updates to the <i>Non-Permanence Risk Tools</i> and associated <i>Risk Report Calculation Tools</i>. Additionally, Verra will hold a training webinar on how to use the updated versions.</p> <p>Verra has incorporated some suggestions to the SLR mitigation, including additional guidance for demonstrating that an expected impact would be positive. However, we will not include additional options for SLR mitigation. If needed, we may consider additional options or additional flexibility in a future update.</p> <p>Verra has removed the mitigation option for the landowners or project participants to be represented by an aggregation firm because it is not clear whether or how an aggregator could change the risk profile of a project with multiple project activity instances.</p> <p>Verra has updated the new mitigation option to include "ecosystem services payments or SD VISta assets" in the list of examples of other types of funding in mitigation option j within table 3.</p>

<p><b>2) Uncertainty requirements:</b> proposal to update Section 2.4 Uncertainty in the VCS <i>Methodology Requirements</i> based on the IPCC definition and corresponding calculation methods</p>	<p>Respondents provided strong support for this proposal and contributed suggestions for further improvement. Some sought greater clarity on the methods for estimating random error.</p> <p>Most agreed that treating uncertainties at the 90 percent confidence interval uniformly will provide more consistency across methodologies and projects.</p> <p>Most agreed that projects with uncertainty of more than 100% should not be eligible for crediting. Most agreed that an uncertainty assessment and discounting is needed only for ERR estimates and not for the quantification of leakage.</p> <p>Respondents diverged evenly in their preferences for scenarios to determine the appropriate conservativeness deduction, citing the importance of flexibility and ease-of-use in application.</p> <p>Some respondents agreed that VVBs can feasibly establish during methodology assessments whether there is a significant risk that uncertainties could exceed 10% but others suggested that this would be challenging for VVBs to apply consistently.</p>	<p>Verra has implemented the proposed update with some adjustments, including additional guidance and worked calculation examples.</p> <p>Verra has dropped the 95 percent confidence interval option and kept only the 90 percent option because it is slightly more conservative in some cases.</p> <p>Verra has maintained the requirement for uncertainties to be below 100% to be eligible for crediting.</p> <p>Verra has maintained no requirement for the quantification of uncertainties related to leakage. Verra has implemented “Approach B” for determining the appropriate conservativeness deduction for its greater specificity. Significantly, Verra shifted the onus for conducting the assessment of risks exceeding 10% from VVBs to proponents such that VVBs are only required to validate this risk assessment.</p>
<p><b>3) Tonne-year accounting:</b> proposal to introducing tonne-year accounting to the VCS</p>	<p>There was a diverse range of opinions on this proposed approach to tonne-year accounting. Generally, there was</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may</p>

<p>Standard as an alternative approach to the buffer for managing non-permanence risk</p>	<p>support for a 100 tonne-years to 1 tCO<sub>2</sub>e equivalency ratio.</p> <p>However, many respondents expressed a preference for a minimum storage period and associated buffer contribution.</p>	<p>revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>
<p><b>4) Subsequent project instance registrations:</b> proposal to clarify guidance on subsequent project activity instance enrollment in grouped projects and non-grouped projects with multiple project activity instances</p>	<p>Respondents generally supported this proposal. There was some concern, and several questions, about how to implement the proposal while avoiding double counting ERRs.</p> <p>Some respondents suggested that this flexibility should be expanded to the transfer of instances between projects using different methodologies and between projects registered under other GHG programs.</p> <p>Some respondents also indicated that projects with activities beyond the AFOLU sectoral scope should have the option to transfer instances.</p>	<p>Verra will not allow subsequent project instance registrations in the immediate term.</p> <p>However, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the <a href="#">announcement on subsequent project instance enrollments</a> for additional information. Verra's current proposal is to conservatively require all instances to be assessed to ensure no double-counting of ERRs.</p>
<p><b>5) Non-permanence risk in grouped projects and projects with multiple activity instances:</b> proposal to clarify requirements on managing non-permanence risk among projects with these kinds of project design</p>	<p>There was general support for this proposal. Some respondents sought greater clarity on how to demonstrate project longevity for grouped projects implementing AFOLU activities.</p> <p>Some suggested a requirement for projects to demonstrate how they would incentivize renewal of contracts or a plan for adding new instances to replace departing instances.</p>	<p>Verra has implemented the proposed update with some minor adjustments. Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra's prior approval).</p>

	<p>Many commented that projects should be allowed to continue to monitor instances that leave for the remainder of their 30-year longevity period rather than immediately assume a complete loss of the stored carbon.</p>	<p>Verra has revised the update to more clearly define how project proponents can demonstrate a plan for maintaining project longevity at the group level, which includes some of the suggestions made (e.g., contract renewal, ongoing monitoring, etc.).</p>
<p><b>6) Peer-reviewed literature:</b> proposal to eliminate ambiguity of what constitutes peer-reviewed literature and enhance assurances around the scientific integrity of default factors derived from peer-reviewed literature</p>	<p>Respondents conveyed broad agreement that the Web of Science: Science Citation Index (SCI) is an appropriate reference for vetting peer-reviewed scientific literature.</p> <p>Some respondents shared concern that requiring cited literature to be indexed in the SCI, without other options, could prove limiting. Others suggested the inclusion of alternative indexing options such as Google Scholar.</p>	<p>Verra has implemented the proposed update with some minor adjustments. The update requires cited literature used to establish default emission factors to be indexed in SCI.</p> <p>However, Verra added a provision to grant proponents the option to cite alternative sources where no relevant literature is indexed in SCI, given that proponents provide sufficient assurance of the robustness and credibility of cited information.</p>

## 4 COMMENTS AND VERRA RESPONSES

### 1.1 AFOLU and JNR Non-Permanence Risk Tools

#### 1.1.1 Are the instructions for how to use the AFOLU Risk Report Calculation Tool clear? What suggestions do you have for how the tool could be made more user-friendly?

Comment #	Issue Raised	Verra Response
1	<p>Our impression is that the tool is created for forestry projects, and in many instances is not applicable or appropriate for ALM projects. Our suggestion is to create another version of the permanence risk tool (hereafter the tool) which would specifically calculate the risk profile of ALM projects. Agoro Carbon</p>	<p>Verra will maintain a single version of the AFOLU Non-Permanence Risk Tool that must be used by all project activity types, and does not intend to create separate tools for all of the AFOLU sub-categories.</p>

would be available to support VERRA in any capacity for the creation of such a tool.

Here below please find our comments to the specific sections in the current tool:

Internal Risk Datasheet:

- Section 1b: It is not clear what “enforcement and encroachment” refers to, in connection to the tool and in the context of ALM projects for the farmers. We would like to receive more guidance here from VERRA.
- We feel that an explanation of the scores in the drop down list and the values applied for many questions would be beneficial. For example, we suggest introducing a legend with the explanation of what figures such as “0, 2, -2, X” etc. mean, or otherwise suggest substituting the scopes with answers like “YES”, “NO” “N/A” etc.
- Section 1, h) Mitigation: Concerning “adaptive management plan in place”, we feel that additional clarification is needed on the plan’s requirements, as well as how to meet this criterion.
- Table 3, opportunity costs: We have some questions concerning sections a) through f), which relate to NPV from the “most profitable alternative land use activity”. The definition of “most profitable alternative land use activity” is unclear to us. Furthermore, we believe it will be very complicated to conduct an analysis on NPV for each alternative scenario for ALM projects at the project level, especially in cases where projects cover different farmers in various geographies, each implementing different crops and practices. We therefore suggest removing this type of analysis from the tool.
- Table 3, question j -Mitigation (ALM projects): “Farmers participating in the project have additional financial support to overcome possible yield decrease at the beginning of the agricultural management change”. Its unclear whether carbon finance provided to the farmers could be qualified to be additional financial support. It also unclear whether the answer to this question would have any effect on the risk score in this section

Some of the suggested changes are to existing text in the AFOLU Non-Permanence Risk Tool that Verra is not proposing to update at this time, and therefore are outside of the scope of this consultation.

Regarding market risk, Verra has decided to remove it from the final version of the *AFOLU Non-Permanence Risk Tool*. We will conduct further analysis on the potential risk interactions with commodity prices, and may incorporate market risk into the tool at some point in the future if we decide it is needed and has a strong connection to risk.

	<p>External Risk Datasheet</p> <ul style="list-style-type: none"> <li>• Table 7, Community Engagement: We would request more guidance on the meaning of the word “consulted” in the questions in this section. We suggest to include e.g. in the definition of consulted the process, where the project developer explained to the farmers the benefits of the regenerative AG and how to implement regenerative AG practices. Further, we see that the risk scores in this section are too high for agricultural projects, and sections a), b) and c) shall be actually defined as mitigation actions: the more stakeholders are consulted, the higher the probability that specific risks will be identified and appropriately addressed.</li> <li>• Table 9, Market risks: We believe that it is very hard to assess market risks for ALM projects. The commodity is typically unclear, and farmers grow different crops in different years with different prices. In addition, projects typically have different landowners, and it is very hard to aggregate these. We therefore suggest deleting this section, as we feel it is impractical.</li> </ul>	
<p>2</p>	<p>The instructions for how to use the AFOLU Risk Report Calculation Tool are clear. To ensure the tool is user-friendly, provide a user manual with the first-time user in mind. The guide could contain animations and/or screen recordings for digital manuals or screenshots for printed versions.</p>	<p>Verra will hold a training webinar on how to use the updated versions of the <i>Non-Permanence Risk Tools</i> and associated <i>Risk Report Calculation Tools</i>.</p>
<p>3</p>	<p>Section 2.2.1 (3) of the Risk Report Calculation Tool Guidance discusses the need to indicate the type of expected impact (positive or negative) for the project evaluating each CID category. However, it was not clear how this assessment should be made considering, for example, the methods that should be applied and the references used. Thus, the procedures indicated in the Risk Report Calculation Tool Guidance were not entirely clear.</p> <p>We suggest clarifications of how the evaluation of each CID should be made (positive impact, negative), and the level of detail and presentation of evidence necessary to support this evaluation, since in some areas we will have generalist information or even we will not have information available.</p>	<p>We made the following changes in the <i>Risk Report Calculation Tools</i>:</p> <ol style="list-style-type: none"> <li>1) Updated the calculation of the amplification factor to only include categories with a CID impact score &gt;1 (regardless of whether the impact is expected to be positive or negative);</li> <li>2) Included additional guidance for how a project proponent may demonstrate that an impact is expected to be positive (note that all project</li> </ol>



	<p>As a last suggestion, the tool can be made to be more user-friendly by highlighting the cells that should be modified by the user. For example, a different cell fill color that will stand out from the rest.</p>	<p>impacts will default to having a negative impact).</p> <p>Additionally, the final version of the <i>Risk Report Calculation Tools</i> will be available as an online tool (rather than a downloadable Excel file). Within this tool, it will be clearer which values a project or jurisdictional proponent needs to input in order to calculate the risk score.</p>
4	<p>We noted a few opportunities for improved clarity in the instructions and guidance provided for the tool. First, further guidance on how to assess, score, and provide evidence for the new adaptive capacity criteria could be useful. As criteria originally crafted for the governmental and societal contexts, they do not necessarily clearly translate to the project proponent context. Definitions or examples for the different criteria as they relate to project proponents could be helpful. For example, what does “climate change governance process” mean in this context? How can a project proponent demonstrate that it possesses “openness to uncertainties in the face of climate change”?</p> <p>Relatedly, guidance for how to use the tool currently states, “The project can reduce the amplifying factor representing the projected future climate impact on natural risk score if there is evidence that any of the adaptive capacity criteria have been implemented or planned to implement in the project management” (emphasis added). However, later in the guidance tables and in the Excel tool, mitigation of the amplification factor requires that the project proponent “demonstrate at least 5 criteria of adaptive capacity” (emphasis added). Consistent guidance would improve clarity here as well.</p> <p>Lastly, the SLR Risk tab of the Excel tool has some inconsistencies in how the tables are labeled. The instructions on the tab refer to Tables 14-19 but the tables on the same tab are all labeled Table 12.4 - 12.11.</p>	<ol style="list-style-type: none"> <li>1) We updated the adaptive capacity criteria to more clearly apply to a project context in the <i>AFOLU Non-Permanence Risk Tool</i> and <i>AFOLU Risk Report Calculation Tool</i> and included some additional guidance for how to use them.</li> <li>2) We updated the <i>Risk Report Calculation Tool Guidance</i> document to align with the calculations in the calculation tool.</li> <li>3) Table number is now aligned across documents.</li> </ol>
5	<p>Yes, the instructions and the tool are clear</p>	<p>Thank you for your input. No change needed.</p>

1.1.2 Are the CIDs used to determine the amplification factor for predicting future climate change impacts appropriate (see the draft AFOLU Risk Report Calculation Tool for a full list of included CIDs)? Should any additional CIDs be included in the analysis?

Comment #	Issue Raised	Verra Response
6	We consider that there is an exhaustive list and no additional CIDs are needed.	Thank you for your input. No change needed.
7	The CIDs used to determine the amplification factors for predicting future climate change are appropriate. The current list of CIDs in the Draft AFOLU Risk Report Calculation Tool is adequate. Since conditions may vary depending on geographical properties of project sites, the tool should be flexible enough to allow for addition of relevant CIDs as long as they are justified.	Thank you for your input. At this time, we want to ensure that there is standardization in the CIDs used to assess risk across projects and jurisdictional programs using the tools. However, if needed we may consider including additional CIDs in a future update.
8	While we think it is appropriate to include a field for the change in soil moisture, expressed as a percent, we propose that it may be more clear and appropriate to label this field something along the lines of “soil moisture change” rather than “aridity.” Aridity implies a decrease in soil moisture, but the value provided for the field may in fact represent an increase in soil moisture—and such an increase may have a negative impact on vegetation communities.	Changed "aridity" to "soil moisture change" in all of the documents.
9	Yes, the CIDs are appropriate.	Thank you for your input. No change needed.

1.1.3 Are the proposed options to mitigate sea level rise appropriate? Should any additional options be added?

Comment #	Issue Raised	Verra Response
10	* The CIDs identified are relevant, but we believe it is very hard to predict the project impact as negative or positive for each CID, in cases where projects are large projects, or encompass significant areas. As a result, the accuracy of	We made the following changes in the Risk Report Calculation Tools related to determining the CID impacts:

	<p>such assessment is very low, and we believe that the whole assessment does not really make sense for grouped projects covering large geographies, such as ALM projects.</p> <p>* Our reaction here also applies to the question of “Does the project proponent demonstrate at least 5 criterion of adaptive capacity? (see Table 13)”. We feel that most of the criteria proposed are either outside of the project developer scope of influence - such as climate policies - or are difficult to answer in case of broad geographic spread. This would be the case when multiple jurisdictions are involved, such as e.g. states in the USA or in India.</p>	<ol style="list-style-type: none"> <li>1) Updated the calculation of the amplification factor to only include categories with a CID impact score &gt;1 (regardless of whether the impact is expected to be positive or negative). This will reduce the number of CIDs that a project may want to demonstrate having a positive impact.</li> <li>2) Included additional guidance for how a project proponent may demonstrate that an impact is expected to be positive (note that all project impacts will default to having a negative impact).</li> </ol> <p>Per existing requirements, grouped projects that are expected to have different risk scores in different areas of the grouped project must set out separate geographic regions and assess risk separately in each geographic region. In cases where the CID impact is expected to be different in different areas, it would also be appropriate to separate a grouped project into distinct geographic regions.</p> <p>The adaptive capacity criteria have been updated to more clearly apply to a project context and additional guidance for the adaptive capacity criteria was added to the Risk Report Calculation Tool Guidance Document.</p>
<p>11</p>	<p>Identified options (ecosystem-based adaptation, bioengineering, land use planning, public participation, and conflict resolution approaches) to mitigate sea level rise are appropriate and adequate. However, natural ecosystems are stochastic and hence should allow for new innovations to be added to the portfolio of options provided they satisfy ecological principles.</p>	<p>Thank you for your input. At this time, we want to ensure that there is a standardized set of adaptation options across all projects. However, if needed, we may consider including additional adaptation options for SLR or additional flexibility in a future update.</p>

12	<p>Yes, the proposed options to mitigate Sea-Level Rise are appropriate. But the Verra team could consider including one more topic focused on “new strategies to mitigate SLR”; which should be approved by VERRA prior to their application (with a recommended SLR Adaptation Score).</p> <p>Also, the use of adaptations to mitigate Sea-Level Rise could increase the extension of Blue Carbon ecosystem. From this, a question emerges: Can the gained area be included for the generation of carbon credit or as a buffer?</p>	<p>Thank you for your input. At this time, we want to ensure that there is a standardized set of adaptation options across all projects. However, if needed, we may consider including additional adaptation options for SLR or additional flexibility in a future update.</p> <p>Note that Section 3.10.3(5) of the VCS Standard, v4.2, allows WRC projects to add to the project area after validation where needed due to landward expansion of the wetland ecosystem.</p>
13	<p>Supporting inland migration of impacted coastal species, such as mangroves, is not explicitly included on the mitigation list, and it is unclear if this mitigation activity would fall under the listed Ecosystem-based Adaptation category. We think this is a viable mitigation measure that should be included.</p>	<p>This was action added to the description of the ecosystem-based adaptation category.</p>
14	<p>It is not clear what the SLR mitigation options are.</p>	<p>The SLR mitigation options are set out in the Risk Report Calculation Tool and are included in Appendix 2 of the Risk Report Calculation Tool Guidance document.</p>

1.1.4 Are the newly proposed ALM-specific risks and mitigation options appropriate? Why or why not? Are there any additional risks or mitigation options for ALM projects that are missing and should be added to the AFOLU Non-Permanence Risk Tool?

Comment #	Issue Raised	Verra Response
15	<p>Mitigation options for climate-resilient forest management practices and adaptive management plans should be incorporated, as those will mitigate future climate risks.</p>	<p>Climate-resilient forest management practices and adaptive management plans would fall under the adaptive capacity criteria included for projected future climate change impacts (e.g., under the</p>

		"learning capacity", "room for change" or "innovation" criteria).
16	Yes, they are appropriate. We totally agree with this update as the specific risks of ALM projects were not taken into account.	Thank you for your input. No change needed.
17	<p>We see value in adding two additional mitigation options to the tool specifically for ALM projects:</p> <ol style="list-style-type: none"> <li>1. Project developer monitors the implementation of the practices over time, e.g. through photos and/or remote sensing. This ensures that the practices are in fact implemented, and the carbon removal is taking place.</li> <li>2. Farmers are getting benefits from the implementation of the practices, compared with the baseline scenario, e.g. in terms of yield or productivity. Here, the more farmers will benefit from the implementation of the practices the higher the mitigation score could be. The logic here is that if farmers will receive direct benefits from implementation of the practices in the long term, it will increase the likelihood that the regenerative practices will be implemented over time.</li> </ol>	<ol style="list-style-type: none"> <li>1) Project proponents are already expected to monitor the implementation of practices over the project lifetime and measure the GHG impacts. Therefore, this would not be an appropriate mitigation option.</li> <li>2) We agree that many farmers will continue to implement regenerative agriculture practices due the associated non-carbon benefits. However, since most of these benefits are associated with all regenerative agriculture activities, it is not appropriate to include as a mitigation factor (as it would not represent an additional option for projects to mitigate their risks of non-permanence).</li> </ol>
18	<p>The proposed ALM-specific risks and mitigation options are appropriate for a number of reasons.</p> <p>First, decoupling of agricultural value chains requires agricultural intensification practices which integrate both indigenous technical knowledge and conventional science. Implementation of such practices must be preceded by adequate farmer training. Without such training, new agricultural systems implemented by the project may not produce optimal crop yields due to poor or misapplied practices. Apart from achieving high agricultural yields from new agricultural land management practices, farmers have to actively participate in biodiversity and carbon surveys, monitoring and reporting during the crediting period.</p> <p>Second, farmers need to learn that agricultural yields of certain new agricultural technologies (i.e. tree-based systems) are lower in early stages of establishment</p>	Thank you for your input. No change needed.

	<p>and gradually increase with time. Third, landowners or project participants are represented by an aggregation firm with experience in carbon credit project development that will support them to implement new agricultural practices. The firm provides technical expertise in carbon asset development and selling of credits, increases the bargaining power of farmers and reduces transaction costs. Finally, seeking additional financial support (e.g., via grants or government funding) to overcome expected revenue loss where there is a potential for revenue loss compared to the most profitable alternative land use activity is ideally plausible. However, such a project may become vulnerable in the long-term and land users can easily shift their loyalty from the project to external funders. Mixing funders with different funding criteria may create problems for the project.</p> <p>Agriculture is a unique sector because of its dependence on the climate and biological variables: (i) in many developing countries, declining per capita agricultural land size is increasingly becoming a major constraint; (ii) agricultural production is characterized by seasonality, which may influence the specific circumstances of the settlements and the cash flow distribution in a certain period; (iii) agriculture is highly impacted by uncertainties in labour supply due to the seasonality of its operations; and (iv) negative climate-induced changes to cropping seasons could have serious implications for agricultural yields. For example, shortened or prolonged rainy season could have disastrous effects on crop yields and post-harvest processing because seeds are products of long breeding and testing programmes. These factors should be carefully internalised in ALM.</p>	
19	<p>Regarding the section 2.3.4 of the AFOLU Non-Permanence Risk Tool, we disagree on this point, because agricultural commodities (usually annual crops, e.g., soybean, corn, cotton, sugarcane; or even beef cattle) have a consolidated global market commanded by large agricultural companies and trading, therefore, they present a low risk of non-permanence due to market variations.</p>	<p>Based on feedback received during the public consultation, we have removed market risk from the AFOLU Non-Permanence Risk Tool.</p>
20	<p>The available research, gray literature, and industry surveys suggest that adoption and continuation of regenerative agricultural practices hinges on successful implementation that generates co-benefits, such as reduced need for farm inputs. Furthermore, practices tend to be more successful in improving soil health and bolstering farm productivity when a suite of practices are</p>	<p>Thank you for the feedback. We removed the mitigation option for the landowners or project participants to be represented by an aggregation firm, since it is not clear whether or how an</p>

	<p>adopted and the whole-farm system and financials are considered. Research also suggests that yields may decline in the early years of new practice adoption as farmers make adjustments and figure out how best to implement practice changes on their farm. Farmers may be liable to drop out of a carbon project if they experience yield loss initially without expecting such losses or understanding that they are temporary. Thus, it is appropriate for the Non-Permanence Risk Tool to consider the potential risk and benefits associated with whether or not an ALM project provides adequate technical support, training, and education.</p> <p>5) Are the proposed scores for new risks and mitigation options appropriate? Why or why not?</p> <p>For the proposed Project Management mitigation factor (i) relating to project participants being represented by an aggregation firm, it is not entirely clear what type of entity is meant by an “aggregation firm” and why they have been singled out in this way as a mitigating factor. Representation by an aggregation firm may not significantly impact whether farmers maintain practices, for example. Could the involvement of an aggregation firm instead be grouped into mitigation factor (g), relating to the experience of the management team?</p>	<p>aggregator could change the risk profile of a project with multiple project activity instances.</p>
21	<p>The approach does not allow for more localized assessment of future climate risk via state-of-the-art climate models (both Global Climate Models and similar regional ones). For example, in many semi-arid regions, a small increase in evapotranspiration (which is consistent with most RCP 8.5 scenarios, but also location specific) can result in dramatic crop loss and increased soil C decomposition. The tool should take such realities into account.</p>	<p>The approach to projecting future climate impacts is intended to be a standardized and practical process for all types of projects in any geographic region. Not all projects or geographic locations will have access to other types of climate models, though project proponents may choose to use them for additional information about the potential climate impacts.</p>

### 1.1.5 Are the proposed scores for new risks and mitigation options appropriate? Why or why not?

Comment #	Issue Raised	Verra Response
22	Yes, they are appropriate.	Thank you for your input. No change needed.

23	<p>The proposed scores for new risks and mitigation are appropriate for less vulnerable projects with access to additional financial resources. However, there are circumstances where the potential loss of revenue compared to most profitable alternative land use activity is substantial and additional financial support (e.g., via grants or government funding) is not readily available. Building robust income streams including intensive and diversified agricultural systems, soil and water conservation systems and climate-smart agricultural systems, should be prioritised.</p>	<p>Updated the new mitigation option to include "ecosystem services payments or SD VISta assets" in the list of examples of other types of funding in mitigation option j in table 3.</p>
24	<p>The methodology should allow for proponents to use something of higher calibre, e.g., climate consulting services that assess risk of particular locations based on an ensemble of climate model projections (rather than just looking at historical occurrences at a regional lens). This is particularly important for sea level rise, as there are often significant local deviations from a regional mean (e.g., these can be exacerbated by the increased frequency of other climate change-driven events such as storm surges from tropical cyclones or where the windward side of islands may be more at risk than leeward).</p>	<p>The approach to projecting future climate impacts is intended to be a standardized and practical process for all types of projects in any geographic region. Not all projects or geographic locations will have access to other types of climate models, though project proponents may choose to use them for additional information about the potential climate impacts.</p>

### 1.1.6 General comments

Comment #	Issue Raised	Verra Response
215	<p>The AFOLU Risk Report Calculation Tool is a useful addition to the VCS program. This will help ensure that risk calculations are done correctly and uniformly across projects, while making the final output more easily verifiable.</p> <p>As far as the addition of Climate Impact Drivers (CIDs), we commend Verra for making this change. Citations for sources of information or models used to reach the conclusions in the tool would allow stakeholders to better evaluate the inclusion of these difference categories, as well as the projected change value proposed in the tool. We believe some additional refinement would also be helpful for clarity and useability. Guidance should be provided around the selection of positive, negative, or "does not apply" for the assessment of project impact. There appears to be a lot of subjectivity to this assessment</p>	<ol style="list-style-type: none"> <li>1) The <i>Risk Report Calculation Tool Guidance</i> document includes more information about how the projected future climate impacts assessment was developed and what it is based off of.</li> <li>2) Further guidance has been added about what documentation a project will be required to provide to justify a "positive" impact (the tool will default to assuming that there will be a negative impact).</li> </ol>



	<p>currently, which may lead to an uneven application of the tool across projects, in addition to challenges during validation and verification. For instance, is a change considered to have a positive impact if it improves the carbon outcomes of the project, but has negative impacts on non-carbon project outcomes? We would suggest further guidance on what qualifies as a “positive” impact, and that one or two example calculations modeled on different AFOLU project types might be useful to further demonstrate to users the expectations for making these assessments. Lastly, it appears that the version available for download on Verra’s website does not include orange instruction text in some of the intended cells. Making these instructions as clear as possible and automating as many of the tool outputs as possible will help to ensure uniform application of the tool.</p>	<p>3) The final version of the <i>Risk Report Calculation Tool</i> is an online tool and we have ensured that the instructions are clear.</p>
<p>221</p>	<p>Section 2: AFOLU and JNR Non-Permanence Risk Tools</p> <p>We support updating non-permanence considerations to include the future impacts of climate change, but have some specific suggestions for consideration:</p> <ul style="list-style-type: none"> <li>• Consider how far this analysis goes, and whether there might be different time periods required for different project types. For example, coastal landscapes are very dynamic; it might be more difficult for blue carbon projects to consider climate impacts on permanence in excess of 50 years.</li> <li>• Consider implementing an outreach and training plan for project developers for the AFOLU Risk Report Calculation Tool.</li> <li>• Consider whether additional, more specific information might be available, in addition to the IPCC AR6 guidance (which will likely remain high-level only).</li> <li>• Provide guidance on this will be implemented and whether projects must retroactively apply the new risk ratings. E.g., If a project’s NPR rating increases from 13 to 16%, will the project have to “true-up” its contributions to the pooled buffer to address the difference from the previous 13% in past issuances? Our recommendation is to only apply this approach going forward to not undermine projects’ financial viability.</li> </ul>	<ol style="list-style-type: none"> <li>1) The suggestion to consider whether it might be appropriate to use different time horizons to assess different types of risks or risks for different types of projects is outside of the scope of this proposed update. However, it is something that we may consider in the future (e.g., with the proposed update to implement long-term remote monitoring of VCS projects).</li> <li>2) We will hold an in-depth training webinar on how to use the updated version of the tool.</li> <li>3) Although more specific information about climate change impacts may be available in some regions or for some ecosystem types, we want to ensure that all projects have a standardized and practical tool to assess their climate risk. We may consider future updates to incorporate more specific information or other tools as they become available.</li> <li>4) Projects will not be required to retroactively apply new risk ratings to already verified monitoring periods. The updated version of the</li> </ol>

		risk tools will only be applicable moving forward.
226	<p>When using a high amplicator factor for natural risks on ex-ante non-permanence risk assessment (NPRA), if proven on upcoming verifications (ex-post NPRA) that risk's frequency and severity was lower, is it possible to claim those buffer's credits during that specific crediting period? Sea level rise (SLR) is a potential risk to all WRC projects, on different levels. Latest WRC VCS methodologies (differently from mangrove CDM methodologies), already include GHG project discounts related to impacts of SLR. To include buffer discounts also related to this, wouldn't the projects be doubly prejudicated?</p>	<ol style="list-style-type: none"> <li>1) Projects are eligible for a buffer credit release where the risk score stays the same and decreases. Specific requirements for this release are set out in the Registration and Issuance Process. (Note that Verra is not proposing to changes the buffer credit release process or requirements in this update).</li> <li>2) The existing relevant VCS methodologies will be updated to remove this accounting from the methodologies.</li> </ol>
230	<p>Managing non-permanence risk if one instance of an activity ceases to be part of a grouped project and if a project implementing multiple activities terminates one of its activities</p> <p>About the project's responsibility for areas that came out of the project (when an owner/instance leaves the project) and does not enter another project, we are in doubt whether the project could use buffer credits to compensate for possible subsequent losses associated with this owner/instance that left the project. In the case of instances/areas that leave the project and do not enter another project later, we see that the monitoring of this instance / area by the proponent will be essential for the latter to be able to monitor the possible losses associated with this instance / area, since the project remains responsible for these areas until the end of the project period.</p>	<p>Verra will revise the update to allow project proponents to either: 1) conservatively assume a full loss when an instance leaves a project and does not join another project; or 2) monitor the instance and account for any losses when observed. Please note that under option #1 (assuming a full loss), the project would not be able to use the buffer to compensate for this loss. Instead, the project would have to discount its net emission reductions and removals at the subsequent verification to account for the loss. The buffer would only be used to compensate for the loss if there was a net reversal. Please see Section 5 of the Registration and Issuance Process document for additional details on handling losses.</p>
231	<p>The non-permanence risk tool is a very useful component of the Verra program for ensuring that projects accurately calculate the required buffer contributions, and that such calculations are easily verifiable. Our main question regards section 2.3.4 and Table 9: Market Risk. We would like to understand why such a large risk deduction (6% deduction) is applied when the price of the commodity has fallen by more than 30 percentage points in the</p>	<ol style="list-style-type: none"> <li>1) Based on feedback from the public consultation, we have removed market risk from the AFOLU Non-Permanence Risk Tool.</li> <li>2) All AFOLU projects will be required to use the AFOLU Non-Permanence Risk Tool to assess</li> </ol>

	<p>last 5 years. We suggest any materials or rationale behind this assumption be made available for public comment prior to any approval actions by Verra.</p> <p>In the agricultural sector, commodity prices are highly volatile and fluctuations of 30% are not uncommon. To address this volatility, North American (and many other) governments have provided significant financial assistance to farmers to prevent loss of livelihood. In areas where government has a significant history of providing agricultural price supports, we believe the mitigation in point c should be weighted commensurately to the deduction in point b.</p> <p>The update to the natural risk assessment has made it increasingly clear that these tables have not been designed with agricultural land use projects in mind. Additional clarity should be provided for how these projects assess their historic natural risk, as there is insufficient historic soil carbon testing to adequately assess the loss of carbon stocks historically. It should also be noted that projects using the "measure and re measure" approach under VM42 will measure losses to carbon stocks in both the baseline and project scenario, with the expectation that regenerative practices will increase the stability and resiliency of soil carbon in the project scenario. We would therefore recommend that projects utilizing quantification option 2 of VM42 ("measure and re-measure") be exempted from the natural risk assessment as these climactic effects are effectively included in project quantification.</p> <p>We appreciate the addition of Climate Impact Drivers (CIDs) but would advocate for more clarity around the implementation of Table 12: Natural Risk Assessment. It is recommended that Verra provide examples of the application of the Risk-Report-Calculation-Tool-Guidance for different project types in different scenarios.</p>	<p>natural risk, including ALM projects and those that continue to measure carbon stocks at subsequent verifications. The risk assessment is intended to estimate the potential for future carbon stock loss and cannot be replaced by remeasurement of actual carbon stock loss. Additionally, although some of the types of natural loss events (e.g., forest fires) may not be applicable to all AFOLU activity types, AFOLU projects are expected to use historical information for relevant loss events in the past (e.g., drought) as well as projected changes to those impacts in the future (e.g., changes in soil moisture).</p>
236	<p>Additional feedback on proposed changes</p> <p>The language used in the new market risk section for projects that produce commodities refers to Net Present Value, which does not seem to be the appropriate concept to use for the analysis. It says, "The difference in commodity price shall be determined using internal or public source records of the commodity purchase price over the last 5 years to calculate the mean net present value of purchase prices and comparing this to the current value of the</p>	<p>1) We removed market risk from the final version of the AFOLU Non-Permanence Risk Tool. We will conduct further analysis on the potential risk interactions with commodity prices, and may incorporate market risk into the tool at some point in the future if we decide it is needed and has a strong connection to risk.</p>

	<p>commodity.” It would be more accurate to request that projects calculate the average commodity price over the last five years “in real terms” or “inflation-adjusted.”</p> <p>Table 1 in the Project Management section of the revised Non-Permanence Risk Tool PDF repeats use of (i), when the final row should instead read (j).</p> <p>Lastly, although unrelated to the proposed changes, we think that Section 2.3.3 (Political Risk) could further clarify the applicability of mitigation factor (f) for projects that are not related to REDD or forestry. For example, if a project is implementing seagrass restoration, could the mitigation credit (i.e., having an in-country FSC standards body) still apply even if the body cited for mitigation is not relevant to the project activity?</p>	<p>2) This update has been made.</p> <p>3) We added "as relevant to the project activity(ies)" to 2.3.3 to clarify that the mitigation discount can only be claimed if the conditions are related to the project activity. Additionally, we added f) to 2.3.3, to allow for options relevant for non-forestry activities.</p>
243	<p>We commend Verra on the development of the new Risk Report Calculation Tool (RRCT). It is, to our knowledge, the first such tool developed by a registry to account for increased natural disturbance risks associated with climate change. Our understanding is that this new tool will use Climatic Impact Drivers (CIDs) from IPCC-AR6 as multipliers that amplify the historic natural risk score defined in the AFOLU and JNR Non-Permanence Risk Tools (NPRTs). This will fractionally increase the buffer pool contributions for projects in regions with increased disturbance risks.</p> <p>For context, we are scientists with extensive experience on disturbance risks to ecosystems and the impact that climate change will have on those risk factors. We also actively review new projects and protocols in the voluntary carbon market and are familiar with Verra’s existing methodologies. Our interest is in ensuring that new and existing methodologies are robust and conservatively reflect the best science available to ensure durable carbon storage.</p> <p>We see three areas for potential improvement:</p> <ul style="list-style-type: none"> <li>Natural risk baselines and multipliers are likely too low. Although the focus of this consultation is on the RRCT, its efficacy relies on appropriate baseline natural risk scores, which are defined in the NPRTs. These baseline estimates should be more firmly grounded in the scientific literature, and we believe they are likely too low for most projects (Anderegg et al. 2020). Using the continental United States (US) as an example, fire alone has an 8% risk of severe carbon loss-driving fire in a</li> </ul>	<p>Thank you for your input. At this time, we are not proposing to change the approach used for the historic risk assessment, though it is something that we may look into in a future update to the <i>Non-Permanence Risk Tools</i>.</p> <p>We have updated the adaptive capacity criteria to be more specific to a project context.</p>

100 year period based on the 2001-2017 record (this does not include even more recent extreme fire years of 2020 and 2021) (Anderegg et al. 2020), which would equate to a “Devastating” loss in the AFOLU NPRT and still be assigned only a 5% contribution to the buffer pool. That 8% estimate is only for a single climate-sensitive disturbance, and yet drought and biotic agents may have as large of carbon cycle impacts as fire in many temperate and boreal forests (e.g. Kurz et al. 2008, Hicke et al. 2013, McDowell et al. 2016). This indicates that a rigorous baseline natural risk contribution is likely to be substantially higher than recorded in Table 10 of the AFOLU NPRT for many regions.

In addition, the risk multipliers (CIDs) range from 1-1.4 and are also likely too low. These CIDs are based on SSP5-8.5, so they are conservative with respect to climate scenario, but a broad body of research indicates that climate sensitive risks (e.g. wildfire, drought, heatwaves, diseases/insects) are likely to increase much more than 40% in many regions (Moritz et al. 2012, Barbero et al. 2014, Allen et al. 2015, McDowell et al. 2016, Sanderson & Fisher 2020, McNellis et al. 2021).

- ✓ Recommendation: We recommend that Verra re-assess the baseline natural risk scoring based on the most recent decade using fire products such as the Monitoring Trends in Burn Severity (MTBS) Database and Global Fire Emissions Database (GFED). Further, we suggest that the total “natural risk” buffer pool contributions should be approximately double this fire risk score to accommodate risks associated with drought and insect-driven mortality, which are often harder to assess with remote sensing-based products. We also recommend that Verra consider an approach for determining CIDs that includes several different modeling methods beyond those used in the CMIP6 for predicting escalating fire, drought, and insect-driven risks with climate change, given the shortcomings associated with any one method in capturing changes in disturbance extent and frequency (e.g. Sanderson and Fisher 2020).
- The CIDs don't consider species. The determination of CIDs is purely based on geographic region. Regional disturbance risk is a critical factor for most disturbance agents, but other factors like species composition and diversity also play an important role in determining resistance to

disturbance agents (e.g., Raffa et al. 2008). Because the RRCT is agnostic to species composition, projects with disturbance resistant species will get the same risk rating as those with non-resistant species.

- ✓ Recommendation: We recommend that future versions of the RRCT would benefit from inclusion of non-regional risk factors like species composition and diversity.
- The criteria for "adaptive capacity" deductions are too lenient. We understand that projects are allowed to deduct 40% from CIDs for implementing "adaptive capacity measures". Adaptive capacity measures are important in reducing climate-related risks and Verra is correct to incentivize these measures in the new RRCT. However, we feel that the criteria for adaptive capacity measures are too loosely defined and subjective as written. Many of the criteria defined in Table 12.2 of the RRCT amount to a statement of intent to consider climate-related risks rather than a reflection of true adaptive capacity.

In this respect, we fear that these criteria will amount to a checklist for project developers to claim awareness of climate-related risks, rather than a reflection of true adaptive capacity. Deductions should only be made where physical action has been taken to mitigate risks.

- ✓ Recommendation: We recommend that Verra remove the entire adaptive capacity deduction rule from the proposed RRCT until stronger criteria can be developed. Stronger criteria would include verification of actual measures that have been implemented to mitigate climate-related risk, such as selection of disturbance-resistant species or training local communities on disturbance response measures. Further, such criteria should be clearly differentiated from natural risk prevention measures defined in the NPRTs (Table 10), which allow for a similar deduction (up to 75%).

In addition to these recommendations, we would like to emphasize that the efficacy of the RRCT is predicated on appropriate natural risk scores. These natural risk scores are defined in the existing NPRTs. Our primary concern is that natural risk scores close to zero are common and relatively easily defended using the NPRTs, and low reported natural risk negates any potential risk amplification

	<p>calculated using the proposed RRCT. Simply put, any CID multiplied by zero is still zero.</p> <p>The NPRTs have numerous provisions for data-poor contexts, and these provisions simultaneously reduce barriers to entry and can exacerbate perverse incentives to underreport risk. However, as the RRCT shows, new spatial data products can make rigorous quantification of risks accessible to any project. We recommend that Verra reconsider the quantification of natural risks in the NPRTs and work to incorporate the kind of regional analysis proposed in the RRCT.</p> <p>Again, we commend Verra for leading the way in accounting for climate-related risk through the RRCT. These good efforts will amount to little change, though, if the underlying natural risk scores are too low.</p>	
248	<p>Updates to the Agriculture, Forestry and Other Land Use (AFOLU) Non-permanence Risk Tool and Jurisdictional and Nested REDD+ (JNR) Non-permanence Risk Tool:</p> <p>We find that this proposal builds up the value of VCS as a robust and solid standard for the generation of top-quality carbon credits. The impact of climate change in the project risk has been part of our own risk assessment processes and we find it appropriate to include these elements as part of the Risk Reporting Calculation Tool.</p> <p>After an initial review of the proposed guide and tool, we find it well developed and easy to fill out. The idea of having a calculation tool with default factors will be very useful for project developers and other stakeholder and will not generate additional work.</p>	Thank you for your input. No change needed.
257	<p>AFOLU and JNR Non-Permanence Risk Tools (request for feedback)</p> <p>1) Internal risk</p> <p>Table 1: Project Management</p> <p>The subsections e), f), i) and j) do not display default values in the dropdown menus and therefore the risk analysis cannot be completed</p>	<p>1) This issue with the Risk Report Calculation Tool has been resolved in the final, online version of the tool.</p> <p>2) The suggested changes to how non-profits are considered as part of the risk assessment are outside of the scope of the proposed update.</p>

<p>when clicking these options. The values, according to the AFOLU Risk Report Calculation Tool, should be 2 and -2.</p> <p>In the mitigation subsection i), in Shell's opinion, the landowners or project participants should be represented by an aggregation firm with experience in carbon credit project development that supports them in achieving project goals and, in addition, should have technical on-site support to help in the materialization and sustainability of alternative land uses beyond the business-as-usual scenario.</p> <p>Table 3: Opportunity Cost</p> <p>In subsection g) the definition of non-profit remains unclear. Shell believes the way this subsection is formulated does not reflect the current voluntary carbon market. Several for-profit organizations are implementing carbon projects with an expectation of a return on investment in VCUs rather than on physical assets generated by the project. Similarly, several non-profit organizations are formulating projects that need the financial return on investment provided by physical assets generated by the project activity (e.g., timber, Non-Timber Forest Products –NTFP, etc.).</p> <p>2) External Risk</p> <p>Table 6: Land tenure</p> <p>In subsections c) and d), Shells observes a higher risk score on disputes of land tenure versus disputes over land use. We believe that in certain contexts, such as the land tenure and land use in some African countries, that this assessment may not reflect the actual levels of risk. We suggest that risk values between the two categories are either considered with higher levels of granularity or simplified to the maximum and equaled for both.</p> <p>Table 7: Community Engagement</p> <p>The title of Section 7 is titles Community Engagement, but the scoring is derived from local stakeholder consultation. Shell believes that projects that have achieved actual and credible willingness from communities to participate in the project should be scored low. As such, it is recommended that a more detailed scale of risk rating that reflects community</p>	<p>3) The suggested changes to land tenure are outside of the scope of the proposed update.</p> <p>4) Renamed the table and risk category to "stakeholder engagement (SE)" in line with the term changes. The two risk options for SE are not "either or" - projects using this tool must demonstrate that they have consulted with stakeholders in order to not receive the risk scores listed in the table. Further, this tool is not intended to set out all of the stakeholder engagement requirements for projects, and further requirements are set out in the VCS Standard.</p> <p>5) This suggestion is outside the scope of the proposed updates.</p> <p>6) We removed market risk from the final version of the AFOLU Non-Permanence Risk Tool. We will conduct further analysis on the potential risk interactions with commodity prices, and may incorporate market risk into the tool at some point in the future if we decide it is needed and has a strong connection to risk.</p> <p>7) Additional guidance has been added for what type of documentation is needed for a project to claim that there is a positive impact from projected future climate impacts.</p> <p>8) This cell has been fixed in the final, online version of the tool.</p> <p>9) Although yield decrease may be included in some ALM methodologies, this tool is intended to apply to all ALM projects under the VCS Program (including those that may allow for</p>
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	<p>participation, awareness, willingness, and commitment to the project be developed.</p> <p>In addition, Shell has identified a potential perverse incentive in the tool. In its current state the tool permits a project that fails to consult stakeholders effectively, and instead implements mitigation measures, to set this risk to zero (0). While mitigation measures are important, they do not replace actual effective stakeholder consultation. Shell’s position is that a project with ineffective local stakeholder consultation has a much higher risk rating than a project with effective stakeholder consultation and strong local support.</p> <p>Table 8: Political Risk</p> <p>The category in Subsection f) sub-subsection e) (i.e., “The country has an established DNA under the CDM and has at least one registered CDM A/R project”) is not applicable.</p> <p>Table 9: Market Risk</p> <p>Subsection b) considers a price drop of commodity higher than 30%. Shell believes that if the same commodity production is maintained in the project activity, the additionality of the project activity will be questionable. The risk scoring to this category is onerous and likely would result in a low score for most projects, thus making the risk score difficult for projects to complete.</p> <p>3) Natural Risk</p> <p>Table 3.1 Future Climate Impact</p> <p>It is not clear what sort of evidence must be provided to support expected project impacts. Per the instructions provided in the AFOLU Risk Report Calculation Tool, it is unclear why evidence is provided only for cases in which negative impacts are expected. Shell foresees that there will be (many) cases in which the selection of “not applicable” or “positive” will be questionable and will need to be supported with evidence.</p> <p>4) Shell requests for clarification</p>	<p>activities that have a short-term decrease in yield).</p>
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	<ol style="list-style-type: none"> <li>1. In the section internal risks: Table 2: Financial Viability  Is the cell F29 which corresponds to the risk value in subsection i), working properly?</li> <li>2. In the section internal risks: In subsection j) - There are references to decreases in yield in ALM projects. Yield decreases are included in the applicability conditions in VERRA's ALM methodologies, such as the VM0042. Is this risk assessment necessary in the tool as well? Moreover, in this same aspect, Shell has observed a discrepancy in the formulation between the AFOLU-Risk-Report-Calculation-Tool_DRAFT_v4.1 and the Risk-Report-Calculation-Tool-Guidance_DRAFT_v0.1 which may be relevant in the process of risk quantification.</li> </ol>	
258	<p>AFOLU and JNR Non-Permanence Risk Tools (request for clarification)</p> <ol style="list-style-type: none"> <li>1) In the section internal risks: Table 2: Financial Viability  Is the cell F29 which corresponds to the risk value in subsection i), working properly?</li> <li>2) In the section internal risks: In subsection j) --There are references to decreases in yield in ALM projects. Yield decreases are included in the applicability conditions in VERRA's ALM methodologies, such as the VM0042. Is this risk assessment necessary in the tool as well? Moreover, in this same aspect, Shell has observed a discrepancy in the formulation between the AFOLU-Risk-Report-Calculation-Tool_DRAFT_v4.1 and the Risk-Report-Calculation-Tool-Guidance_DRAFT_v0.1 which may be relevant in the process of risk quantification.</li> </ol>	<p>A response to this comment is included with the response to comment 257 above.</p>

## 1.2 Uncertainty Requirements

### 1.2.1 Do you agree with the proposed new text on uncertainty assessment? Do you have any suggested improvements or additions?

Comment #	Issue Raised	Verra Response
25	While we generally agree with this text, there are a few specific revisions we recommend. First, the proposed new text should continue to use the width (not half-width) of a confidence interval as a reference point, as this is more intuitive and easier to understand. Second, more guidance and/or a stronger definition is needed in this section (2.4.2, 2.4.3) about how “likely” and “unlikely” variation is. We would propose that determining the likelihood of variation could be easily accomplished by requiring a trial conducted with empirically informed mock data to determine approximate variability.	Regarding item 1, it is common practice in statistics to work with half-widths of confidence intervals.  Regarding item 2, yes, we have added a process for determining approximate variability.
26	We recommend Verra consider switching uncertainty analyses from a frequentist approach to a Bayesian approach. Doing so would be compatible with the 2019 Refinement to the 2006 IPCC Guidelines for National GHG Inventories' description of Monte Carlo samples as a valid means of quantifying uncertainty. To accommodate this, we suggest changing the language around "confidence intervals" (which implies a frequentist confidence interval) to "prediction intervals (inclusive of confidence intervals and credible intervals)" or "confidence intervals (or credible intervals)", to accommodate both Bayesian and frequentist statistical approaches.	In principle, Monte Carlo approaches are acceptable with the proposed guidance. It would be a matter of the methodology to include all the relevant guidance.
27	Yes, we think that the proposed text is clearer than the previous one.	Thank you for your input. No change needed.
28	Overall, we have many reservations about the new text on uncertainty and have recommended changes, the details of which are found in our response to question 5 below.	Thank you for your input. No change needed.
29	Making the test universal is important. Utilizing uncertainty assessment definitions as provided by IPCC makes this definition easily obtainable and utilizable across varying fields. The definitions associated with 2019	Thank you for your input. No change needed.

	Refinement brings universal solidarity to the understanding of general statistical terms that would otherwise not be specific to VCS.	
30	No. If “consistency across methodologies and projects” is the central concern, the original section 2.4.1 should be amended such that the 90 percent confidence interval option is removed (i.e., all projects must calculate a 95% confidence interval). For project developers, this is the most simple change with the least dramatic changes to their already established workflows.	Within the Verra team there was consensus that the original guidance needed review and only a minor change would not be sufficient.
31	We agree with the proposed text on the concept of uncertainty as defined by the IPCC (The 2019 Refinement to the 2006 IPCC Guidelines for National GHG Inventories) and its approach to reducing systematic and random error based on recognized statistical approaches, and to apply conservativeness deductions to reduce the risk of overestimating emission reductions. However, we do not agree with the choice of 90% confidence level as a standard for declaring statistical significance of GHG emission reductions/removals, if we have to achieve environmental integrity.	Great to know about the general support to the changes.  Regarding the choice between 90% or 95% confidence levels, this is substantially equivalent. In principle, discount factors could also be stated in terms of 95% C.I., this would change the factors, but not their ultimate environmental integrity.
32	In general, the text is clear. However, Item 2.4.1 “when it is unlikely that the half-width of the two-sided 90 percent confidence interval for estimating emission reductions could exceed 10 percent of the estimated value” could be clearer. This statement seems to imply that this assessment is done before the actual uncertainty calculations. Is that the case? If yes, then the text could be improved by pointing to/describing instructions on how to make such pre-assessment.	Further guidance and a worked example has been included on how to assess the likelihood of this happening.
33	We generally agree with the proposed new text. However, we feel that the term ‘unlikely’ in 2.4.2 and 2.4.3 may be too non-specific. It may be most appropriate for the burden of identifying when either scenario is unlikely to fall to the specific methodology, but it could still be advisable to have some criteria or suggested process for assessing that likelihood.	Further guidance and a worked example has been included on how to assess the likelihood of this happening.
34	Yes, agree.	Thank you for your input. No change needed.

1.2.2 The proposed requirements would treat uncertainties at the 90% level, while the current requirements offer the option to treat uncertainties at the 90% level or at the 95% level. Do you agree that the previous optionality in Version 4.0 of the VCS Methodology Requirements allowing methodologies to choose one of two thresholds for uncertainty deduction (i.e., 20% at the 90% level or 30% at the 95% level) should be eliminated to provide more consistency across methodologies and projects?

Comment #	Issue Raised	Verra Response
35	We favor the proposed requirements, which would only treat uncertainties at the 90% level.	Thank you for your input. No change needed.
36	Yes, we consider that uncertainties of 90% are adequate and it is better to eliminate the range of the previous Requirements to unify requirements.	Thank you for your input. No change needed.
37	Yes, we think it is best to standardize uncertainty deductions across methodologies and projects, so that buyers can more easily interpret and compare the credits in their portfolio. Allowing project developers to choose between two uncertainty deduction rules simply means that the effective uncertainty deduction rule is more complex, and project developers will tend to choose whichever rule is more favorable. Having one rule makes credits more readily interpreted and understandable, especially if the uncertainty deduction rule itself is one that lends itself to interpretation (please see our response to question 5 for more details on that topic).	Thank you for your input. No change needed.
38	Having one uncertainty threshold is vital for project consistency. As global carbon markets unfold, this can be changed, however, moving forward for project enrollment in varying landscapes allows for more projects to be written and accepted at a universal standard. This will then allow carbon credits to be marketed equally across landscapes. If in the future, certain ecotones provide carbon sequestration at a greater rate or permanence, this concept can be revisited to provide a stamp of greater certainty and transparency, based on sampled data.	Thank you for your input. No change needed.

39	<p>Yes, the 90% level could be dropped to provide consistency, though this is not essential.</p>	<p>We understand this comment as suggesting to "drop" the 90% level and stick only with the 95% level. However, we are dropping the 95% level and sticking only with the 90% level since it is slightly more conservative in some cases.</p>
40	<p>The previous optionality in Version 4.0 of the VCS Methodology Requirements allowing methodologies to choose one of two thresholds for uncertainty deduction (i.e., 20% at the 90% level or 30% at the 95% level) should not be eliminated, unless we opt for 95% confidence interval for the following reasons. First, eliminating the options compromises the overall quality of the credits created by the projects because of the general tendency to reduce costs. Second, the best confidence level depends on the consequences of being wrong. As the voluntary carbon market strives to provide high integrity carbon credits, a 95% confidence level of overall emissions is better than 90%. Third, the 95% confidence level is most common although other levels (such as 90% or 99%) are sometimes used (Jerrold, 1999; Dekking et al. 2005; IPCC, 2019). The IPCC (IPCC 2019 Refinement to 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 3; pp3.13) and the wider scientific community use 95% confidence level of overall emissions. Peer-reviewed journals typically require a confidence level of 95%. It is true that the price you pay for high confidence level is large sample sizes, which are costly. In addition, there are data that are likely to be highly variable regardless of the measures to reduce random and systematic errors. Greater variability in the sample produces wider confidence intervals when all other factors are equal. A higher confidence level produces wider confidence intervals when all other factors are equal (Vikas et al. 2020). In such circumstances, a 90% confidence level may be justified. Hence, maintaining the options becomes a realistic practical solution.</p>	<p>Thanks for the support to using only one single confidence level. We are adopting 90% instead of 95%, because the 10%/90% threshold is slightly more conservative than the 15%/95%.</p>
41	<p>Reference 3 (the second reference 3), discusses discounts applied in terms of "the acceptable risk of overestimation", which is the probability that the true project's emissions reduction is lower than the number of credits issued. This seems to us as a statistically sound approach to discount applications.</p>	<p>It is a great thought to assign larger discount factors to larger projects and thereby even better safeguard integrity - yet Verra aims to retain simplicity and does not plan to implement this.</p>

	<p>The magnitude of discounts (and consequently, the confidence level) is directly defined by the decision on this acceptable risk. The article also points out that the overall risk of underestimation for all projects will probably be much lower than for individual projects, which suggests that even smaller discounts could be applied to individual projects. Consequently, CI's with confidence level even lower than 90% could be applied without raising the overall risk of overestimation. To avoid the impact of larger projects, Verra could then base the choice of the acceptable risk on the project's size, with larger projects requiring less risk of underestimation (and consequently higher confidence levels).</p>	
42	<p>We support having consistency across methodologies and, therefore, eliminating the specified optionality in Version 4.0 of the VCS Methodology Requirements.</p>	<p>Thank you for your input. No change needed.</p>
43	<p>Yes, agree.</p>	<p>Thank you for your input. No change needed.</p>

### 1.2.3 Do you agree that projects with uncertainty of more than 100% should not be eligible for crediting?

Comment #	Issue Raised	Verra Response
44	<p>In our understanding, a project with &gt;100% uncertainty would just as likely as not result in a zero or negative climate benefit. However, there is a question about where to draw an explicit line here; there does not seem to be a compelling case for why a project with 99% uncertainty would proceed either.</p>	<p>It is true that such a threshold is somewhat arbitrary, but a line has to be drawn somewhere. We have generally received support for setting this threshold.</p>
45	<p>Yes. This is an important addition to ensure real climate impact from projects that generate VCUs.</p>	<p>Supportive comment, no response needed</p>
46	<p>Yes. Even though we are talking about a very high certainty for natural projects, it makes sense.</p>	<p>Supportive comment, no response needed</p>

<p>47</p>	<p>No.</p> <p>We have two concerns with this proposal:</p> <p>“2.4.4: Where the half-width of the two-sided 90 percent confidence interval exceeds 100 percent of the emission reduction estimate, the project is not eligible for crediting.”</p> <p>First, it is not clear why a two-sided interval is of interest here. For reducing emissions, we are most interested on a conservative under-estimate. Thus, one-sided intervals are of interest.</p> <p>Second, and more importantly, proposal 2.4.4 shuts down the possibility of projects with even moderate uncertainty. If a project were right at the proposed “cliff” (i.e., if the half-width of the two-sided 90% confidence interval were 100% of the emission reduction estimate), then <math>CV \approx 1 / 1.6449 \approx 0.6079</math>. Under approach B with confidence level 66.67%, the discount factor would be <math>0.6079 * 0.4307 \approx 0.2618</math>. That is a low discount factor beyond which to forbid crediting: as uncertainty increases, the discount factor would increase smoothly from 0 to 26.18% and then jump immediately to 100%. This cliff would make it impossible to create credits for methodologies where uncertainties are moderately high, such as <math>CV = 61\%</math>. Note that under Approach B, there is already a cliff beyond which credits are not created, namely at <math>CV = 1 / 0.4307 \approx 2.3218</math>. We think this cliff at <math>CV \approx 2.32</math> suffices, and this simple discount rule Approach B maintains the interpretability of all credits created with this rule (namely, that we can be 66.67% confident that the credits underestimate the true benefits).</p>	<p>Regarding the first point, it is common practice in statistics to work with half-widths of confidence intervals.</p> <p>Regarding the second point, please note that this rule will apply to case of 100% uncertainty. We do not understand how this comment can speak of "moderate uncertainty" here.</p> <p>In the Verra team we feel that the much higher maximum uncertainty that this comment suggest (at beyond 200%) conflicts with the requirements of environmental integrity.</p>
<p>48</p>	<p>When all plausible situations or sources of uncertainty have been identified and considered then yes, 100% uncertainty projects should be considered. However, if “novel” projects are proposed using new technology or techniques, 100% uncertainty is not plausible because ALL scenarios or courses of uncertainty are not either fully or partially understood. Over-estimation could occur in this response, or in the worst case, under-estimation. If a project has proposed potential uncertainty that is contextually viable, then the project should be considered. As the project matures from “novel” status, uncertainty can be assessed.</p>	<p>Within the Verra team we believe that even novel projects must be required to estimate uncertainty in a sound manner. We are unable to have more lenient rules for novel projects.</p>



49	Yes.	Thank you for your input. No change needed.
50	Yes, we agree that projects with uncertainty of more than 100% should not be eligible for crediting.	Thank you for your input. No change needed.
51	If the procedure above is used, then this point is irrelevant, and all projects are eligible (although extremely uncertain ones would not get any credits).	We understand this comment as generally supporting the approach.
52	In practice there may be circumstances where a confidence interval less than 100% of the mean is not achievable, for example, in ALM projects, soil organic carbon may be slow to accumulate such that uncertainty could exceed 100% of the ERR estimate for 5-10 years. Provided that sample designs and models are demonstrably un-biased, we do not see the need for an upper limit on (sample) uncertainty, as the deductions amply incentivize improved precision. Because a confidence interval includes zero does not mean that a zero value is probable.	<p>It is true that the a 100% confidence interval doesn't mean a zero value is probable. But what it does mean is that one cannot be reasonable sure that the project had any positive impact at all. This really creates doubt about environmental integrity</p> <p>But the point is taken that there could be project circumstances where ER uncertainty would be higher than 100%. The objective of the new rules is to prevent crediting in these circumstances.</p>
53	Yes, agree.	Thank you for your input. No change needed.

#### 1.2.4 The proposed requirements do not require an uncertainty assessment and uncertainty discounting in the quantification of leakage, but only for estimates of emissions in the project and baseline scenarios. Is this appropriate?

Comment #	Issue Raised	Verra Response
54	<p>This seems appropriate for the current Standard, but improved defaults around leakage estimates should also lead to appropriate and robust quantification of leakage uncertainties.</p> <p>We welcome ongoing research in this area.</p>	Thank you for your input. No change needed.

55	<p>Yes, analyzing and quantifying the certainty of leakage can be a very complex operation that could rule out very important projects in terms of results.</p>	<p>Thank you for your input. No change needed.</p>
56	<p>Downstream leakage could be particularly consequential in any open-ocean-based pathway, particularly macroalgal aquaculture, a pathway for which we understand Verra is currently developing or planning to develop a standard. As with most aspects of ocean biogeochemistry, the uncertainties are very large in some cases. Nutrient robbing could cancel out a very large fraction of claimed the emissions reduction from farming of seaweeds, depending on density and geographic context. But we don't know how large.</p>	<p>This type of uncertainty specific to a project activity should be handled at the methodology level, not the VCS Methodology Requirements. Indeed the new guidance would require inclusion of this source of uncertainty if it is expected to exceed the threshold.</p>
57	<p>We prefer Approach B over Approach A because it enables credits to be more easily interpreted: a buyer of a credit is 66.67% confident that the credit corresponds to at least one tonne of removals/abatement. By contrast, there's no such simple interpretation for Approach A: the confidence in each credit depends on the estimated emissions reduction and the uncertainty in a complex way that is not easy to understand. Thresholds like those in Approach A also invite gaming to be just barely on the favorable side of the threshold; as a result, we recommend smoothly increasing penalty functions like that in Approach B.</p> <p>We have a few minor comments about the details of Approach B:</p> <p>We think the minus symbol should not appear in the equation "Discount factor = - Uncertainty / <math>t_{\{\alpha=10\}}</math> * <math>t_{\{\alpha=66.6\}}</math>".</p> <p>The CAR SEP is undergoing a revision (to version v1.1) that adopts a new approach to accounting for uncertainty. We recommend that you coordinate with staff at CAR on the details of this approach. Also, in addition to the correction above, we also suggest that the parameter 66.67% be changed to 70%.</p> <p>The equation can be written more succinctly and intuitively by canceling the factor of <math>t_{\{\alpha = 90\}}</math> that appears implicitly in the "Uncertainty" term. We recommend writing this equation as: "Discount factor = <math>s * t_{\{\alpha=66.6\}} / y</math>" where "s" is the standard error (of the estimate of the target parameter) and</p>	<p>Thanks for pointing out that the minus sign is not needed. We have removed it.</p> <p>And we prefer keeping the 66% for reasons of easy interpretability. It means that overestimation risks are only half the underestimation probability in all cases.</p>

	<p>“y” is the estimate of the target parameter. Equivalently, “Discount factor = <math>CV * t_{\{\alpha=66.6\}}</math>”, where the coefficient of variation is <math>CV = s / y</math>.</p> <p>We recommend providing guidance on computing the t-value. What’s written in the proposal is insufficient because the t-value has another parameter, the degrees of freedom. In some cases, it is well understood how to compute the degrees of freedom from the sample size. In other cases, it is not yet understood how to estimate the degrees of freedom, in which cases project developers should use a z-value (i.e., a normal approximation) instead of a t-value. In practice, sample sizes will likely be large enough that the t-value can be replaced by a z-value with negligible impact. So Verra could simplify by requiring that a z-value is used. If there is concern that projects will have very small sample sizes, then projects could be required to properly compute a t-value specific to their sample design.</p> <p>We have a nit about the units of Discount factor and of Uncertainty. If their units truly were “%”, as it’s written, then the equation “Conservatively discounted estimate = Estimate * (1 - Discount factor)” would be incorrect. It would need “discount factor” to be divided by 100. We recommend saying that the units of discount factor and uncertainty are both dimensionless, so that division by 100 is not needed.</p>	
58	<p>Yes, leakage can be speculated but in a system that has been mismanaged, leakage can be mitigated with management change. Since background information is needed for baseline scenarios and future management practices, uncertainties from these can be calculated. Obtaining uncertainties on potential leakage is not appropriate because many different scenarios could be fathomed that are not real-world situations.</p>	Thank you for your input. No change needed.
59	Yes.	Thank you for your input. No change needed.
60	<p>The proposed requirements, which do not require an uncertainty assessment and uncertainty discounting in the quantification of leakage, but only for estimates of emissions in the project and baseline scenarios, is not appropriate. Every measurement has an error component and could significantly affect the net emission value. Therefore, leakage measurements</p>	The comments received indicate broadly support for the proposed approach. We therefore plan to keep it.

	should be subjected to the same level of uncertainty assessments and uncertainty discounting as project and baseline scenarios.	
61	It is much more difficult to realistically assess the uncertainty of the leakage belt's emissions, as even its boundaries' definition is uncertain. So, I think it is fine the way it is for now.	Thank you for your input. No change needed.
62	If it is possible to do such an uncertainty assessment and discounting in the quantification of leakage, it would be appropriate to include it and the principle of conservativeness applied. As leakage cannot be directly measured, and is largely based on inference, it's hard to believe that any meaningful estimation of uncertainty could be made. The only exception would be for direct measurement of some quantity outside the project area that serves as an indicator of leakage (e.g. observations in a leakage belt).	Yes, agree. In quantifying leakage, projects need to estimate variables that are very hard to estimate, and often much expert judgment is involved. Because of that, uncertainty estimation is less valuable.
63	Uncertain. If leakage is estimated to be above a certain percentage threshold uncertainty would need to be estimated and consequently discounted.	The comments received indicate broadly support for the proposed approach. We therefore plan to keep it.

### 1.2.5 Of the proposed approaches under requirement (3), is Approach A or Approach B more appropriate? Why?

Comment #	Issue Raised	Verra Response
64	<p>We unfortunately make this recommendation without a full understanding of Approach A versus Approach B, as footnote #4 is behind a paywall. In the future, we recommend that all materials within a public consultation are open access.</p> <p>In footnote #3, the table of conservativeness factors does not seem to be reflected in the equation presented in the VCS update. Thus, in Approach B, we would ask Verra to provide language explaining these changes. This approach appears to be superior in that it is more specific than Approach A; however, until we fully understand the proposed changes to the footnotes, we cannot say if we support it or not.</p>	Yes, indeed approach B is more specific than approach A.

	In sum, we propose Verra provides more justification, an open-access link, and a worked example for Approach B; once we have access to these updates, we would provide better comments about which approach we support (likely Approach B).	
65	We prefer Approach A. Approach B is not very flexible, and requires several strong assumptions to be made about the applicability of t-tests to the underlying datasets.	In Verra's view, both of the proposed approaches are quite flexible and simple to apply.
66	We consider that we should implement the more flexible approach and the simplest one to apply.	In Verra's view, both of the proposed approaches are quite flexible and simple to apply. What matters, though, is which approach stands a better chance to guarantee environmental integrity.
67	<p>We see the value of enabling highly certain projects to be viable in low-resource contexts by not requiring uncertainty to be estimated. However, we'd like to note that in other contexts, where there are resources to estimate uncertainty or where it's difficult to be confident that the CV will be less than <math>0.1 / 1.6449 \approx 6.08\%</math>, it would be preferred to estimate uncertainty for two reasons.</p> <p>First, it would eliminate doubts of whether <math>CV &lt; 6.08\%</math> (<math>= 10\% / 1.6449</math>) or not.</p> <p>Second, it would maintain the interpretation of credits as being 66.67% likely to be under-estimates; requirement 2.4.2 has the unfortunate side-effect that credits generated with <math>CV &lt; 6.08\%</math> are 50% likely to over-estimate the true benefit to the climate. A 50% likelihood of being anti-conservative would be concerning. We think it's better to remove a few credits (1-2%) so that the interpretation—of 66.67% likelihood of being an under-estimate—can be maintained.</p>	Verra sees value in streamlining approaches. Where the VVB determines that a given project category is simply very unlikely to ever generate uncertainties $>10\%$ , it seems inadequate to require a full quantification of uncertainties nonetheless. This could be quite cumbersome and laborious.
68	While both approaches applicable, we believe Approach A makes better sense for large-land mass projects, or projects that are global in scope. This puts uncertainty on a level playing field and if there are aspects of a project that are not accounted for, Approach A, requires a per-project approach for uncertainty.	We find this comment surprising. Both approaches would require a per-project approach to uncertainty. The difference is about how discount factors are calculated.

69	<p>Approach A is more appropriate and would provide consistency across non-VCS carbon projects. In Approach B, Verra has provided no justification for the proposal to further correct downwards by the discount factor.</p>	<p>We find this comment surprising. Both approaches foresee the application of a discount factor. The difference is only about how that factor is calculated.</p>
70	<p>Approach B is more appropriate than approach A because Approach A has some uncertainties in the assessment of scientific and model uncertainties. For example, uncertainties regarding demonstration of additionality require projects to make conservative assumptions, provide proper documentation or justification. This may allow projects to justify activities high error components. This approach does not address the possible bias in applying monitoring procedures because there appears to be no information on how this uncertainty should be addressed. In contrast, Approach B provides a statistical procedure for uncertainty assessment and discounting in carbon accounting.</p>	<p>Thank you. It is true that approach B provides a statistical procedure.</p>
71	<p>As explained in questions 2' answer, we are in favor of the approach discussed in Reference 3.</p> <p>Approach B seems to be more aligned with that approach, with the advantage that it also seems to try to address the risk of underestimation, which is of interest to project's proponents. However, we need more information on the rationale beyond those equations to answer the question.</p> <p>In addition, the equations provided mention the quantiles of a t distribution with missing the degrees of freedom. Does that mean the t distribution with df tending to infinity? If that's the case, why not just use z (Standard Gaussian)?</p>	<p>In drawing up these equations, we neglected the degrees of freedom. We are aware that this simplification is not ideal, but it makes the equations easier to apply. And yes, the t-distribution with a very large amount of degrees of freedom would resemble the z-distribution.</p>
72	<p>The methodology should allow for proponents to use something of higher calibre, e.g., climate consulting services that assess risk of particular locations based on an ensemble of climate model projections (rather than just looking at historical occurrences at a regional lens). This is particularly important for sea level rise, as there are often significant local deviations from a regional mean (e.g., these can be exacerbated by the increased frequency of other climate change-driven events such as storm surges from tropical cyclones or where the windward side of islands may be more at risk than leeward).</p>	<p>This reads more like a comment on non-permanence than on uncertainties.</p>

1.2.6 How feasible would it be for VVBs to establish during their methodology assessments whether there is a significant risk that uncertainties could exceed 10% (which would then require the application of conservativeness deductions)?

Comment #	Issue Raised	Verra Response
73	This depends on the methodology in question. It might be more feasible to use data from a previous application of a similar project in a similar setting. This data could be used as a mock-up for a new methodology but would only be useful for similar types of methodological updates. It is less clear how feasible it would be for any methodologies that are piloting a new approach or including proprietary data.	We have substantially revised the guidance esp in 2.4.2 (including a worked example) to require the PP to conduct an assessment of risk and the VVB would just check that work
74	We believe this will be difficult to assess, because we expect VVBs do not have the technical capacity to do this.	We have substantially revised the guidance esp in 2.4.2 (including a worked example) to require the PP to conduct an assessment of risk and the VVB would just check that work
75	It is our opinion that due to the innovative nature of regenerative AG projects under the VCS, it will be difficult for the VVBs to establish during their methodology assessments whether there is a significant risk that uncertainties could exceed 10%.	We have substantially revised the guidance esp in 2.4.2 (including a worked example) to require the PP to conduct an assessment of risk and the VVB would just check that work
76	The proposed addition (15) to Section 6.1.3 should be excluded. It provides no guidance to VVBs for how they should determine “significant risk” and implies a high degree of subjectivity could be used in VVBs’ decision making.	We have removed the second sentence of the addition to S6.1.3.(15) of the MAP since the revised the guidance in S2.4.2 of the VCS Meth Reqts requires the PP to conduct an assessment of risk and the VVB would just check that work per the guidance in the MAP
77	It is feasible for VVBs to establish during their methodology assessments whether there is a significant risk that uncertainties could exceed 10%, if there is a requirement to do so. Verra should ensure that the VVBs have this skill through training or stringent VVB selection process.	We have substantially revised the guidance esp in 2.4.2 (including a worked example) to require the PP to conduct an assessment of risk and the VVB would just check that work

78	<p>It seems that this would be generally feasible but could be contingent on how many types of systems or interventions a methodology may cover. For example, VM0042 could cover row crop projects with low rates of SOC accrual that are hard to detect as well as agroforestry projects with substantial aboveground biomass accrual that's easy to measure. Adjusting the revisions to use a term more precise than 'unlikely' would be helpful. It may be the case that nearly all AFOLU projects are likely to have this level of uncertainty risk under different circumstances.</p> <p>If the questions centers on methodologies deliberately without measures in place to quantify and deduct uncertainty, then the answer is for the methodology developer to provide demonstrations of worst case scenarios with sample data. We did this with the VM0035 RIL-C methodology, where sampling intensity is explicitly prescribed in the methodology, and minimum sample sizes were substantiated with field data, demonstrating that they would achieve precision within the VCS tolerance - this allowed for the methodology to avoid any explicit quantification of uncertainty (greatly simplifying its application).</p>	<p>We have substantially revised the guidance esp in 2.4.2 (including a worked example) to require the PP to conduct an assessment of risk and the VVB would just check that work</p>
79	<p>Shell believes it is important for VVBs to review the uncertainty assessment.</p>	<p>Thank you for your input. No change needed.</p>

### 1.2.7 General comments

Comment #	Issue Raised	Verra Response
216	<p>Choosing a single uncertainty threshold makes sense to provide consistency across the program. 20% at the 90% confidence interval is reasonable, and consistent with other carbon programs. We agree that projects with uncertainty of more than 100% should not be eligible for crediting, until they take corrective action to lower their uncertainty to within reasonable thresholds. In regard to the feasibility for a VVB to evaluate whether there is risk uncertainty could exceed 10% (during new methodology assessments), we find that to be very subjective and not an appropriate assessment. Seemingly all methodologies should include conservativeness deductions, unless there is</p>	<p>Thanks for these several points. Most of these are very clear.</p> <p>Several other respondents agree with the assessment that the VVB needs some guidance to be able to assess whether uncertainty could exceed 10%.</p> <p>The proposal that all methodologies should include conservativeness deduction has also been made by</p>



	<p>good reason not to (for instance, if a methodology is standardized and relies on default factors to the extent that uncertainty would be exceedingly and consistently low across projects).</p>	<p>several other respondents, but we find it not right to require all project categories to undertake an uncertainty analysis. Where uncertainties are expected to be low, it could be much effort for little benefit.</p>
227	<p>When developing REDD AUD projects (validation process), it is a common practice to use secondary data to estimate carbon stocks (no carbon credits revenues available to assist with forest inventories). Developing countries might struggle to get secondary data and, even if available, data may be presented only in a very objective way (e.g. mean carbon stock), without being given other statistical important parameters. For this specific context (which can be common), uncertainty analysis might be hard to properly assess. Is this somehow being addressed for not negatively affecting projects within a lack of data location?</p>	<p>This question would need to be addressed when discussing specific methodologies for AUD. But this consultation is not about the AUD case, it is about generic requirements for methodologies.</p> <p>But yes, in principle, the new uncertainty requirements imply that AUD methodologies would have to propose ways to quantify uncertainties, even if (or rather, especially if) the data situation is difficult.</p>
232	<p>We agree that there is a need for clear guidance to enhance consistency in approaches to uncertainty across methodologies and projects. The proposed changes to the uncertainty calculations seem to be reasonable, but we recommend that Verra provides example uncertainty calculation workbooks for different project types and methodologies to ensure consistency among methodologies and project types. We also agree that projects with Department Name uncertainty of more than 100% should not be eligible for crediting. Finally, calculating an uncertainty factor for leakage would require much additional research and peer-reviewed input, so we believe that including it with these updates would make the calculations unnecessarily complicated and not necessarily more accurate.</p>	<p>Thanks for these several points. These are all very clear.</p>
244	<p><b>UNCERTAINTY REQUIREMENTS</b></p> <p>1) Section 2.4.2. allows for exclusion of uncertainty “where it is unlikely that the half-width of the two- sided 90 percent confidence interval for estimating emission reductions could exceed 10 percent of the estimated value.”</p>	<p>Regarding point 1a, the proposal that all methodologies should include conservativeness deduction has also been made by several other respondents, but we find it not right to require all project categories to undertake an uncertainty analysis. Where uncertainties are expected to be low, it could be much effort for little benefit.</p>

	<ul style="list-style-type: none"> <li>a. Statistical uncertainty is quantifiable in all cases and should be quantified for all projects in order to assess a “conservativeness deduction,” as is the case with prominent high quality carbon offset programs and methodologies.</li> <li>b. Otherwise, any Project Proponent (PP) could make a claim that that uncertainty should be excluded and there is not a clear procedure for how a Validation Verification Body (VVB) would confirm this claim to reasonable assurance without quantifying uncertainty.</li> </ul> <p>2) Section 2.4.4. allows for projects with uncertainty up to 100% (or 0% confidence) to be credited.</p> <ul style="list-style-type: none"> <li>a. Statistical uncertainty should be limited to an amount in-line with all prominent high quality carbon offset programs and be reflective of an acceptable amount of error for the measurement approach/technologies utilized. 100% uncertainty should not be a level of statistical uncertainty that is acceptable for crediting of carbon offsets.</li> </ul> <p>3) Section 2.4.4 allows for the VVB to determine whether there is a significant risk that the halfwidth of the two-sided 90 percent confidence interval for estimating emission reductions could exceed 10% of the estimated value.</p> <ul style="list-style-type: none"> <li>a. Statistical uncertainty is not an area of professional judgment as it is quantifiable. <ul style="list-style-type: none"> <li>i. Not only could this lead to integrity issues in statistical computations, but it could also lead to significant delays in verification processes due to a lack of parameters for verifiers to follow.</li> </ul> </li> <li>b. Related to Section 2.4.4, statistical uncertainty should be quantified for all projects to assess a “conservativeness deduction” and the VVB should confirm the appropriateness of the PP’s quantification and assessment.</li> </ul>	<p>Regarding point 1b, yes, this mirrors request by several other respondents to have some additional guidance to VVB to evaluate whether or not a certain methodology might have uncertainties &gt;10%.</p> <p>Regarding point 3a, yes, this is quantifiable and VVBs will need guidance to assess claims. To be added.</p> <p>Regarding point 3b, see response to point 1a, above.</p>
249	Updates to uncertainty requirements	Thanks for the several points.

	<p>As in the case of the adjustment of the non-permanence risk tool, we are favorable to this proposal as it makes the standard more transparent and reliable, including the standardisation of the thresholds for uncertainty deduction. We agree that this will provide consistency across methodologies and project.</p> <p>Regarding the use of options A or B, we will be favorable to the use of option A, building on existing tools developed under the CDM considering the principles of materiality, use of good practice instrumentation in measurement and incentivizing the use of more accurate approaches over less accurate approaches.</p> <p>We think that it is the responsibility of VERRA to work in coordination with the VVBs to be sure that they have the tools and capacities to establish whether a significant risk that uncertainties could exceed 10% therefore apply the conservativeness deductions (this is also applicable for any other element that the VVBs needs to assess during the validation or verification processes).</p>	<p>Regarding the remark to work together with VVBs to provide them tools to be able to undertaken validation / verification, two responses. First, please be aware that this guidance is not applicable to validations / verifications, this is for the methodology approval process. Second, fundamentally, we agree, though, that some additional guidance for VVBs is needed and we have expanded to include that.</p>
254	<p>Uncertainty requirements</p> <p>Updating the statistical confidence threshold to 10% at the 90% confidence interval is a reasonable change and in line with norms of the carbon market. However, the proposed requirement 2.4.2 suggests a provision to exclude uncertainty “where it is unlikely” to exceed 10%. Section 2.4.4 (15) also suggests a VB judgement call on “...whether there is significant risk that the....confidence interval could exceed 10%...”. Both random and systematic error can and should be quantified for all projects. Whether uncertainty “could” exceed a certain threshold should not be a judgement call. The only way to be sure is to quantify it. We suggest deleting these section statements and requiring a statistical quantification of uncertainty for all projects. The absence of such measures presents a serious risk of over-crediting.</p> <p>Section 2.4.4 also states “Where the half-width...exceeds 100%....the project is not eligible for crediting”. We strongly agree any carbon claims for project-level crediting with uncertainty <math>\geq 100\%</math> are unfounded and should not be credited (this is essentially the same as complete uncertainty of the GHG assertion). We suggest a more stringent requirement of +/- 20% at 90% CI, aligning with other reputable carbon standards and providing a more realistic and conservative</p>	<p>Regarding the "judgment call", we agree this needs additional guidance. We have changed the guidance such that the PP now has to demonstrate risk and the VVB just checks the work.</p> <p>Regarding the request to quantify uncertainty and apply uncertainty discounts for all projects - we find this puts an undue burden on those project categories where it is known that uncertainties will be very small.</p> <p>We are unsure what is meant by the suggestion of a "more stringent requirement of +/- 20% at 90% CI" - is this trying to say that the maximum uncertainty threshold should be set at 20%? At Verra, we would find this unnecessarily stringent. Instead, we aim to work with uncertainty discounts in cases where uncertainties exceed this threshold. The proposed discounts are set up in a fashion to ensure that for each project, the likelihood of underestimating ER</p>

	metric by which to judge the validity and accuracy of potential new quantification approaches.	is double the likelihood of overestimating ER. For the portfolio at large, there is virtual certainty that ER are greatly underestimated.
261	<p>Uncertainty Requirements</p> <p>IETA generally supports the need to understand the uncertainties associated with GHG emission reduction and removal estimates, and the need for clear guidance to enhance consistency in approaches to uncertainty across methodologies and projects. We also support Verra’s proposal to use the latest IPCC guidance for uncertainty. A single uncertainty threshold is a useful update, supporting consistency across the VCS program. The proposal of 20% at the 90% confidence interval is reasonable and consistent with other carbon programs. The proposed requirement to exclude uncertainty “where its is unlikely” to exceed 10% and for the VVB to evaluate “whether there is significant risk that the ...confidence interval could exceed 10%” is too subjective. Instead, we urge Verra to require a statistical quantification of uncertainty for all projects.</p> <p>In question 5 of the requested feedback related to uncertainty requirements, Verra asked which of the approaches (A or B) is more appropriate, however some of the reference documents are not easily accessible, making it difficult to properly assess this. We request that Verra elaborate on the pros and cons of each of the options.</p>	<p>Regarding the request to quantify uncertainty and apply uncertainty discounts for all projects - we find this puts an undue burden on those project categories where it is known that uncertainties will be very small. Operationalizing this would require revising the methodologies for most project categories to add sections for uncertainty quantification. All projects would then need to undertake this analysis. This is of course necessary where uncertainties could be significant. But in some project categories, it can be established with a good level of assurance that uncertainties are invariably expected to be very low. Why then put the additional burden on projects? We feel that we should keep the process simple in these cases. Rather, it is important to focus the uncertainty analysis on those methodologies and project categories where uncertainties could, indeed, be a problem.</p>

### 1.3 Tonne-Year Accounting

#### 1.3.1 What concerns do you have about the introduction of tonne-year accounting as an alternative approach to non-permanence risk within the VCS Program?

Comment #	Issue Raised	Verra Response
80	<p>We are supportive of the introduction of tonne-year accounting to the VCS program. As details get refined over time, we would support continued caution around ensuring additionality for tonne-year accounting projects, as typically longer-term programs are more likely to change behavior the most because they exist beyond "current markets" and even current landowners. We believe additionality with tonne-year accounting is possible and support how Verra has proposed to implement it, and acknowledge that it may be wise to be extra cautious as the first implementations of it get under way and evaluate its effectiveness. It also comes at the risk of adding complexity to the market and currently is not widely understood by all market actors.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>
81	<p>In order to establish a conversion rate for tonne-year accounting, one needs to define a timeframe after which a reversal of a removal is no longer considered to have a negative effect on climate. Calculations of this "equivalence period" of an emission reduction and a removal with reversal is theoretically tied to a) the residence time of a CO2 emissions pulse in the atmosphere and to b) the availability of "backstop technologies" that generate an unlimited amount of mitigation at a specified price-point. If the "equivalence period" chosen for the tonne-year accounting is not conservative, the approach is less appropriate than that of a buffer stock (see our detailed submission on the equivalence period below).</p>	<p>Please note that Verra chose a timeframe of 100 years in the update because the Verified Carbon Standard and other GHG crediting programs currently use 100-year global warming potentials. However, we recognize that the residence time of carbon dioxide in the atmosphere is much longer. Using the 100-year global warming potential and focusing on 100 years of permanence is a policy decision that was made by the broader GHG accounting community.</p>
82	<p>TYA is suitable as an alternative approach to non-permanence risk when compared to the buffer pool. As stated above, it only credits achieved climate benefits, which are not reversible. However, TYA can also be used to justify short-term project commitment periods, which has implications for other aspects of project quality. For instance, in the context of IFM AFOLU projects, forest management is typically planned for on a decadal or multi-decadal</p>	

basis. While a management decision affecting forest carbon stocks may happen in any given year, these harvests are typically planned carefully with an eye toward long-term management. This is one reason carbon registries have traditionally required commitment periods ranging from 30-200 years for implementing such projects. While there is little to no assuredness regarding the additionality of a management change in any given year, over a 30+ year timeframe we have significantly more confidence in the counterfactual scenario proposed by the project proponent. Although TYA can be a useful tool to tell us how much climate benefit was achieved by sequestration over a shorter commitment period, it does nothing to tell us whether that climate benefit was additional.

Shorter time commitments for projects also have direct impacts on how leakage should be viewed. As mentioned above, forest management and harvest yields are planned for across decades. The current body of peer reviewed literature illustrates that any short-term reduction in harvest volumes is easily and almost completely made up for by local or regional wood consumers (see Murray et al 2004). The assessment of leakage should match the scale that merchantable volumes are withheld from the marketplace by deferrals. With shorter, year-to-year commitments, the results are likely to support high leakage deduction rates, near 100%. Clearly, the implications of TYA can go beyond permanence. To that end, we have further comments below regarding the proposed changes to “non-permanence risk in grouped projects and projects with multiple activity instances.” In cases where TYA is used to support project instances that do not meet the 30-year minimum project longevity, the VCS additionality tests and leakage discounts should be revisited to ensure they are sufficient for generating real, additional, conservative emission reductions and removals.

While we make our comments here in the context of forestry and IFM projects, we also suggest Verra carefully consider this when considering applying TYA to any AFOLU project type. A methodology-by-methodology review may be needed to ensure the use of a tonne-year conversion factor wouldn't have unintended consequences that could lower the integrity of credits issued under those methodologies. TYA can be a useful accounting framework, so long as it is paired with careful consideration for minimum time commitments,

	<p>additionality, and leakage provisions that are appropriate for a given project type and industry.</p>	
83	<p>We do not have any concerns and we strongly support adding tonne-year accounting as an alternative approach for mitigating non-permanence risk within VCS. Tonne-year accounting quantifies the climate benefit that has already occurred on an annual basis, and therefore is irreversible. We recommend Verra update the tonne-year section to indicate clearly that tonne-year accounting ensures the climate benefit of each tonne-year is delivered in that year and is therefore irreversible. We suggest editing the text in Section 2.4.1 as follows:</p> <p>“Projects employing tonne-year accounting do not need to make contributions to the pooled buffer account because tonne-year accounting only credits the approximate impact a metric tonne of CO<sub>2</sub>e would have had in the atmosphere over a single year. The full climate impact of each tonne-year occurs within that year, is credited after it occurs, and is therefore permanent and irreversible.”</p>	
84	<p>We do not normally sign 100-year projects, so this calculation would not be cost-effective.</p>	
85	<p>It is our belief that this type of accounting practice is impractical in the context of ALM projects.</p>	
86	<p>While the tonne-year carbon crediting approach is relatively conservative, consistent with other carbon crediting programs and easy to understand and implement, Verra’s simplified Lashof methodology does not convincingly annualize emission reductions/removals to reflect 100-year global warming potential. Despite extensive scientific research (recognized by the IPCC), this accounting approach, benefiting from three methodologies (Moura-Costa, Lashof and Verra’ simplified Lashof), has not been widely adopted in the voluntary market. As acknowledged by Verra, the tonne-year carbon accounting approach has been previously adopted by Climate Action Reserve (CAR) in their Forestry and agricultural protocols and in Canada through White climate protocols, but its adoption has been limited by feasibility and low volumes that can be credited at 100 to 1 conversion, which increases transaction costs.</p>	

	<p>Unless Verra can prove that the methodology can estimate ERRs with high levels of accuracy and precision, it is likely to attract criticisms from advocates of high integrity carbon credits who value real, measurable and verifiable ERRs. While tonne-year carbon accounting may be appealing, it is not clear how these VCS AFOLU projects will impact biodiversity and livelihoods, if land users have the flexibility of annualizing carbon benefits.</p>	
<p>87</p>	<p>a. It is widely agreed that at a bare minimum, offset projects need to be: Additional; Not overestimated; Permanent; Not claimed by another entity; Compliant with all relevant laws and regulations; Not associated with significant social or environmental harms. I am highly concerned that the tonne-year accounting approach will allow the development of methodologies that are not leading to genuine emissions reductions that are not either additional or permanent, which are the underlying core traits of carbon offsets. In this sense, allowing tonne-year accounting in the VCS program could potentially undermine the validity/credibility/reputation of the program. Allowing crediting periods of only one year if using TYA is problematic for additionality because land management in forestry is often done decades in advance.</p> <p>b. Tonne-year accounting bases the entire benefit of avoiding the emission of CO<sub>2</sub> to the atmosphere (for whatever specified timeframe) on the effect of that temporary avoided emission on cumulative radiative forcing. But cumulative radiative forcing is not the only climate outcome we might care about. There are other climate impacts which are primarily determined by the absolute amount of CO<sub>2</sub> in the atmosphere at a given point in time, rather than the total energy trapped in the climate system over time. These outcomes include long-term temperature targets like 1.5 or 2 degrees. In these cases, storing a ton of CO<sub>2</sub> today but releasing it a few years from now may simply kick the can down the road. It's possible that temporary carbon storage looks beneficial through the lens of cumulative radiative forcing but may be neutral or even counterproductive through the lens of temperature targets after the temporary storage ends. The tonne-year approach gives a permanent credit even when the C stock is eventually lost. Therefore, the tonne-year approach can be contrary to (or even undermine) the objective of stabilising atmospheric CO<sub>2</sub> concentrations as expressed in the UN Climate Convention; and as a</p>	



	<p>result, the use of the tonne-year index would result in inappropriate allocation of resources to meet the objective of the Convention. Irrespective of the lifetime of CO2 in the atmosphere, any reversal of a carbon offset constitutes a net emission of CO2. Even adding a tonne of CO2 to the atmosphere in 1000 years still increases the atmospheric pool by one tonne.</p> <p>c. Tonne-year accounting is only useful for making equivalence claims about climate damages that stem from cumulative radiative forcing. It's true that temporarily storing carbon reduces the cumulative amount of energy trapped by the Earth's atmosphere, but that does not make it identical to either avoiding emissions in the first place or permanently storing CO<sub>2</sub> — both of which produce benefits that are strictly greater than those achieved by temporary carbon storage.</p>	
88	<p>Patch is supportive of tonne-year accounting so long as its use cases and rationale for its introduction are clear. Patch is supportive of any innovation that incentivizes effective, science-based climate action, and believes the introduction and standardization of an approach to tonne-year accounting by Verra represents a step forward in managing nuances of project-level permanence.</p> <p>It is critical to clearly articulate both present and future applications of tonne-year accounting to Verra methodologies. Patch is an advocate for emerging technologies across project types, and believes it imperative to articulate the cases to which tonne-year accounting will apply and how as new project types continue to enter the market and scale.</p>	
89	<p>The primary concern around the current proposed TYA approach is the lack of a minimum crediting period for some projects. Forest management decisions are considered over the course of many decades, and therefore any reputable forest carbon project should also be maintained over a similar time scale. Where long-term management is concerned, it is unreasonable to determine additionality of a management change in any single year. However, over a multi-decadal timeframe, we can establish much greater confidence in the reasonability of the counterfactual scenario outlined in each project's baseline. This is one of the reasons why current Verra AFOLU projects require a</p>	

	<p>minimum 20-year crediting period: over a multidecadal time frame market participants have significantly more confidence in the additionality and permanence of emissions reductions.</p> <p>We advocate that the VCS Standard be updated to require that the crediting period for all projects, regardless of whether they are grouped or individual, be a minimum of 20 years.</p> <p>It is also important to consider the issue of leakage in the context of projects with single year commitments. The current leakage factors prescribed for VCS AFOLU projects were designed to be applied to multi-decadal projects, and it is not clear that leakage figures calibrated in this manner are at all appropriate for projects with commitments as fleeting as one year.</p> <p>In addition, it is not clear whether Verra will allow for the use of discount rates in association with TYA. We would urge Verra to specifically disallow the application of discount rates in conjunction with TYA in the VCS Standard.</p> <p>Finally, we would advocate for full public disclosure of the expert analysis of the proposed tonne-year accounting assumptions and quantification approach to ensure additionality and appropriate discounts for leakage and uncertainty. We also suggest these materials be made available for public comment prior to any approval actions by Verra.</p>	
90	<ul style="list-style-type: none"> <li>Issue 1: Ton-year accounting is inconsistent with net-zero climate goals and global temperature stabilization.</li> </ul> <p>Issuing offset credits based on ton-year accounting is inconsistent with the physical climate outcomes required for net-zero climate goals and global temperature stabilization. Ton-year accounting asserts that temporary carbon storage is equivalent to the permanent effects of CO<sub>2</sub> emissions based on a peculiar physical criterion: when the cumulative radiative forcing of CO<sub>2</sub> emissions is balanced out by an equal reduction in radiative forcing brought about by temporary CO<sub>2</sub> storage.</p> <p>Critically, this equivalence concept ignores temperature and is thus inconsistent with climate-stabilization outcomes. Global temperatures are highly responsive to the amount of CO<sub>2</sub> in the atmosphere.<sup>3</sup> If temporary carbon storage is used to offset emissions, post-storage temperatures</p>	

reflect both the offset emission and the carbon emitted at the end of its temporary storage period – as well as a reduced rate of uptake in natural sinks during the temporary storage period. As a result, the system stabilizes at a higher temperature and leads to larger long-term climate impacts. These impacts must be taken into account to properly measure the value of temporary carbon storage, but they aren't included in ton-year accounting methods.

To illustrate the problem, we modeled the temperature outcomes of carbon offsetting based on Verra's proposed ton-year methods. Specifically, Verra's proposal would award partial credits for each year a ton of CO<sub>2</sub> is stored outside the atmosphere based on a "conversion rate" of 100:1.<sup>4</sup> In other words, Verra calculates that over a 100-year time period, 100 tons of CO<sub>2</sub> stored for 1 year is equivalent to 1 ton of CO<sub>2</sub> emissions. Figure 1 shows the temperature outcome of offsetting 1 GtCO<sub>2</sub> of emissions with a 10-year carbon storage project credited under Verra's proposed ton-year accounting method (green line).

Because Verra's proposed 100:1 conversion rate requires a 10-year project to store 10 times the CO<sub>2</sub> emitted, the offsetting scenario (green line) initially leads to a significant but temporary reduction in temperature. When the temporarily stored CO<sub>2</sub> is released after 10 years, however, temperature increases and briefly exceeds the emissions-only scenario (orange line). Although Verra's methods suggest that ton-year offsetting neutralizes warming, the long-term effect is essentially identical to the effect of initial emissions (orange line) and substantially higher than the baseline scenario (blue line). If Verra's assertion about physical equivalence were consistent with temperature stabilization, we would instead expect the green and blue lines to be similar.

We are mindful that these concerns have ramifications for other temporary carbon storage projects. We also appreciate that temporary carbon storage provides some benefits to the climate. Climate researchers have identified scenarios where temporary carbon storage can help reduce peak warming and delay climate impacts, for example, but those scenarios depend on temporary carbon storage augmenting

climate mitigation and not being used as a justification for additional emissions via offset credits.<sup>6</sup>

We are concerned that ton-year accounting is being considered for offset crediting despite never having been stress-tested for net-zero climate targets. Ton-year accounting was developed in the late 1990s and early 2000s as a way to estimate the benefits of temporary carbon storage in forests and other natural ecosystems,<sup>7</sup> about a decade before the scientific

literature began to recognize that net-zero greenhouse gas emissions are required to stabilize temperatures.<sup>8</sup> The method's history is relevant because ton-year accounting has only rarely been used in practice and has largely remained an academic abstraction. Its recent revival — including Québec's cap-and-trade program regulator,<sup>9</sup> the Climate Action Reserve's Mexico Forest Protocol<sup>10</sup> and Soil Enhancement Protocol,<sup>11</sup> and now NCX's proposal to use ton-year methods in Verra's program<sup>12</sup> — has come without any discussion of whether an old method is relevant in a world aiming for global net-zero emissions.

The value of temporary carbon storage ultimately depends on a number of critical factors that must be analyzed comprehensively<sup>13</sup> — notably the global emissions scenario, the extent and pace of future climate impacts, and highly normative decisions around economic discounting and distributional impacts. Ton-year accounting does not account for any of these complexities and is based, instead, on an oversimplification of physical climate science dynamics. Issuing offset credits based on conversion ratios derived from ton-year accounting does not indicate progress toward net-zero goals and may even lead to counterproductive outcomes that increase global temperatures.

- Issue 2: Ton-year accounting introduces novel additionality concerns that require methodology-specific mitigation standards.

The additionality standard requires projects to demonstrate that their credited climate benefits occur in addition to business-as-usual expectations, i.e. that credited emission reductions would not occur in the absence of the credit's financial incentive. According to VCS program rules, additionality must be “demonstrated and assessed in accordance

with the requirements set out in the [crediting] methodology applied to the project.”<sup>14</sup>

We strongly recommend Verra foreclose the option to use ton-year accounting with crediting methodologies that were not explicitly designed to address the novel additionality risks created by ton-year accounting. These risks are significant enough in their own right when it comes to methodologies that are designed primarily around ton-year accounting. What Verra is proposing, however, goes far beyond that. Verra’s proposal includes the option for any project to petition Verra to use ton-year accounting under any methodology.<sup>15</sup> This is a problem because additionality risks vary depending on offset methodologies’ crediting periods. As a result, protections designed for an existing methodology with a crediting period of 40 years might be wholly inadequate for a ton-year methodology based on 1-year crediting periods.

As proposed, ton-year accounting creates unique additionality risks because it gives projects the option to exit their carbon commitments on an annual basis. Specifically, projects could be issued credits on an as-you-go basis with a renewable crediting period of one or more years.<sup>16</sup> Projects electing ton-year accounting can choose to end the crediting period at any time with no penalty and do not have to make contributions to buffer pools.<sup>17</sup>

Giving projects the ongoing option to exit their carbon commitments creates multiple, novel additionality risks. Additionality depends on complex real-time market dynamics and can be gamed when projects can opt in or out of crediting.

For example, imagine a forest project with mature timber that has decided to defer harvest until market prices recover from an unexpected crash. With ton-year accounting, this project could receive non-additional credits over a flexible time horizon while it waits for more favorable market conditions to conduct its business-as-usual harvest plans. Alternatively, consider a forest project with a 40-year harvest cycle. Using ton-year accounting, this project could claim credits during its natural regrowth cycle without having to make any changes to long-term carbon stocks or change business-as-usual harvesting intentions. Because today’s crediting methodologies are based around a minimum 20-year crediting

	<p>period,<sup>18</sup> the possibility that projects would opt in and opt out of crediting on much shorter time horizons is not addressed — but would become an explicit additionality risk under ton-year accounting.</p> <p>Additionality risks also depend on interactions between program rules and crediting methodologies. Although the Proposed Update includes potential changes to program rules that have direct ramifications for the additionality of ton-year accounting projects, the Proposed Update does not appear to contemplate how these changes might encourage non-additional crediting under ton-year methods. For instance, the VCS Standard contains a requirement that individual projects increase the total size of the terrestrial carbon sink by crediting the project in the context of its long-term harvest dynamics.<sup>19</sup> If ton-year projects were exempted from this requirement — as Verra appears to be contemplating<sup>20</sup> — then the additionality risk currently addressed by this requirement would need to be resolved by another, as-of-yet-unspecified mechanism.</p> <p>Similarly, additionality risks depend on the rules governing when landowners can cycle in and out of credited projects. Under Section 5 of the Proposed Updates, landowners who were previously credited with ton-year accounting are allowed to move between projects and have gaps between leaving one project and starting in another. This could exacerbate the additionality concerns outlined above by allowing cyclical, non-additional crediting patterns that take advantage of business-as-usual harvesting and timber market dynamics.<sup>21</sup></p> <p>Because ton-year accounting offers projects the flexible option to exit carbon commitments on an annual basis, it creates new opportunities for projects to earn credit for business-as-usual behaviors. These risks must be addressed with methodology-specific additionality standards. Projects using methodologies that were not explicitly designed to address the additionality risks of ton-year accounting should not be allowed to use ton-year accounting.</p>	
91	<p>We appreciate that Verra has taken an approach to tonne-year accounting that is grounded in the more scientifically robust Lashof method yet simplified for more straightforward accounting and implementation. However, we have reservations about adding another layer of complexity to the market, and are</p>	

	not sure that buyers fully understand the concept (hence the need for the VCS primer) and implications for reporting.	
92	We have no concerns with the introduction of tonne-year accounting. It has the potential to add much needed transparency to credits of varying durations and time horizons. It also extends greater inclusion for a broader set of beneficial project types. If anything, presenting tonne-year accounting narrowly as an alternative approach to nonpermanence risk seems limited in scope.	
93	<p>Shell has no concerns with tonne-year as an alternative approach, but it is not clear from this consultation document whether this deals only with a substitution for the non-permanence buffer pool or with an actual crediting pathway based on tonne-year accounting. Clearer linkage with the GHG accounting component would be beneficial. It's important to emphasize Shell read the consultation materials that focused on the non-permanence risk, and don't see this as automatic support for tonne-year accounting for GHG quantification. Shell sees tonne-year accounting as an additional tool to address the urgent need to reduce emissions in the near term and avoid irreversible longer-term impacts on the climate.</p> <p>If indeed tonne-year accounting is being proposed as a programmatic level shift creating a new crediting pathway, further safeguards and programmatic-level changes would be required. For example, Shell would support a minimum crediting period to ensure that the mechanism is used to finance urgent action (say, over 5-10 years) as opposed tool to provide additional compensation to landowners. In addition, Shell supports the creation of a separate restriction that limits tonne-year accounting to removals only. Avoidance credits and reduction credits seem particularly challenging to credibly quantify over short-term periods (1-2 years).</p>	

### 1.3.2 What concerns do you have with the proposed conversion rate of 100 tonne-years to one tonne? What do you think would be a more appropriate conversion rate, and why would this be more appropriate than 100 to 1?

Comment #	Issue Raised	Verra Response
94	We are supportive of the 1:100 ratio.	
95	<p>The equivalence periods calculated by the academic literature differ considerably. Moura Costa and Wilson (2000) calculate an equivalence period of 55 years based on the residence time of a CO<sub>2</sub> Perspectives Climate Group GmbH · www.perspectives.cc · info@perspectives.cc Page 2 emissions pulse in the atmosphere but did not look at the availability of a backstop. Herzog et al. (2003) find that if climate damages require a fixed cumulative emissions limit (a carbon budget) and there is no backstop, then a storage option with even very slow leakage has limited value relative to a perfectly permanent storage option. The reasoning of Herzog et al. (2003) thus leads to proposals of equivalence periods of 1000 years or more (Carbon Plan 2021, Chay et al. 2022). We see the 100 years equivalence period implicitly proposed by Verra through the equation 100 tonne-years = 1 permanent tonne as a reasonable compromise given that Direct Air Carbon Capture and Storage (DACCS) will be available as backstop option within the next decades before the carbon budget limit commensurate with the long-term temperature target of the Paris Agreement is exhausted, and given the calculation of ‘Global Warming Potentials’ uses a 100 year period. The proposed approach offers a flexible solution for short-term projects that lowers adoption barriers, such as high costs (e.g. buffers, monitoring etc.) and can therefore increase participation while maintaining a high standard of environmental integrity. In order to prevent unsustainable “short-termism”, i.e. the generation of a significant amount of credits on large areas during a period of one or two years after which the reservoirs are destroyed, we would propose that tonne-year credits can only be issued after a minimum period of five years.</p> <p>A good alternative to the tonne-year accounting would be a strong permanence and buffer approach coupled with the “long-term reversal monitoring system” (LTRMS) (Verra 2021)., Verra should offer both options, and activity developers need to apply the chosen option until the end of their crediting period.</p>	<p>There seems to be support for a 100 to one equivalency or conversion rate of tonne-years to tonnes. Nonetheless, Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p> <p>Please note:</p> <ol style="list-style-type: none"> <li>1) At this time, Verra does not believe there is sufficient scientific support for a non-zero discount rate. Adopting a less conservative equivalency ratio based on a non-zero discount rate would substantially change how carbon credits are quantified and would make it hard to draw equivalency to projects using the buffer approach. Verra would require peer-reviewed science supporting a discount and significant academic support to consider such a change.</li> <li>2) Under the February consultation proposal, the crediting period requirements would not change for tonne-year projects (i.e., the minimum crediting period for AFOLU projects with non-permanence risk would still be 20 years). However, this commitment would be at the project level instead of the individual instance level in grouped project.</li> </ol>



96	<p>The proposed conversion rate of 100 tonne-years to 1 tonne is appropriate. It complements the use of 100-year global warming potential conversion factors throughout the VCS program. While alternative TYA methods put forth by Moura Costa or Lashof offer reputable, peer-reviewed approaches, the 1/100th method offers some simplicity in accounting when compared to these other options. This can help make for more straightforward implementation and review by both project proponents and VVBs. This method is also consistent with the Climate Action Reserve's method used in several of their protocols, which has had demonstrated verifiable success across over 50 CAR forest projects in Mexico. While registries need not implement the same policies, some manner of uniformity between programs is useful for establishing consistency in an unregulated market, particularly during a time when numerous outside entities are looking at the voluntary carbon market with a great deal of scrutiny.</p>	
97	<p>A 100 to 1 ratio implies that 1 tonne of CO<sub>2</sub> removed in 99 years is as valuable to the climate as one tonne removed today. We think there is economic and social consensus that carbon abated or removed today reduces climate harm more than carbon removed tomorrow, and so we suggest Verra include a mechanism to incentivize early action through a revised conversion rate – for tonne-years retired all at once to create a full VCU – that reflects the time value of carbon. The conversion rate used in tonne-year accounting will determine the cost of a tonne-year credit and is therefore a choice that will have significant consequences for the effectiveness of tonne-year accounting. The rate chosen will determine whether the adoption of tonne-year accounting will have the desired impact, namely, stimulating demand for and mobilizing supply of VCS-accredited projects. If the conversion rate is overly conservative, thereby undervaluing a tonne-year, tonne-year denominated projects will be unnecessarily costly, and may not have the material effect on scaling demand and supply. We believe a ratio that incorporates the time value of carbon would be more appropriate and has the opportunity to help VCS scale its impact quickly. NCX has calculated that a discount rate of 3.3% suggests a ratio of just under 31 tonnes held for one year is equivalent to one tonne held for 100 years (from an update to Parisa et al. 2021, under review in March 2022). While we are sensitive to recent public conversations on what the ideal discount rate is, indecision about the perfect discount rate should not get in the way of stimulating action today. Therefore, we recommend strongly that Verra adopt a</p>	

	<p>more moderate conversion rate, and establish a standing working group to advance and assess (1) the impact of the chosen conversion rate on the evolution of the market for VCS-accredited projects; (2) the degree to which there is an emerging consensus on the most appropriate conversion rate; and (3) ways in which with the process for changing the conversion rate can be simplified and accelerated.</p>	
98	<p>It is difficult to sign agreement for 100 years projects.</p> <p>We proposed the tonne-year accounting for a period of 50 years and a conversion rate of 1/50 or the exploitation period.</p>	
99	<p>This approach strikes a reasonable balance between the underlying scientific concepts and practicality of application.</p>	
100	<p>We believe that while 100 years may be a suitable time frame for forestry projects, it is not appropriate for ALM projects or other projects having shorter crediting periods than 100 years. Therefore we suggest that the 100-year period should be changed and reflect the minimum acceptable lifetime of the project of 30 years, or the minimum crediting period of 20 years, for ALM projects.</p>	
101	<p>There are different methodologies for calculating tonne-year GHG emissions/removals based on the global warming potentials over 100 years. But Moura-Costa and Lashof methodologies do not seem to arrive at the same values. The simplified 100 tonne years to one tonne could essentially be applied differently. As you rightly explained, it is more of a policy artefact than a scientific certainty. The tonne-year will gain traction once there is incontestable scientific evidence that it is feasible and reliable. We do not have an appropriate alternative rate at the moment.</p>	
102	<p>We believe the proposed conversion rate of 100 tonne-years to one tonne is appropriate if paired with a multi-decadal project crediting period and with discounting prohibited.</p>	
103	<p>The proposed 100:1 conversion rate should not be reduced. The current rate is appropriate for asserting a balance in cumulative radiative forcing over 100</p>	

years. A lower conversion rate would be inconsistent with the stated goal of balancing cumulative radiative forcing over 100 years, and a higher conversion rate is required to balance cumulative radiative forcing over a period longer than 100 years.

We believe the choice of conversion rate should be based on climate modeling that substantiates a ton-year method's claim of balancing cumulative radiative forcing. Using the FaIR climate model to balance cumulative radiative forcing, we calculate a conversion rate of about 104:1.<sup>22</sup> The correspondence between Verra's proposed conversion rate (100:1) and our climate-model-based calculation (about 104:1) suggests that Verra's proposal is reasonably well aligned with the goal of balancing cumulative radiative forcing over 100 years. We note, however, that the modeled conversion rate depends on the choice of global emission scenarios and can range from 82:1 to 121:1.<sup>23</sup>

Again, however, we stress that ton-year accounting is not consistent with net-zero climate goals or global temperature stabilization. It is also important to observe that Verra's choice of a 100-year time horizon excludes consideration of all subsequent warming impacts. A higher conversion rate is needed to justify physical equivalency claims that extend beyond 100 years

We also want to address two alternative methods for choosing a conversion rate that should not be adopted, either in the present consultation or as an option for future methodologies.

First, some stakeholders have proposed introducing economic discounting concepts into the calculation of a conversion rate. NCX's recent white paper, for example, introduces a discount rate that reduces the reported ton-year impacts of emission scenarios over time. As a result of discounting, NCX calculates a conversion rate of 30.1:1 for a 100-year time horizon and only 30.8:1 for an infinite time horizon.<sup>24</sup> This approach is inappropriate because discounting radiative forcing calculations invalidates any claim to physical equivalency, including the claimed equivalency under Verra's proposal.<sup>25</sup> Decisions about discounting and time horizons should be made separately from physical equivalency assertions,<sup>26</sup> not co-mingled in ways that are all but certain to confuse market participants.

Second, in addition to the "Lashof" method on which Verra's proposal is based, a distinct approach known as the "Moura Costa" method exists and should not be

	<p>used.<sup>27</sup> The Moura Costa method does not address the atmospheric impacts of emitting CO<sub>2</sub> after temporary storage. As a result, the Moura Costa method can produce the obviously absurd result that temporarily storing 1 tCO<sub>2</sub> justifies the emission of more than 1 tCO<sub>2</sub>.<sup>28</sup></p>	
<p>104</p>	<p>One of our key questions regarding the 100 to 1 conversion rate is the financial viability of projects pursuing tonne-year accounting. It can be challenging for carbon projects to cover the costs of implementation with carbon revenues alone, especially when a project requires upfront implementation costs. Even if tonne-year accounting is introduced, it may be highly unlikely that projects choose to pursue tonne-year accounting over conventional accounting. That said, these are largely challenges related to implementation costs and the price of carbon credits. It is most appropriate and scientifically sound to base the conversion rate on the physical impacts of CO<sub>2</sub> on the atmosphere over time. We agree that Verra’s approach to a conversion rate should not incorporate subjective concepts, such as a discount rate, and we support using the Lashof method as the basis of determining a conversion rate over use of the Moura-Costa method.</p>	
<p>105</p>	<p>We have two primary concerns. The first is related to the model itself and the second to the implicit decision around time preference:</p> <ol style="list-style-type: none"> <li>1) The proposed “Verra model” – that is the simplified (linear) version of the Lashof model – sacrifices accuracy for simplicity. While accurate for projects with a duration of 100 years, it is inaccurate for all other project durations, an inaccuracy that is exacerbated for shorter durations – durations more common to projects using tonne-year accounting. Moreover, simplifying the math to a simple conversion rate, which is to say a linear relationship, misrepresents exponential relationships, such as that of carbon forcing and time preference. Thus, the Verra model is less flexible as well as less accurate.</li> </ol> <p>To resolve this concern, we recommend that Verra simply adopt the Lashof model. The Lashof model is an accurate representation of the physical properties of carbon in the atmosphere and is the most accurate and appropriate model. In lieu of a conversion rate, Verra can publish a simple</p>	

	<p>tool to calculate the accurate number of carbon credits across any project duration.</p> <p>2) Our second concern is with the implicit time preference in the Verra model. Though the Verra model is linear, it can be effectively approximated by the Lashof model with a discount rate of 0.51%, regardless of project duration (see Excel spreadsheet). We highly recommend that Verra adopt a standard discount rate explicitly, rather than imbed it implicitly into another assumption. Moreover, action to combat global warming is preferred now, strongly. And so, while a discount rate representing time preference is an appropriate way to represent that time preference, the implicit time preference used by Verra (0.51%) is insufficient.</p> <p>To resolve the second concern, we recommend that Verra explicitly adopt a discount rate equal to 3.0% with space for public commentary. This discount rate is consistent with both the social cost of carbon (3.0%, Source: IWG Social Cost of GHG) and the 100-year GWP standard (3.3%, Source: Sarofim et al., 2018). Using this discount rate, the aforementioned tool would determine the conversion rate for any project duration. Here is a summary of the conversion rates by 10-year interval, comparable to that in Verra’s “Additional Background Information on Tonne-Year Accounting:”</p>	
106	<p>It needs to be clearer that, if tonne-year accounting approach is chosen, the conversion will also happen ex-post (i.e., 100tCO<sub>2</sub>e verified for a given vintage will convert into 1 tonne-year and be credited post verification). While Shell believes the 100/1 conversion rate is the most conservative, research has shown that the radiative forcing effect of a tonne of CO<sub>2</sub> is variable over time. The flat and linear conversion rate does not take this into account.</p> <p>The proposed conversion rate assumes a linear impact over time, but Shell would encourage Verra to explore scientific support for a lower conversion rate, as this would increase the chances of uptake of this new approach. The stringent and conservative conversion rate of 100/1 could act as barrier to entry for certain project proponents and could have a large impact on project economics compared to the ‘conventional’ buffer pool approach. A less conservative conversion rate combined with the above mentioned minimum crediting period restriction could unlock urgent climate action over the next decade and provide</p>	

	<p>certain project types, (e.g., ALM), that have difficulty committing lands for the entirety of the traditional crediting period, an alternative financing model.</p> <p>For example, the IPCC (<a href="https://archive.ipcc.ch/ipccreports/sres/land_use/index.php?idp=74">https://archive.ipcc.ch/ipccreports/sres/land_use/index.php?idp=74</a>) also indicated that “as long as the policy time horizon is finite or a non-zero discount rate is applied to determine the present value of future emissions/ removals, even short-term sequestration will have some value.” Accordingly, Shell would encourage Verra to consider the integration of a non-zero discount rate for the conversion rate. This can also be amended at a later stage, as science provides additional insights.</p>	
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### 1.3.3 Should ARR and IFM projects using tonne-year accounting be exempt from the long-term average requirements outlined in Section 3.2 of the VCS Standard?

Comment #	Issue Raised	Verra Response
107	Yes, because using tonne-year accounting with the equation in Section 3.2 of the VCS Standard would be ineffective, because the long-term average GHG benefit would be divided by 1, so it should stay the same (as opposed to if the number of years considered in calculating the long-term average was greater than 1, as with non-tonne-year accounting projects). It seems that making tonne-year accounting projects exempt from these requirements would have the same result as making them non-exempt, so we do not see a purpose in making them non-exempt.	There is a mix of perspectives on whether ARR and IFM projects employing tonne-year accounting should be exempt from the long-term average requirement. No decisions have been made on this topic since Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.
108	As we understand it, the long-term average requirements in Section 3.2.20 of the VCS Standard prevents projects from being credited for tonnes that are likely to be intentionally reversed based on the project’s future harvesting plans. Since TYA credits only for the climate benefit attained in past reporting periods, and does not consider reversible tonnes, it seems reasonable to exempt TYA projects from this requirement. However, if there is other rationale behind this requirement that we are not considering, then Verra should further explain why TYA projects should be exempt.	

109	<p>Yes. As Verra states, “Tonne-year accounting allows project activities with shorter durations to credit the climate benefits annually so that there is no long-term liability.” Since the annualized benefit is what is calculated, and that benefit is not reversible there is no need for a long-term average requirement when using tonne-year accounting.</p>	
110	<p>Yes, it should be exempted to avoid double penalty.</p>	
111	<p>No, ARR and IFM projects using tonne-year accounting should not be exempted from long-term average because of the long-term impact of timber harvesting on the ecosystem carbon budget.</p>	
112	<p>We believe the LTA requirements should apply to all projects regardless of the nonpermanence approach. If there are two identical ARR projects that last 100 years, the project using a buffer approach will not only need to contribute to the buffer pool for 100 years but will also need to model a final harvest at the end of the project (whether one is planned or not), and will only be credited up to the long-term average. However, the project using the TYA approach would be credited for the full 100 years of emissions reductions and would not need to account for a final harvest. This would lead to a very large difference in crediting over the project lifetime (likely &gt;50%), but the overall actual emissions reductions over that time frame would be identical.</p>	
113	<p>No. Section 3.2 of the VCS Standard is designed to ensure that individual projects increase the total size of the terrestrial carbon sink by crediting the project in the context of long-term harvest dynamics. Absent these safeguards, ton-year accounting could allow significant non-additional crediting of business-as-usual forest regrowth.</p> <p>In many ways, Section 3.2 of the Verra Standard anticipates the additionality concerns surrounding ton-year accounting that we raise above. Like ARR and IFM projects that include timber harvesting, ton-year accounting can only be successful if it takes into account harvest dynamics to ensure the additionality of credited carbon. In the absence of these protections, projects could enroll</p>	

	<p>business-as-usual land management activities in ton-year accounting and earn credit for non-additional carbon storage leading up to planned harvest activities.</p> <p>To reduce the risk of these outcomes, Verra should retain the long-term average requirements in its current Standard, including the calculation and reporting of historical harvest/cutting cycle lengths in Section 3.2.3.21. Section 3.2 should also be expanded to prohibit the use of ton-year accounting to credit carbon stored in ARR and IFM projects when the trees are younger than the historic harvest/cut cycle. This would have the effect of prohibiting business-as-usual timber regrowth cycles from earning offset credits that are highly likely to be non-additional.</p>	
114	<p>Yes, as Shell supports the exemption of these project types from LTA as the tonne-year accounting approach alone will result in a more conservative or equal amount of VCUs.</p>	

#### 1.3.4 How should situations where partial credits are generated be handled? Should Verra allow projects to carry over excess tonne-years to the next verification period?

Comment #	Issue Raised	Verra Response
115	<p>We support continuing the conservative practice of rounding down when calculating GHG benefit during verification. With this in mind, we propose that partial credits in a verification are not credited, and not carried over to future verification period.</p>	<p>Thank you for your feedback. This question refers to carrying over tonne-years to the next verification period to be added to additional tonne-years to complete the tonne. For example, suppose a project has 53 tonne-years from a previous verification. In that case, we are asking if it should be allowed to carry these tonne-years over and add 47 tonne-years from the following verification to finish the tonne. Overall, there seems to be support for this flexibility.</p>
116	<p>We do note that while the 1/100th method is generally simpler to implement than other methods, there is still room for compounding errors. We suggest that Verra develops a TYA worksheet to assist project proponents and verifiers in applying this method consistently across projects. We see no issue in allowing projects generating partial credits to carry those over to future reporting periods. This would be another good reason for Verra to consider providing a TYA</p>	



	worksheet: rounding rules could be programmed into the tool, as well as any carryover mechanism.	<p>Nonetheless, please note that Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>
117	Since tonne-year accounting delivers climate benefit fully on an annual basis, tonne-years are fungible. Therefore tonne-years generated in one verification period should be allowed to be carried over to the next period. We also recommend allowing tonne-years to be carried over from one project to another. That is, if one project generates excess tonne-years sooner than the crediting period required, they should be allowed to be allocated to other projects under the same methodology.	
118	We would need more clarification on partial credits, but in case of additional credits, we should be able to choose when we want to receive them.	
119	When applying TYA, the volume of credits should be rounded to the nearest integer. However, in subsequent years, the total number of credits from the start date should be calculated, rounded to the nearest integer, and then the difference between this number and the number of credits already issued should be the new quantity for issuance. This ensures that instances of rounding up will not compound and result in net over-issuance over time.	
120	No, Verra should not allow projects to carry over excess tonne-years to the verification period to ensure environmental integrity. A verification is undertaken based on monitoring data, assumptions and conditions within a given a given period. The conditions in any two verification periods may not be the same.	
121	Verra should provide example calculation workbooks to properly round and distribute partial credits. It seems appropriate to carry over excess tonne-years to the next verification period.	
122	We have no objection to carrying partial credits forward, so long as the total number of credits issued never exceeds verified historical quantities.	

123	Allowing projects to carry over excess tonne-years to the next verification period makes sense and shouldn't pose additional risks.	
124	As long as there are no changes in the conversion ratio (100/1), carrying over excess tonne-years to the next verification should not be an issue. Shell assumes this is referring to partial tonne-year credits (i.e., <1 tonne-year). In this case, Verra should think through what vintage would be assigned to this partial credit when combined with a partial credit from the next verification to make it a whole credit. Shell's suggestion would be either of the two years, or the year with the largest partial credit contribution, without a particular preference.	

### 1.3.5 What further clarifications on using tonne-year accounting do you think are needed?

Comment #	Issue Raised	Verra Response
125	Tonne-year accounting presents a new and unique challenge to the calculation of leakage. The proposed updates seem thorough in regards to how tonne-year accounting projects would handle permanence, but there should be clarification on if tonne-year accounting projects should also use the same guidance as other projects on handling leakage. Is tonne-year accounting for leakage handled the same as non-tonne-year accounting leakage?	Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.
126	A final benefit worth mentioning is that the 1/100th method is also reasonably conservative when compared to other TYA methods, falling somewhere between the Moura Costa and Lashof methods. However, this is only true so long as a discount rate is not applied on top of this accounting. Some applications of TYA may include use of a discount rate to estimate the economic value of a tonne withheld from the atmosphere for a given amount of time. This will generally show a greater near-term economic impact for temporary carbon storage when compared to the physical climate benefit of that same storage. However, this is not historically the way credible carbon offset credits have been represented. One credit issued by a registry is equivalent to the climatic impact of one tonne of CO2e that was avoided or held out of the atmosphere for a set period of time.	<p>Please note:</p> <ol style="list-style-type: none"> <li>At this time, Verra does not believe there is sufficient scientific support for a non-zero discount rate. Adopting a less conservative equivalency ratio based on a non-zero discount rate would substantially change how carbon credits are quantified and would make it hard to draw equivalency to projects using the buffer approach. Verra would require peer-reviewed science supporting a discount and</li> </ol>

	<p>This provides buyers with a clear picture of the physical climate impact of a project, which can then be compared to the climate impact of the buyer's GHG footprint. To provide the most straightforward comparison possible and the truest representation of a project's effect on the climate, we believe discount rates should not be applied to the final VCU calculation of a project using TYA. This ensures that buyers can be confident in purchasing and retiring VCUs on a 1-to-1 equivalent basis to their GHG emissions. We suggest that Verra clearly specify in the VCS Standard that discount rates are not to be applied when using TYA.</p>	<p>significant academic support to consider such a change.</p> <p>2) Tonne-year projects would still need to be monitored during the crediting period under the proposal presented in the February 2022 consultation.</p> <p>3) For further information on the equivalency ratio, please see Verra's background document on <a href="#">tonne-year accounting</a>.</p>
127	<p>We suggest further clarifying whether projects can switch between conventional and tonne-year accounting once a project has begun.</p>	
128	<p>We need some clarification on partial credits (previous question).</p>	
129	<p>Section 3.8.7: Introducing use of TYA should not necessarily result in the allowance for crediting periods of 100 years. The crediting period should be set for each project type irrespective of the use of TYA.</p>	
130	<p>Further research is needed on how to calculate the tonne-year emission reduction/removal. This must be based on scientific evidence.</p>	
131	<p>a. Verra should clearly state that discount rates should not be applied when using TYA (if it is approved).</p> <p>b. I am very concerned that there is no requirement for monitoring if using tonne-year accounting as this could result in ineffective oversight over the projects using this approach and thus claims could be made that are not what is happening on the ground. It also means less transparency for other stakeholders (e.g., the public).</p>	
132	<p>In order for tonne-year accounting to effectively unlock new climate activities, the following items should be made clear: (a) why tonne-year accounting is being introduced and (b) how it should be understood relative to buffer account approaches and (c) rationale for the selected conversion rate (100 tonne-years to 1 tonne CO<sub>2</sub>e). Specifically, it is critical that the "why" and "how" of the selected conversion rate be explained simply, so as to avoid further obfuscation of carbon</p>	

	<p>markets for carbon credit buyers. It should also be made clear if (and if so, under which circumstances) the conversion rate shall be changed. The concept of a discount rate should also be clarified - why a discount rate is included or excluded from consideration and under what circumstances the use of a discount rate would be appropriate and/or reconsidered.</p>	
133	<p>We would advocate for full public disclosure of the expert analysis of the proposed TYA assumptions and quantification approach to ensure additionality and appropriate discounts for leakage and uncertainty. We also suggest these materials be made available for public comment prior to any approval actions by Verra.</p>	
134	<p>The Proposed Updates define a ton-year as “[a] metric tonne (MT) of CO<sub>2</sub> stored for one year that approximates the radiative forcing that the tonne of CO<sub>2</sub> would have had in the atmosphere over a single year.”<sup>29</sup> We believe this definition should be clarified to avoid potential misunderstandings.</p> <p>In our view, a ton-year is an arbitrary but potentially useful way to refer to a combination of mass and time. Technically, ton-year accounting methods balance impacts denominated in ton-years — not cumulative radiative forcing. When a ton-year accounting method uses an impulse response function to calculate ton-years (as the Lashof method<sup>30</sup> does), it is true that ton-year calculations approximate radiative forcing calculations.<sup>31</sup> However, there is nothing about ton-year units that necessarily approximates radiative forcing. This is clearly demonstrated by the Moura Costa method, which balances impacts denominated in ton-years but produces physically inconsistent claims from the standpoint of radiative forcing.</p> <p>Because ton-year units may have separate utility in climate accounting, we suggest defining a ton-year in the VCS Program Definitions simply as “[a] metric tonne (MT) of CO<sub>2</sub> stored for one year,” as Verra has elsewhere in its explanatory materials.<sup>32</sup></p>	
135	<p>Verra recently provided additional information on its reasoning behind tonne-year accounting (Additional Background Information on Tonne-Year Accounting, Apr 1, 2022, provided to stakeholders via email by Candace Vinke). This information helped to clarify Verra’s approach and how tonne-year accounting differs from</p>	

	<p>conventional accounting. It could be helpful to expand on this document to provide guidance for projects that intend to use tonne-year accounting, such as a more detailed example of implementing tonne-year accounting over several verification periods for a grouped project.</p>	
136	<p>In the context of this proposal, tonne-year accounting (TYA) is described as a tool for managing non-permanence risk. While certainly true, TYA has a broader application for which no clarity is given. Like the Rosetta Stone, TYA allows the carbon community to translate carbon equivalencies across different volumes, durations, and periods of time. In the proposed definition, there is no consideration for how equivalencies should be measured across periods of time, i.e., Verra does not address the question of time preference.</p> <p>Theoretical question: Is it better to sequester carbon from the atmosphere today or in 80 years? If the answer is today, all-else-equal, then a demonstrable time preference exists. The Verra standard of a 100-year global warming potential (Source: VCS Standard 4.2: 3.14.4) is also a demonstrable time preference for the next 100 years (where the discount rate is 0%) compared to the subsequent infinity (where the discount rate is 100%). However, this binary representation of time preference misrepresents the continuous nature of time. A consistently applied discount rate more accurately represents this nature.</p> <p>Determining how much we value that time preference is a difficult challenge. But the Verra proposal avoids attempt to answer it. By not establishing an explicit time preference, the proposal accepts the status quo where there is no time preference in the first 100 years – the only answer we know not to be true if the answer to the theoretical question above is “today.” By doing so, the proposal perpetuates a system that compensates project developers equally for climate benefits today and climate benefits 70-, 80-, 90-years from now, long after the critical time window for collective action.</p> <p>Opposition to global warming is strongly preferred now. For this reason, Verra should simultaneously clarify a standard of time preference when introducing TYA to avoid any ambiguity or possible misunderstanding that there is no time preference in the next 100 years. The time preference should be represented by a consistent discount rate applied across all years. The discount rate should be 3.0%.</p>	

137	<p>In general, the background and time-effects of tonne-year accounting could be explained in more detail in the VCS Standard. The standard would benefit from slightly more detailed info such as in the 'additional background' document.</p> <p>In addition, it is unclear whether a project is allowed to switch approaches during its lifetime, i.e., if a tonne-year accounting approach is chosen at the project start, can there be a transition to the 'conventional' way (recognizing the required accounting adjustments at that time)?</p>	
266	<p>Delayed emissions are not emissions reductions.</p> <p>Short-term carbon storage merely delays climate change. At bottom, the motivating economic principle is to kick the can down the road until, in some unspecified future, fossil fuel alternatives decarbonize the economy. If damages are reversible, delaying them produces real benefit (i.e. time value of money). With compounding interest, I can rectify \$X of damages in the future by holding less than \$X aside today. However, carbon impacts (e.g., glacial melt, rising sea levels, ocean acidification, species extinction) are generally irreversible. In short, delayed storage produces a theoretical economic benefit under very specific assumptions, but does NOT produce an actual physical, climate benefit.</p>	
267	<p>Tonne-year accounting is fundamentally arbitrary.</p> <p>In addition to arbitrary economic assumptions (e.g. time horizon of cost-benefit analysis, discount rate, etc.), any tonne-year method rests on enormous assumptions about the atmospheric lifetime of carbon dioxide. This atmospheric lifetime is an emergent property of the earth system. It changes through time and can only be quantified with large uncertainty. Tonne-year accounting represents this atmospheric lifetime with an impulse response curve, an extreme simplification. Crediting outcomes are highly sensitive to the shape of this impulse response curve.</p>	
268	<p>Additionality of very short-term carbon storage is impossible to quantify.</p> <p>When forest carbon projects are designed at the outset to specifically offer financial incentives that last no longer than 1 year, even with discounted credit issuance, it fundamentally shifts the Voluntary Carbon Market (VCM) values of 1)</p>	

	<p>financing long-term changes in GHG management behavior, 2) providing collaborative cost-effective mechanisms to achieve permanent GHG reductions. Like Verra and the VCM community, Pachama recognizes the urgency of the climate crisis,</p> <p>which is why it is critical to ensure that we do not adopt standards today targeting short term gain (i.e. increase supply of carbon credits) by simply delaying mitigation action for a few short years. Nature is dynamic and complex, with feedback loops and tipping points that the tonne-year approach does little to reconcile. We reiterate that a claimed 1-year harvest delay is trivially easy to make and impossible to falsify. Such credits representing supposedly “delayed” emissions would be used to offset real permanent emissions.</p>	
269	<p>Tonne-year accounting introduces confusion.</p> <p>Taken together, our prior concerns highlight the fact that tonne-year accounting is a black box of assumptions. The market cannot scale nor survive in the long-run without trust, transparency, and standardization.</p> <p>This is evidenced by the reality that there is little to no uptake of the protocols with tonne-year accounting options in the Western Climate Initiatives in Quebec. While there is uptake in Climate Action Reserve's Mexico Forest Protocol (MFP), it is worth highlighting the MFP employs tonne-year accounting based on 30-year contracts, that are renewed annually. Further, the tonne-year accounting mechanism in the MFP addresses a specific challenge unique to rural and indigenous landowners in Mexico who are not legally able to sign land management contracts longer than 30 years. The assumption that a 1-year crediting framework through tonne-year accounting will generate enough financial benefit for landowners to engage is simply not observed today in existing protocols with similar mechanisms. Demonstrating that tonne-year accounting is insufficient to address the main pain point the methodology seeks to solve for.</p>	
270	<p>Transparent methodologies are required to instill market confidence.</p> <p>Rather than creating more accounting layers and alternative approaches on top of an already complex ecosystem of accounting methodologies, Pachama encourages Verra to leverage advancements in remote sensing technology and</p>	

data availability to provide transparency and accountability on the observed ongoing climate benefit of Verified Carbon Units (VCUs). Alternatives such as enhanced programmatic requirements (i.e. annually for 30 years post crediting period) for ongoing monitoring is the most defensible approach to communicate the permanence of forest carbon projects. One is able to validate the ongoing climate benefit of credits independently with data, rather than by digging into often competing white papers, research, NGO position papers about the appropriate discounts that should be applied for delaying emissions for a few short years.

### 1.3.6 General comments

Comment #	Issue Raised	Verra Response
213	In principle, tonne-year accounting is a reasonable approach for addressing non-permanence risk, and provides a flexible alternative to projects that are unable to adhere to multi-decadal commitment periods. However, the use of tonne-year accounting does not justify a one-year crediting period, as proposed in section 3.8.7. This is particularly true for Improved Forest Management (IFM), where project credibility relies on a robust demonstration of a multi-year baseline representing a justifiable harvest scenario that is based on mill capacities, common practice harvest practices and professional forester expertise. Most forests are managed over decades and harvesting is a result of careful long term planning, making the additionality of a single year management decision almost impossible to demonstrate. In fact, the ability to demonstrate additionality of IFM projects effectively requires that time commitments coincide with the long-term timeframes in which natural systems are managed. Similarly, addressing and mitigating for leakage is difficult without a clear sight on the longer-term reductions to harvesting over a crediting period. For these reasons, we recommend that Verra consider a longer, more credible minimum crediting period for projects that apply tonne-year accounting.	Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.
214	The time horizon of 100 years is reasonable for calculating tonne-years, however, other important methodological details are missing from the proposal.	Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time



	<p>Specifically, we recommend that the application of discount rates be explicitly prohibited as this undermines the equivalence between emitted and stored carbon over a given period. This is because incorporating the economic impacts associated with temporarily storing carbon effectively over-estimates the climate benefits for the same period, thus generating tons of CO2 are that not equivalent to the emissions that buyers wish to use towards net zero goals. Further, as mentioned above, it is critically important to define a robust and consistent storage period (i.e., crediting period) across all projects that apply tonne-year accounting. In addition to clear risks related to additionality and leakage, we also note that flexibility around this time-period could significantly alter resulting estimates of climate benefits between projects.</p>	<p>due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>
217	<p>Tonne-year accounting (TYA) is not objectionable in principle, and can in fact provide beneficial flexibility to carbon accounting. By crediting for climate benefits that have already been achieved, rather than anticipated climate benefits that are subject to reversals through tonne-tonne accounting, projects can provide added certainty to buyers regarding permanence. From this perspective, we do not have any objections.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>
222	<p>The Nature Conservancy does not have an official position on tonne-year accounting; we are still working to understand the best scientific approaches and rigor here. With that caveat, here are some reactions to Verra’s proposal:</p> <ul style="list-style-type: none"> <li>• Tonne-year accounting as an alternative to addressing non-permanence risk could risk the perceptions of environmental integrity in NCS projects. Verra should carefully consider both the scientific case for tonne-year accounting and the possible perception and reception of this within the market.</li> <li>• Tonne-year accounting creates greater flexibility in carbon markets but also reduces transparency. Prior to adopting tonne-year accounting, Verra should conduct a stress test of this approach to identify opportunities for gaming across AFOLU project types. We have some concerns that the minimum one-year crediting period this enables may create opportunities for gaming.</li> </ul>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

	<ul style="list-style-type: none"> <li>• The single-year crediting period enabled by tonne-year accounting may increase market leakage risks relative to other IFM projects. Many existing IFM methodologies incentivize actual change in forest management practices that either increase productivity or lead to product substitution (e.g. larger diameter sawlogs) that can have positive effects on overall timber production and mitigate leakage risk. Single-year crediting periods are too short to change forest owner behavior in a material way.</li> <li>• Given the concern referenced above, Verra may want to mandate a minimum crediting period (e.g.) for tonne-year accounting projects for any project types deemed subject to higher gaming risks.</li> <li>• The conversion rate for tonne year accounting should be derived from the permanence timeline for traditional AFOLU accounting under VCS. For example, because Verra defines permanent as 100 years, the conversion rate for tonne-year accounting should be 100 tonne-years to 1 tonne.</li> <li>• In terms of conversion rates, has Verra conducted a literature review of all tonne-year accounting approaches? Verra may wish to share these results and clarify its selection of conversion rate, in the context of tradeoffs between the principles of accuracy and conservativeness, in order to build confidence.</li> <li>• Finally, would Verra permit a single project to delineate areas that are subject to tonne-year accounting and other areas that would be subject to accounting based on achieving 100-year permanence and full crediting at the time of the creation of climate benefit? For example, if it was likely that 30% of a mangrove project could be subjected to sea level rise during the crediting period, could the proponent choose to pursue tonne-year accounting on that 30% and 100-year permanence based accounting on the remaining 70%?</li> </ul>	
225	<p>Before we respond to Verra’s specific questions about the proposed changes to the VCS, we want to highlight what we see as an important precondition to providing constructive, relevant feedback on the proposed changes. To understand the benefit and innovation of TYA, It is important to distinguish between: (1) TYA as an accounting approach to track the climate benefit of any offset methodology (“accounting method”); and (2) short-term creditable</p>	<p>Thank you for clarifying this difference. No response is needed.</p>

	<p>activities that generate climate benefits (“mitigation activity”). TYA as an accounting method is equally valuable for tracking the benefit of the storage of carbon for a one-year duration as it is for a 1,000-year duration. At NCX, we are using TYA to account for the annualized benefits of our short-term harvest deferral improved forest management projects (the draft methodology for which is under separate review and public consultation by Verra), but the benefits of TYA extend to offsets of all types and durations. Implementing TYA as an accounting method across the VCS portfolio of methodologies will allow buyers and others to compare the permanent climate benefits of mitigation activities across programs of varying durations. As TYA is a new concept to many, we have found it important to clearly distinguish between the characteristics of the accounting method and the characteristics of the mitigation activity. Our responses to the questions about TYA are focused entirely on the implementation of TYA as an accounting method.</p>	
228	<p>Tonne-year accounting</p> <p>Some doubts and concerns were raised about the tonne-year accounting theme.</p> <p>On the inclusion of item 3.8.7, to be placed into the VCS Standard: “For non-AFOLU and AFOLU projects using tonne-year accounting, the project crediting period shall be one or more years, renewable to a maximum of 100 years”. In this case, we must therefore assume that there will be a change in the minimum crediting time (which is 20 years) and in the minimum longevity of an AFOLU project. Is this a correct interpretation?</p> <p>On the inclusion of item 3.14.2, to be placed in the VCS Standard: “Where the applied methodology uses tonne-year accounting all GHG emission reductions and removals shall be converted to tonnes of CO2 equivalent (CO2e) using a conversion rate of 100 tonne-years to 1 tCO2e. This shall be done by dividing the number of tonne-year GHG emission reductions and removals by 100. Where the applied methodology does not use tonne-year accounting, projects may request a methodology deviation to use the tonne-year conversion rate to credit 1/100 of the emission reductions and removals from the project per year as an alternative to applying the AFOLU Non-Permanence Risk Tool and making contributions to the pooled buffer account”.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

We understand that if the methodology does not present directions for the use of tonne-year-accounting, this use should be requested in the deviations section and simply divide tonnes of CO2 equivalent (CO2e) by 100. However, reading the excerpt "Where the applied methodology uses tonne-year accounting all GHG emission reductions and removals shall be converted to tonnes of CO2 equivalent (CO2e) using a conversion rate of 100 tonne-years to 1 tCO2e" it was unclear whether there will be another form of calculation (other than that commonly used in removal and removal methodologies, which lead to estimates in tCO2eq) when the methodology allows the inclusion of tonne-year-accounting and whether the form of the form calculation will vary according to the methodology. That is, will there be a direction in the methodologies of how this should be calculated? Or even a specific methodology or tool to be able to calculate emissions in tonne-year accounting?

Why allow categories of REDD+ or emission reduction projects to use this approach if the theme presentation itself brings "The advantage of tonne-year accounting is that it allows sequestration projects to quantify temporary carbon storage on a permanent basis using the radiative effect of CO2 and therefore enables credits to be issued on an basis as-you-go"? In fact, the use of tonne-year accounting seems to be much more feasible for projects focused on emission removal, mainly because they have a lower risk after their completion than emission reduction projects.

If the application of the risk tool is not necessary, we understand that projects with very high risk or that fail in any of the risk categories, will end up being made feasible, which is worrying. For example, by joining the "tonne-year accounting", high-risk projects can be terminated and then start issuing GHG (occurrence of deforestation after project closure, for example). As much as the approach takes into account precisely the annual reduction or removal of the carbon ton, why enable high-risk projects?

We understand that devices that prevent "any project" from being certified are required in this context of tonne-year accounting. Perhaps differentiating between categories and project activities can help address this issue. For example: short-term agroforestry projects, for the possible short cycles of the species used, may have in this approach a possibility of crediting, but areas applicable to REDD+ can take advantage of this possibility to acquire credits and then deforest even more projects at high risk according to the risk tool.

It was not clear whether a project that adheres to the tonne-year accounting should use only this approach until the project is finalized or whether it will be possible to change to the use of the Non-permanence risk tool, or even whether it is possible to use both methods simultaneously over the project crediting period.

We also believe it would be interesting for agroforestry projects to generate credits from both accounting types (tonne year accounting and regular GHG accounting) and have part of the carbon production with buffer discounts (trees in the system) and part with tonne year scheme without buffer (crops in the system). This might generate an important income for small holders.

Finally, we do not understand what should be taken into consideration for the choice of tonne-year accounting. What processes would lead bidders to choose their use? Perhaps an adaptation of the risk tool, thinking about a prior analysis of the scenario, can help in decision making. Thinking about the appreciation of these credits that will be issued, would they not be of lower added value compared to those that have greater security with the non-permanence risk tool? Would carbon offsets generated by tonne year accounting also be issued as VCU? It was not clear if these credits could be used in the market for the same purposes.

We understand that the proposal intends to realign the long-term responsibilities of the proponents in their projects that have adopted the tonne-year accounting. However, it was not clear how these projects will be monitored. That is: i) how Verra, through its technical staff, platform, and other tools, will adapt to monitor these projects and their areas; (ii) what will be the new long-term responsibilities of the tenderers and how will they be charged for them (e.g. in annual checks)?

The term "partial credits" appeared only once in one of the questions in the document "Proposed Updates to the VCS Program". Thus, it was not clear what they are, what their scope is and how partial credits apply.

Two papers (Moura-Costa and Lashof) support the challenging conversion to tonne-year accounting. More scientific approaches are likely needed to give a more robust approach for this conversion.

Specifically, this is because the equivalence ratio is different between these two works and Verra's made a policy-based decision. Verra pointed out that it has

	<p>consulted several scientific experts about the subject but did not mention them, so the possibility of bias cannot be assessed.</p>	
<p>237</p>	<p>I am writing to convey my deep concern about Verra’s proposed introduction of tonne-year accounting in its VCS Program. I urge you not to make the change for the reasons outlined below.</p> <p>There is broad consensus that in order to be at all effective, offset projects must be: permanent; additional; not overestimated; not previously claimed; compliant with laws and regulations; and not associated with significant social or environmental harm. The tonne-year approach does not fulfill these requirements. It may lead to the development of methodologies that are neither additional nor permanent, which would undermine the very core goals of offsetting. Its adoption could therefore undermine the validity of all Verra’s offset programs.</p> <p>Tonne-year accounting bases the entire benefit of avoided CO<sub>2</sub> emissions on the effect of that temporary avoided emission on cumulative radiative forcing; but only focusing on cumulative radiative forcing is a much too narrow a view. Many climate impacts are primarily determined by the absolute amount of CO<sub>2</sub> in the atmosphere at a given point. These impacts lead to long-term temperature change. Storing a tonne of CO<sub>2</sub> today only to release it decades from now is merely delaying impacts, not avoiding them.</p> <p>A lens that focuses only on cumulative radiative forcing obscures this reality. The tonne-year approach gives a permanent credit, despite the C stock only existing temporarily. A tonne-year approach has the potential to undermine the long-term stabilization of atmospheric CO<sub>2</sub> concentrations and would lead to the inappropriate allocation of resources.</p> <p>While temporarily storing carbon reduces the cumulative amount of energy trapped by the Earth’s atmosphere, this does not make a temporary approach identical to either permanently storing carbon or avoiding emissions altogether.</p> <p>Please reconsider your proposal of introducing a tonne-year accounting approach, which would surely undermine the viability of Verra offsetting projects.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p> <p>We appreciate your feedback on the limitations of only looking at the impacts of temporary storage on cumulative radiative forcing and agree that temporary storage is delaying impacts, not completely avoiding them. The decision to use 100-year GWPs in carbon crediting programs and greenhouse gas accounting more broadly was a policy, not a scientific decision.</p>

239	<p>Tonne-Year Accounting. We have thoroughly reviewed the technical approach to tonne-year accounting and support the addition of tonne-year accounting to the standard where tonne-year accounting is applied within the framework of a long-term crediting period. Based on conversations with Verra during the public consultation period, it is our understanding that any project applying tonne-year accounting is required to use the minimum twenty-year crediting period but that instances in grouped projects have no such requirement for a minimum crediting period. This presents the opportunity for “temporal leakage” and gaming of carbon accounting methods, as described further below. We strongly encourage Verra to prohibit the use of tonne-year accounting in grouped projects where there are no contractual obligations for project activity instances to endure the entirety of the minimum twenty-year crediting period.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>
240	<p>Tonne-Year Accounting</p> <p>We firmly oppose the adoption of tonne-year accounting in favor of maintaining requirements for real permanence. While we have open questions related to technical aspects of tonne-year accounting, our focus is on the greater reputational risk related to what we see as a misapplication of tonne-year principles, specifically regarding reduction-type credits.</p> <p>Scrutiny of carbon offset markets from the public and media is at an all-time high, as witnessed with the increased frequency of critical journalism exploring the validity of additionality claims. We see Verra as a key partner in expanding the impact of nature-based solutions around the globe but perceive fundamental risk to that mission if credits with questionable climate benefits are allowed to pass through the Verra registry.</p> <p>While not an exhaustive list of our concerns, we feel it important to focus Verra’s attention on the following deficiencies.</p> <p>Temporal resolutions in reductions. A primary concern is related to the temporal resolution, especially around reductions. Fundamentally, it is not appropriate for tonne-year accounting and emissions reductions to exist together, as shortening the crediting period to a single year requires an ability to precisely predict the exact timing of when baseline emissions would occur, which is near impossible. Tonne-year accounting effectively treats emissions, and emissions reductions, within each year of the crediting period independently of other years; emissions</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

are not independent and therefore the temporal resolution of annual crediting is flawed. For example, a harvest is purported to occur in one year of the baseline which results in an emission event. However, the next year in the baseline would see removals as a result of forest regrowth. To make the case that deferring a harvest in one year has a radiative forcing effect of a certain magnitude relative to the baseline ignores the fact that the baseline would simply see the same radiative forcing effect in the next year as a result of regrowth; these two effects should then cancel each other out. However, if each year is treated independently then these two effects can't cancel each other in carbon accounting. The temporal resolution of tonne-year accounting is inappropriate for carbon accounting, especially for reductions projects where there is a strong dependency between emissions in the baseline year-over-year. Other examples of dependence between years include activity shifting leakage, emissions from decay pools, and emissions from hydrological changes in organic soil.

Conversion Rate. CAR's Tonne-Year Methodology resolves the issue surrounding the temporal resolution concern within the conversion rate by requiring a 100-year crediting period, functionally equal in length to the conversion rate. VCS currently does not require any minimum length for project activity instances. CAR's approach to requiring a long-term crediting period effectively forces projects to account for emissions year-after-year for an extended period, to capture the dependency between emissions over time. Therefore, it is not appropriate to compare the proposed changes for tonne-year accounting under the VCS as being equivalent to those requirements of CAR; Verra simply doesn't have the requirement to force project activity instances to apply 100-year accounting like CAR.

Permanence is perhaps one of the strongest credibility pillars of any carbon methodology.

Tonne-year accounting with the possibility of one year crediting periods makes it plainly non-permanent. While it can be argued tonne-year accounting incentivizes project developers to maintain carbon stocks over time, it does not ensure permanence. This is a concept that is easily picked up on by the layperson and poses a significant threat to the carbon market.

Difficult to prove additionality. When introducing creative accounting practices, it increases the difficulty of proving additionality and introduces reputational risk to project developers, Verra, and the larger marketplace. When a long-time crediting



period is required, it mitigates the additionality risk; where there may be uncertainty about the timing of baseline events to which additionality is measured, the duration of the long-term period assuages the uncertainty in timing. Tonne-year accounting applied to project activity instances with a single year of crediting and a single year of participation in a grouped project is not additional where there is uncertainty about the precise timing of baseline emissions events and therefore uncertainty about additionality.

Emissions Events Unaccounted for. Allowing for crediting periods as short as one-year allows for projects to pick and choose which years to report, incentivizing projects to stop reporting during years when emissions occur as a result of harvesting or clearing. There are no safeguards to prevent an instance from receiving credits from avoided emissions in one year, leaving the project, and then engaging in heavy harvesting practices the next year when they're no longer part of the group, then reengaging in the same grouped project or other grouped projects, possibly emitting significantly more emissions than the emissions reductions generated. This presents a massive risk to the credibility of Verra and the VCS.

Not recognized by the IPCC's Good Practice Guidance document and not formally recognized by the IPCC. Long-term emissions uninterrupted. Temporarily postponing emissions by a single year, or similarly short project lifetime, provides little to no climate benefit as it fails to consider the holistic effect of the eventual emissions into the atmosphere in relation to global temperature targets. Regardless of one's position regarding the scientific validity of tonne-year accounting, a significant threat to the credibility of the market exists when applied to reduction-type activities. As an industry that is already heavily scrutinized, we are deeply concerned with protecting the integrity of the market and thus implore the Verra team to seriously consider rejecting the introduction of tonne-year accounting into the Verra Carbon Standard.

#### Open Tonne-Year Questions

- How would emissions from wildfire or other natural disasters be accounted for under a tonne-year accounting approach?
- Is there a fundamental danger to the efficacy of the buffer pool if enough projects elect to use a tonne-year approach rather than buffer contributions? With the frequency and intensity of natural disasters

	<p>increasing, ensuring a sufficient buffer pool is maintained will be critical to protect the permanence of projects that don't elect to use tonne-year accounting.<sup>225</sup></p>	
<p>241</p>	<p><b>Managing radiative forcing</b></p> <p>The proposed approach seems fundamentally flawed in its logic, where it assumes that balancing cumulative radiative forcing<sup>1</sup> over a given time horizon leads to equivalent outcomes, regardless of how the radiative forcing is distributed over that time period. This is the result of the proposed rule which would provide that storing 100 tCO<sub>2</sub> for 1 year is equivalent to storing 1 tCO<sub>2</sub> for 100 years. The rise in global average temperature is due to the accumulation of greenhouse gases (GHGs) in the atmosphere, which increases the level of radiative forcing. The higher the quantity of (accumulated) GHGs in the atmosphere, the higher the radiative forcing. This in turn leads to higher global average temperatures, and hence more devastating climate impacts. Formulating this differently: higher radiative forcing means higher climate impacts.</p> <p>Properly storing 1 tCO<sub>2</sub> permanently, to compensate for emitting 1 tCO<sub>2</sub>, would lead to radiative forcing being balanced at any moment in time. But balancing cumulative radiative forcing over a given time horizon is very different, and it could imply higher climate impacts.</p> <p><b>Tonne-year accounting and carbon budgets</b></p> <p>It is unclear how this tonne-year approach can be compatible with the idea of a limited remaining global carbon budget. Given that the world has a fixed carbon budget available, storing CO<sub>2</sub> for a short amount of time is of very little benefit and does not contribute to staying within that carbon budget. For example, if we have 100 tCO<sub>2</sub> left in our budget, it makes no difference whether we store 10tCO<sub>2</sub> for 5 years or not. Once the carbon gets released - after 5 years in this case - then our budget will still be short of 10 tonnes. Such very short term storage does not have any benefit in relation to the finite carbon budget we have available. Some have argued that a large temporary decrease in emissions could help prevent the world from passing a tipping point. In theory, this might be the case, although it's unclear whether adopting tonne-year accounting would lead to significantly increased carbon storage, such that it can have a material impact to avoid passing a tipping point.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

But in any case, this logic does not apply well in the current situation, where global emissions are increasing, not decreasing. With increasing emissions, the risk of passing tipping points is higher in the future compared to today. And therefore emitting 1tCO<sub>2</sub>e is more risky in the future than today. Of course, this is only relevant when talking about when a given tCO<sub>2</sub>e should be released. Ideally, that tonne should not be released at all. Emission reductions are urgently needed and should not be postponed.

#### Timing of impacts

Storing 100 tCO<sub>2</sub> for 1 year will lead to a “large” decrease in radiative forcing (relative to storing only 1 tCO<sub>2</sub> for 1 year). Emitting 1 tCO<sub>2</sub> will create a “small” increase in radiative forcing. Using the tonne-year approach that is being proposed would imply that a large decrease in radiative forcing in one year, can compensate a small increase in radiative forcing over 100 years. Translated in terms of climate impacts, this would mean that avoiding large impacts today can compensate for a slight increase of impacts tomorrow.

This is myopic because all the benefits will accrue in the short term while the costs will materialise in the long term. Actors will benefit financially today (from not having to reduce the tonne that is being offset, and from selling a carbon credit) and society as a whole will benefit from lower climate impacts today. It is society in the future that will suffer from increased climate impacts.

#### Additionality concerns

Finally, the proposal to allow any AFOLU project to use tonne-year accounting, instead of relying on the current (imperfect) approach of buffer pools, raises concerns regarding additionality and selection bias. Projects which have higher risks of reversals in the mid- to long-term will likely turn to tonne-year accounting, in order to escape any requirements for long-term monitoring and compensation. This could be the case for projects in areas particularly prone to natural disasters such as forest fires, but also for landowners who are planning to harvest their timber in a few years, and see an opportunity to earn carbon credits in the meantime. Assessing the additionality, i.e. determining whether or not a given landowner was planning to cut down its trees, is difficult for forest projects in general, but even more so when it comes to evaluating risks for specific years.

	<p>In conclusion, we call on Verra to refrain from adopting the tonne-year accounting method, as it would further weaken the credibility and the environmental integrity of the Verified Carbon Standard.</p>	
<p>242</p>	<p>We are writing with regard to Verra’s proposed inclusion of tonne-year accounting as an option to address non-permanence risk associated with mitigation activities that enhance the storage of carbon. We are climate policy experts with 40+ years of combined experience in evaluating standards for greenhouse gas accounting and carbon offsets, and we strongly recommend not introducing the use of tonne-year accounting.</p> <p>The fundamental problem with tonne-year accounting is that it does not reflect cumulative emissions to the atmosphere, which is the primary driver of long-term temperature change, which in turn is the focus of the Paris Agreement’s temperature goals. It is not possible for companies to claim that they have offset their contribution to cumulative emissions and temperature change based on tonne-year accounting as tonne-year accounting is based on radiative forcing during a defined time period and does not reflect contribution to cumulative emissions.</p> <p>Background</p> <p>Tonne-year accounting was first proposed more than 20 years ago, in early discussions of how to address non-permanence under the Kyoto Protocol’s Clean Development Mechanism (CDM) (Fearnside et al. 2000; Fearnside 2002; Moura Costa and Wilson 2000). It was ultimately rejected as a flawed approach under the CDM, and has likewise been rejected under every major carbon offsetting program – regulatory or voluntary – established over the ensuing 20 years.</p> <p>Only recently has this approach seen renewed attention. This is ironic since, in the last 20 years, developments in the scientific understanding of the relationship between cumulative CO2 emissions and global warming have put in stark relief the approach’s inherent flaws. To be clear, when we refer to tonne-year accounting, we mean approaches that attempt to draw an equivalence between temporary carbon storage and permanent CO2 mitigation based on the duration of storage compared to an arbitrary time period (e.g., 100 years) – without any limits on minimum duration or any obligation to compensate for reversals if and when they occur (Chay et al. 2022). Approaches that impose</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

minimum time commitments for maintaining carbon storage, but discount crediting when shorter time commitments are adopted (sometimes also referred to as “ton-year” accounting) 1, are not considered here.

Why mitigation must be permanent

A crucial question for assessing the permanence of mitigation is the time horizon over which reversal risk should be considered. That is, does ‘permanent’ mean forever, or something more finite? This question has been the subject of some confusion over the years, in part due to common misunderstandings about the global carbon cycle (Archer et al. 2009; Mackey et al. 2013). From the perspective of long-term temperature stabilization, however, science has given us a definitive answer: permanent does in fact mean permanent (or more precisely, indefinite). The reason is that numerous studies have established that long-term temperature increase depends primarily on cumulative emissions of CO<sub>2</sub>, irrespective of the timing of those emissions (Allen et al. 2009; Archer et al. 2009; Ciais et al. 2014; Eby et al. 2009; Mackey et al. 2013; Matthews et al. 2009; Matthews and Caldeira 2008). In other words, there is no advantage to delaying emissions from the standpoint of limiting the amount of global warming we can expect to see. This fact underpins the colloquial notion of a global “carbon budget.”

While there are other important considerations related to the impacts of global warming, including the expected rate of warming (which depends on how quickly we reach a particular carbon budget), the international community has recognized long-term temperature stabilization as the primary objective of climate change mitigation efforts (Paris Agreement, Articles 2(1)(a) and 4(1)).

When we account for CO<sub>2</sub> emission reductions or removals in the context of carbon crediting, therefore, what matters is whether they contribute to staying within a safe global carbon budget. When CO<sub>2</sub> reductions or removals are reversed - that is, when associated carbon is subsequently released (back) to the atmosphere - it no longer contributes to staying within a global carbon budget, and can no longer be considered an offset to greenhouse gas emissions. This is true regardless of how long the carbon may have been stored before a reversal occurs.

Tonne-year accounting fails to recognize this fundamental premise, relying instead on concepts like cumulative radiative forcing (or worse, simple fractional

accounting over an arbitrary 100-year time period) to try to equate temporary storage with permanent mitigation (Chay et al. 2022). In their recent evaluation of tonne-year accounting methods, Chay et al. (2022) discuss this fundamental flaw:

“Another notable shortcoming [with tonne-year accounting] is that cumulative radiative forcing is not the only climate outcome we might care about. There are other climate impacts which are primarily determined by the absolute amount of CO<sub>2</sub> in the atmosphere at a given point in time, rather than the total energy trapped in the climate system over time. These outcomes include long-term temperature targets like 1.5 or 2 degrees [emphasis added]. In these cases, storing a ton of CO<sub>2</sub> today but releasing it decades from now may simply kick the can down the road. It’s absolutely possible that temporary carbon storage looks beneficial through the lens of cumulative radiative forcing, but may be neutral or even counterproductive through the lens of temperature targets after the temporary storage ends.”

This is the primary reason, for example, that the Oxford Principles for Net Zero Aligned Carbon Offsetting call for a graduated shift to truly permanent forms of CO<sub>2</sub> removal over time, rather than non-permanent removal or reduction options (Allen et al. 2020).

Appropriate methods for capturing the value of temporary carbon storage

Note that from the standpoint of staying within a carbon budget, mitigation efforts that temporarily store carbon can still have value. The issue is not that there is no value to temporary storage, but rather that this value cannot be equated to the reduction in cumulative radiative forcing over an arbitrary time period. Rather, the value comes from optionality. That is, temporarily storing carbon can help slow the rate of warming, and can buy time until more permanent mitigation options become feasible, and/or a decision is made to extend carbon storage indefinitely.

Approaches based on compensating for reversals when they occur, over predefined or indefinite time periods, help to capture this value. These approaches include both monitoring and compensation approaches (e.g., employing buffer reserves) and temporary crediting (Biggsby 2009; Marland et al. 2001; Sedjo and Marland 2003). Under these approaches, it is understood that carbon storage must be maintained to have any mitigation value, and that

	<p>reversals impose liabilities with respect to future climate risk. It is simply not true that storing carbon for 1 year is equivalent to some fraction of a “permanent” tonne of mitigation when considered against long-term temperature targets and a global carbon budget.</p>	
245	<p>TONNE-YEAR ACCOUNTING</p> <ol style="list-style-type: none"> <li>1) Tonne-year accounting is currently not supported by long-term climate change mitigation research and shouldn’t be added to the VCS program without extensive research regarding how the method provides real and additional GHG emissions reductions consistent with established high quality carbon offset quantification methodologies and internationally published climate goals.</li> <li>2) Overall, the concept of tonne-year accounting does not currently align with the principals of proven carbon offset programs. Additional language clarifying some of the key concepts of carbon offsets and how tonne-year accounting incorporates those principals should be required before adoption. There are some points on this below (permanent, additional, real, verifiable).</li> <li>3) Adoption of tonne-year accounting without extensive research regarding how the method provides real and additional GHG emissions reductions will likely decrease demand for, and potentially devalue, VCU’s generated under the method, and, overall, result in VCS program quality/integrity issues that may negatively affect both VCS itself and many existing VCS stakeholders (PPs, Technical Consultants, etc.).</li> <li>4) Section 4.1 hints that tonne-year accounting allows for more flexibility and does away with the need for a non-permanence risk buffer pool. This should be reconsidered given the dynamic nature of forestry.</li> <li>5) For forestry projects, tonne year accounting disincentivizes long-term sustainable forest management and sound silviculture as PPs will look to complete projects under methodologies where shorter term commitments can be made without a responsibility for long-term forest conservation and management. Further, tonne-year accounting approaches appear to leave</li> </ol>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

the door open for manipulation of “planned harvests,” as well as crediting for years when a harvest is not feasible or realistic.

- 6) It is unclear how a VCU generated under tonne-year accounting is permanent as it could be removed the following year. Section 4.1 confirms this as it states, “when tonne-year accounting is employed, ongoing monitoring is unnecessary.” Monitoring is a key component of all well established high quality carbon offset programs and methodologies and should be a component of any type of program that intends to produce credits that are used for the offsetting of emissions.
- 7) Section 4.1 states “The advantage of tonne-year accounting is that it allows sequestration projects to quantify temporary carbon storage on a permanent basis using the radiative forcing effect of CO<sub>2</sub> and therefore enables credits to be issued on an as-you-go basis.”
  - a. Fundamentally, carbon offsets must be permanent, not temporary.
- 8) Section 4.2, 1.1.4 states “GHG benefits cannot be reversed.”
  - a. While we understand that for a given stand or tract (in forestry projects) the avoided emissions benefits from, for example, a deferred harvest project may not be “reversed,” the PP’s enrolled properties can have a net loss of carbon stocks (i.e., negative sequestration) as a whole, which could negate the avoided emissions benefit being credited. It does not appear there is a mechanism to account for this in the proposed updates. This key concept warrants further investigation and suggests that PP’s nonproject activities must be monitored, and that a buffer pool is still warranted under the tonne-year accounting approach.
- 9) Section 4.2, 3.2.20 states “Projects using tonne-year accounting do not have to report loss events.”
  - a. During any given year at the PP level, for forestry projects, a net loss of carbon stocks could occur outside of areas where avoided emissions were claimed.



	<p>b. If tonne-year accounting is to be integrated into the VCS Standard, then PP-wide monitoring and reporting of the changes in carbon stocks must be a component of the program.</p> <p>10) Regarding forestry projects (e.g., a harvest deferral) the concept of tonne-year accounting assumes that (i) a forest is mature enough for a merchantable harvest, (ii) there is a specific demand from accessible mills for the wood products from that forest, (iii) that the price paid to the forest owner is high enough to justify a harvest, and that (iv) there is a need from the forest owner for the cash-flow from the sale of those wood products to a mill. Many assumptions are being made in the “prediction” of harvests, especially in pine stands. Given the factors listed above, along with many others, “planned” harvest may not be feasible, realistic, or potential. Additional forest management planning requirements should be considered in the tonne-year approach to ensure that “harvest potential” is accurately predicted and accounted for in programs; otherwise, there may be manipulation of the program incentives.</p>	
250	<p>Introduction of tonne-year accounting</p> <p>As a project developer and operator working with hundreds of small and medium landowners around the world, ECOTIERRA and its partners are deeply concerned by the impact of this proposal on the integrity of standard, the stability of the market, the confusion in stakeholders and the disengagement from the principle that carbon market mechanisms are a tool to promote long term changes for sustainable development. Any approach that promotes no long-term liability from projects will not be supported by our company, our investment partners, and our partners on the field.</p> <p>The inclusion of this approach will put existent projects, mainly grouped projects in implementation phase, a serious setback putting in danger investment and financing models that are contributing at this moment to important changes in land use, forest management and forest conservation paradigms bring us back to pre-project situations.</p> <p>In addition, the review of the additional background information on tonne year approach shared just a few days before the end of the public comments period shows that the simplified Lashof method proposed by VERRA will be</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p> <p>You are correct that the proposed approach overestimates the benefit of temporary storage in the early years and underestimates the benefit in later years. As mentioned in the background document on tonne-year accounting, this was proposed to simplify the approach and align with the approach previously adopted by the Climate Action Reserve in some of its forestry and agricultural protocols.</p> <p>Please note that the justification for proposing tonne-year accounting is not to react to the increasing demand for</p>

overestimating the generation of VCU during the first 10 years by near 25% and underestimating the generation of VCUs after year 30, a clear disincentive for long term action on climate change.

ECOTIERRA and its partners are surprised to hear that part of the justification of this proposal is to react to the increasing demand of carbon credits and the need to create more flexible approaches. We are also surprised that VERRA is using as the example for putting this approach for consideration, the forestry protocol developed by the Quebec government, the only methodology worldwide proposing the use of this approach as far as we understand. It is important to know that this protocol has been under development for almost 10 years, with a very limited consultation process and that it has been published without considering several contributions and requests for modification made both by developers and scientist.

Regarding the changes proposed for the crediting period we are concerned by the possibility of having projects of one year in the forestry sector were increase in biomass from one year to another, and even more if you consider climate variability, will not be easy to predict. Our technical team is wondering how anybody can demonstrate the additionality of the project activity over a one-year period. If in any case the tonne year approach is retained, we strongly suggest that:

- The project crediting period and the liability of the proponents and participants should never be less than one rotation period or something similar and never less than 10 years.
- Any VCU generated with the tonne year approach should be labeled as tonne year VCU to differentiate this product from VCU with long term engagement and liability.
- According to different scientific articles, when using the radiative forcing approach measuring should include all the carbon flows due to forest carbon sequestration and soil decomposition, substitution of GHG-intensive materials and fossil fuels with forest biomass, and timber use efficiency. Therefore, any project using the tonne year approach shall include all pools in their accounting,

carbon credits. Instead, it was put forward as a method for incentivizing greater climate action. In particular, among landowners who often cannot commit upfront to very long storage periods. Tonne-year accounting does this by crediting temporary storage based on the benefit achieved rather than the benefit expected.

Nonetheless, as mentioned above, Verra is not presently moving forward with tonne-year accounting.

	<p>Finally, we are deeply concerned by the possibility of the use of the tonne year approach and the proposal to allow instances to change from one project to another at any moment. A mix of these two elements will allow a project developer to offer better conditions to participants of other project with no long-term engagement, directly leveraging the design effort as well as initial investments in stakeholder education and implementation activities of the original project developer.</p> <p>Changes proposed by the reviewer</p> <p>Second public consultation on tonne-year.</p>	
253	<p>Tonne-Year accounting</p> <p>Verra has proposed “tonne-year” accounting as a means of allowing AFOLU carbon projects of various durations (as few as 1 year) to enter the market and claim long-term (100 year) “permanence”. The method establishes an equivalency ratio between the impact of short-term action (such as harvest deferral) versus long-term, multi-decadal climate impact. The approval of tonne-year accounting in Verra’s program may lead to enrollment of new landowners unwilling or unable to enroll in long-term carbon sequestration commitments. It is also likely to lead to an abandonment of landowners enrolling in programs that require a longer commitment.</p> <p>The concept as it stands is highly debated (e.g., Lesage et al. 2012; Korhonen et al., 2002; Jørgensen and Hauschild, 2013; Kirschbaum 2003). While it has been suggested by some, there is also a strong body of literature questioning the approach and cautioning that its validity is highly dependent upon the specific assessment method and assumptions therein (e.g., equivalence timeframes, discount rates, asymptotic decay of CO<sub>2</sub>, etc.). These concerns are not trivial, as recent work shows choice of these variables can affect crediting outcomes vary as much as 10-fold (Chay et al. 2022).</p> <p>In addition to being used as a justification for short-term project commitment periods (and as a means to avoid accounting for inevitable near-term reversals), ton year accounting also has implications for other aspects of project quality including the additionality of such an approach. Short-term commitments force the assumption that project actions (such as deferred harvest) would occur in a specific year. In reality, natural systems such as forests are managed on decadal</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

and multi-decadal timescales. The case for additionality is bolstered when carbon sequestration commitments coincide with the long-term timeframes in which natural systems are managed. This is one reason carbon registries have traditionally required commitment periods ranging from 30-100 years for implementing such projects. While we may not be completely certain about the additionality of a management change in any given year, over a 30+ year timeframe we have significantly more confidence in the counterfactual scenario proposed by the project proponent. Although ton year accounting is a tool to quantify sequestration over a shorter commitment period, it does nothing to tell us whether that climate benefit was additional.

Shorter time commitments for projects also have direct impacts on how leakage should be viewed. As mentioned, forest management and harvest yields are planned for across decades. Leakage literature suggests that any short-term reduction in harvest volumes is easily made up for by local or regional wood consumers (see Murray et al 2003). With shorter, year-to-year commitments, leakage may be nearly 100%. Clearly, the implications of ton year accounting go beyond permanence. To that end, strong additionality tests and leakage discounts should be included in all methodologies to ensure they are sufficient for generating real, additional, conservative emission reductions and removals. In Verra's proposed changes, it is not clear whether strong additionality tests or leakage discounts would be included.

Considering this as a departure from the rigorous standards of the existing carbon market, amplified by the suggestion to allow tonne-year accounting for all AFOLU project types in the Verra project portfolio, we feel that full public disclosure and expert analysis of the proposed tonne-year accounting assumptions and quantification approach is warranted in addition to ensuring additionality and appropriate discounts for leakage and uncertainty. We also request these materials be made available for public comment prior to any approval actions by Verra. Verra approving tonne-year accounting as an option for project developers without a requirement to implement additional safeguards that bolster additionality, better ensure long-term commitment to carbon storage, and manage leakage, would be a blow to the environmental integrity of the carbon credit/offset market.

Changes proposed by reviewer

	Second public consultation on tonne-year and further academic consultation	
255	<p>Tonne-Year Accounting</p> <p>(1) Additionality</p> <p>I suggest not allowing tonne-year accounting to be used with protocols not specifically designed to accommodate tonne-year accounting because they aren't designed to address the greater additionality challenges of tonne-year accounting. I also suggest designing any tonne-year accounting specific protocols in a way that explicitly accounts for non-additional crediting and adverse selection under such a program.</p> <p>Additionality is trickier with tonne-year accounting than with AFOLU protocols requiring longer-term storage. Additionality can potentially be addressed in the design of tonne-year accounting specific protocols; but allowing existing protocols to apply tonne-year accounting invites non-additional crediting.</p> <p>If we knew perfectly what each forestland owner would do each year without offsets we could accurately measure the effect of offsets on on-site forest carbon stocks and credit appropriately. In practice, baseline stocks are uncertain in a long time frame and are even more uncertain in any particular year. Forests of similar types can be managed differently, affected by many factors including type of timber product being sold, distance from roads, changes (and expected changes) in timber market prices, changes in local mill capacity, and family landowner goals and financial needs over time. It is possible to statistically estimate what a landowner is likely to do by comparing with other similar lands using dynamic baselines and taking into account the landowner's past practice. But it is not possible to predict with confidence what would happen on any particular plot, and even less so in any particular year.</p> <p>This means that carbon offsets will result in adverse selection. Of the pool of similar landowners, those that would not have harvested in the credited years are most likely to participate, because they can be paid for what they would have done anyway.</p> <p>Non-additional crediting due to adverse selection is an inevitable challenge with any offsetting program and must be managed to avoid over-crediting. Current IFM protocols use baselines designed to average over many years. The long-term</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p> <p>Verra agrees that temporary carbon storage is not directly equivalent to reducing carbon dioxide emissions from a scientific perspective on the topic of equivalency. Once emitted, a tonne of carbon dioxide stays in the atmosphere for a long time (estimates range from approximately 300 to 1000 years). For this reason, emission reductions are of utmost importance, and Verra strongly supports the mitigation hierarchy.</p> <p>Last, Verra could potentially consider a label for tonne-year credits to distinguish them from other credits. We may explore this further in the future.</p>

commitment to hold carbon can partially remedy over-crediting at the project start. Even if initial credits are non-additional, the offset program acts like an easement, preventing management changes over decades. For some plots (but not all) non-additional credits generated early in the project can become addition over time as landowner management choices are constrained. It can be argued that the biggest effect of current

IFM protocols is the long-term commitment – the year on year requirement to avoid forest conversion or carbon reduction. Even though there is still a timing disconnect – credits generated for reductions that could happen over many decades are used to offset immediate emissions from the buyer – the offset program can still reduce forest carbon loss over the project life.

Tonne-year accounting abandons that long-term commitment, significantly weakening the effect of the offset program and making it essential that credits are truly additional each year. Owners of managed timberlands can earn credits for cyclical growth periods, and harvest as they would have without offsets. Family landowners can earn credit for natural growth, and then harvest when they need the income as they would have without offsets. Ideally the credits would cause a change in land management. But with tonne-year accounting, even more business-as-usual land management could be credited since the lack of long-term commitment creates a lower barrier to entry and more opportunity for gaming.

I strongly recommend not allowing the use of tonne-year accounting by IFM protocols that are not specifically designed to address these additionality and adverse selection risks. Any protocol designed for tonne-year accounting, would need to explicitly address the inevitable generation of credits from non-additional activities including the effect of adverse selection to avoid over-crediting. Protocols that discount credits to account for the risk of non-additional crediting should take into account adverse selection – that landowners are most likely to participate if they would not have harvested regardless of the payment. Ideally credits would be assessed programmatically, looking for noticeable changes in land management over the pool of participating lands and re-adjusting discount rates as needed to avoid over-crediting. (2) Short-term tonne-years of storage can not be equivalent to reducing CO<sub>2</sub> emissions

Tonne-year accounting attempts to create an equivalence between the emission of one tonne of CO<sub>2</sub> and the temporary removal or storage of a greater quantity

	<p>of CO 2 from the atmosphere. But the nature of the effects are different enough to make an equivalence claim problematic.</p> <p>In the long-run, short-term storage has little to no climate benefit. All else being equal, over the long run, drawing carbon temporarily out of the atmosphere does not change the amount of warming caused by that carbon - it only shifts that warming back in time.</p> <p>But all else is not equal. Since temperatures are rising, pushing back when carbon is in the atmosphere by short periods of time causes more climate impact over the atmospheric lifetime of that carbon, because each tonne of atmospheric CO 2 causes more damage when temperatures are higher. If that temporary storage is used to offset the release of a tonne of CO 2 it doesn't neutralize or counterbalance the climate effects of those emissions. It only reduces warming temporarily and may cause even more warming in the future.</p> <p>Temporary storage therefore cannot truly "offset" the climate impacts of releases of CO 2 into the atmosphere. If they are used in addition to (not instead of) emissions reductions, temporary removals can potentially help to "buy time" or smooth emissions peaks until dramatic emissions reductions and significant removals are performed. Does Verra have the ability to create a second type of credit in the form of a tonne-year of carbon storage not intended to be used to offset direct emissions and not claiming equivalence with emissions reductions?</p>	
256	<p>The potential approval of the tonne year approach in conjunction with the possibility of allowing instances participating in existing projects to move to a new project will significantly increase the risk of our investments, increasing at the same time the uncertainty of partners investors to engage in new carbon sequestration projects and critically reducing the long-term impact of mitigation actions on the field.</p> <p>We are also concern that these changes will generate a gigantic flow of "tonne year credits" mainly generated in the United States and greatly impacting actions taken in countries were carbon finance have a critical impact in changing land use change tendencies. We can already see the impact of these proposals on the market when a project developer in the US is already mentioning on its website that they expect a climate impact of near 500,000 MTCO2e including a list of participant buyers that will claim carbon credits using the VERRA registry. This</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

	<p>kind of misinformation distorts and confuse players in the market, moreover when the name of VERRA is being used to give credibility to an initiative that is not currently approved by you.</p> <p>URAPI expects that VERRA will reconsider these proposals and reassure the investment community that VCS will remain a reliable partner for the generation of high-quality credits in the voluntary market.</p>	
262	<p><b>Tonne Year Accounting</b></p> <p>Members within IETA's broad and diverse membership have a variety of views on tonne-year accounting. We recognize the flexibility that it can provide, potential enrollment of new landowners who are unwilling or unable to enroll in programs that require long-term commitments, the focus on achieved climate benefits that are not at risk of reversal – thereby adding certainty related to permanence and providing an alternative approach to non-permanence risk. However, there are also several concerns that have been raised, that we urge Verra to consider as the proposed updates are approved and finalized.</p> <p>Many of the “pros” listed above are accompanied by a drawback, or “con”. These will be outlined below. While the approval of tonne-year accounting for the VCS program may lead to enrolment of new landowners, on the other hand, it can be used to justify short-term project commitment periods, which has implications for other aspects of project quality and is also likely to lead to an abandonment of landowners enrolling in programs that require a longer commitment. Furthermore, with lower barriers to entry, including no need to commit credits to a buffer pool and no penalties upon exiting a commitment, there is a risk that a large number of temporary credits could flood the market, lowering prices for existing developers who have committed to traditional long-term commitments, and reducing the incentive for enrollment in long-term commitments, as mentioned above. Long-term commitment periods (ranging from 30-200 years), provide the necessary confidence in the counterfactual scenario provided by the project proponent. This shift towards shorter timeframes is concerning, considering the concept as stands has not been tested in the carbon market and its validity is highly dependent upon specific assessment method and assumptions.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>



In addition, short-term commitments force the assumption that project actions (such as deferred harvest) would occur in a specific year. In reality, natural systems such as forests are managed on decadal and multi-decadal timescales. The case for additionality is bolstered when carbon sequestration commitments coincide with the long-term timeframes in which natural systems are managed. Shorter time commitments for projects also have direct impacts on leakage, with the literature suggesting that any short-term reduction in harvest volumes is easily made up for by local or regional wood consumers. With shorter, year-to-year commitments, leakage may be nearly 100%.

Furthermore, tonne-year accounting assumes that the short-term climate benefits of delaying emissions are sufficient to offset the long-term impact of the same emissions. From a physical science perspective, it is not clear that this is the case. Temporary storage will by definition lead to higher temperatures after the commitment period, because the emissions are released. If the commitment period is 100 years, this may not make a difference – but if the temporary period is 1-2 years from now, it will likely negatively affect climate goals. In other words, it is not clear that the negative impact of releasing 1 tonne 1 year from now can be negated by simply combining 100 1-year temporary periods. If this is the case, the full impacts of the emissions would still occur, and the credits would effectively be meaningless.

These concerns are amplified by the suggestion to allow tonne-year accounting across the entire Verra AFOLU portfolio. At this broad level, we are concerned it will be difficult to impossible to provide adequate public disclosure, expert analysis, and public comment. If tonne-year accounting is to be considered, it should only be at the methodology level.

In summary, tonne-year accounting can be a useful accounting framework but must be paired with careful consideration for minimum time-commitments, additionality, and leakage provisions that are appropriate for specific project types and sectors. If it is adopted, there should be a clear differentiation between credits generated based on tonne-year accounting and those based on buffer pools.

## 1.4 Subsequent Project Instance Registrations

### 1.4.1 What concerns do you have with the proposed clarifications?

Comment #	Issue Raised	Verra Response
138	<p>It would be great to get more clarity around the update that there cannot be a gap between an instance's participation in one project and another (except if the original project used tonne-year accounting). What happens if there is a gap, but the instance wants to enroll in another project? Is there any way in which this would be allowed? And if the original project did not usually use tonne-year accounting, but sought a methodology deviation to do so, would that be allowed to have them switch projects with a gap?</p> <p>It would also be helpful to get more clarity on how projects and/or VVBs will be able to assess and demonstrate that verification of an instance in its second project is not being sought be two projects for the same benefits. Is that up to the VVB to determine? What sort of assessment is sufficient to meet this requirement? If the documentation and process for this are extensive, it could become cost/time prohibitive for landowners and/or project proponents wanting to include landowners switching between projects. It will be an added transaction cost to landowner participation in a program.</p> <p>It's also becoming increasingly important for Verra to clarify whether, before these proposed updates go through, whether it is currently possible for instances to move between projects. Even within the public consultation document, it is unclear whether this is currently allowed or not, and there are mixed messages going around about the status of this. Our interpretation from previously communication with Verra and from these proposed updates is that instances moving between projects is not currently operational, and therefore not currently allowed, but others are interpreting the document as saying that it is not prohibited (which is understandable given other language in the public consultation document). It would be helpful to all projects and landowners if clarity could be given in the interim of these proposed changes on whether instances may or may not currently switch between projects.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>

139	<p>We believe it is important to give flexibility to the different instances of a project. We believe that this flexibility in the time frame could also be given to the special frame and that the new instances doesn't need to be in the same area than the previous ones.</p>	<p>Thank you for your feedback. No response is needed.</p>
140	<p>The scope of the proposed clarifications is far too narrow. The text should be revised to allow for all of the following scenarios:</p> <p>Transfer of project activity instances from one VCS project to another.</p> <p>This is the scope of the current proposal.</p> <p>Transfer of project activity instances from a project in another public registry (e.g., Climate Action Reserve) into a VCS project.</p> <p>This would require additional language around eligibility to avoid using other programs to “game” the VCS eligibility rules (e.g., start date deadlines).</p> <p>Transfer of project activity instances from other carbon payment schemes (e.g., low carbon fuel crediting pathways, Scope 3 emission reduction programs, etc.) into a VCS project.</p> <p>This is a more complex scenario which would require careful language and potentially detailed guidance. However, this is more than likely going to be the future state of certain project activities which are embedded within global supply chains. Verra should endeavor to be on the leading edge of developing programmatic structures to enable this future.</p>	<p>Verra agrees that the opportunities available to project activity instances are rapidly evolving. However, at this time, Verra is likely to limit transfers to between VCS projects (please see the announcement on subsequent project instance registrations for further information). Verra is confident that it can establish robust systems to manage the double-counting risk within its registry, but this becomes more complicated with transfers from other carbon crediting programs, Scope 3 Programs, etc. Nonetheless, Verra may consider this flexibility in the future and has recently launched a Scope 3 Initiative and a Digital Monitoring, Reporting and Verification Working Group to explore such issues.</p>
141	<p>Key concerns include: (i) how to ensure that the project activity instances remain compliant with methodology requirements; (ii) if not properly managed, biodiversity conservation and other benefits may easily be compromised as landowners are allowed to move from one project to the other; (iii) How to manage monitoring and verification as project activity instances transition from one project to the other.</p>	<p>Verra agrees that it is important to remain compliant with methodology requirements and maintain biodiversity and other benefits. Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Further, please note that Verra's current proposal is to limit transfers between</p>

		projects using the same methodology and co-benefit programs.
142	<p>The revisions proposed under Section 5 of this consultation clarify that landowners would be allowed to move between offset projects and, if credited with ton-year accounting, to have gaps between leaving one project and joining another.<sup>33</sup> Without safeguards – such as those we recommend strengthening in Section 3.2 of the VCS Standard, in response to Question 3 in Section 4.3 of this consultation – this optionality could pose significant risks to the additionality criteria of the Verra Standard.</p> <p>For example, imagine a landowner with industrial timberlands scattered throughout the American South, all in various age classes and managed on rotation lengths of about 30 years. The ability to indiscriminately enroll and un-enroll segments of that acreage could invite significant arbitrage opportunities, whereby the owner could enroll soon-to-be harvested parcels that they technically could harvest, but would not typically harvest until the trees were slightly older. To continue our example, the landowner might enroll trees in year 20 or 25 of their rotation. After collecting ton-year-based payments for a few years, they could un-enroll their land, execute their planned business-as-usual timber harvests, and, during the course of the next harvest cycle, re-enroll the land for additional carbon payments. Such a scenario could continue in perpetuity and would result in no additional carbon storage, but could nevertheless generate credits under a ton-year accounting approach.</p> <p>It is unreasonable, if not impossible, to fully grasp how flexible enrollment and ton-year accounting might interact across all of Verra’s methodologies. Because ton-year accounting presents significant and novel additionality risks, including as a result of landowners (or “instances”) moving in and out of projects, ton-year accounting should only be allowed – if at all – under methodologies that were explicitly designed to address these risks.</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>
143	<p>In general, we think that it is important for Verra to be forward-thinking on this issue and support developing rules and guidance for successive participation in different VCS projects. We support this in part because it seems likely that, at least in the US agricultural project context, US farmers may be inclined to</p>	<p>As Verra begins taking steps towards allowing subsequent project instance registrations we may consider whether this could be expanded to other registries; however, our current proposal is to limit</p>

	<p>switch between different projects as payment terms vary between actors in this space, or as the market and its competitors consolidate or change over time. (In that vein, we also encourage Verra to work with other registries on rules and guidance for switching between comparable projects on different registries.)</p>	<p>this flexibility to between VCS Projects. Verra feels that it can establish robust systems to manage the double-counting risk within its registry, but this becomes more complicated with transfers from other carbon crediting programs, Scope 3 Programs, etc. Nonetheless, Verra may expand this flexibility in the future and has recently launched a Scope 3 Initiative and a Digital Monitoring, Reporting and Verification Working Group to explore such issues. Further, please note that Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time.</p>
144	<p>Shell agrees that more flexibility benefits projects that face unique local contexts and challenging on-the-ground realities. In order to ensure a smooth transition for projects and there are no impacts to overall credit quality further development of this mechanism is needed. The following areas have been identified as areas of concern:</p> <ul style="list-style-type: none"> <li>i. Double counting <ul style="list-style-type: none"> <li>1. Instances could switch to a new project and end up double counting or double claiming an ER. VVBs should have specific guidance on how to prevent this and should thoroughly check location data to prevent such occurrences.</li> </ul> </li> <li>ii. Methodology <ul style="list-style-type: none"> <li>1. Will an instance be able to move from a project using one methodology to a different project using a different methodology? If so, will there be restrictions on activity (projects cannot shift activities but may change methodologies – e.g., switching from a REDD (AUDD) project to a cookstove project wherein the project would use the same activity to generate different ERs).</li> </ul> </li> <li>iii. Start Date and Crediting Period <ul style="list-style-type: none"> <li>1. Is the project tied to the initial grouped project start date?</li> </ul> </li> </ul>	<p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information.</p> <p><b>Double counting</b> - Verra's current proposal for the future is that grouped projects will need to start reporting ERRs, buffer contributions and start dates by instance. Further, more granular spatial data for each instance will need to be submitted (See updates to Section 3.10.2 of the VCS Standard). Using this spatial data, Verra will be able to check to make sure there is no double-counting of instances.</p> <p><b>Methodologies</b> - Verra's current proposal is that transfers will only be allowed between projects using the same methodology.</p> <p><b>Start date and crediting period</b> - For instances that were previously part of another project, Verra's proposal is that the start date is the date on which activities that led to the generation of GHG emission reductions or removals were implemented.</p>

<ul style="list-style-type: none"> <li>2. Could the project join a grouped project with a later start date and reset its crediting period?</li> <li>3. How will this information be transparently reported? Oftentimes projects do not include an exhaustive list of all instances included in the project.</li> <li>iv. Baseline             <ul style="list-style-type: none"> <li>1. The “new” project’s baseline should have as conservative or a more conservative than the previous.</li> </ul> </li> <li>v. Permanence requirements and incentives             <ul style="list-style-type: none"> <li>1. The “new” project should have as conservative or more conservative permanence requirements.</li> </ul> </li> <li>vi. Leakage, including historical leakage             <ul style="list-style-type: none"> <li>1. The “new” project should have as conservative or more conservative leakage requirements and should take account of any historic leakage from the instance joining the “new” project.</li> </ul> </li> <li>vii. Benefit sharing             <ul style="list-style-type: none"> <li>1. If the project includes benefit sharing, how will Verra ensure that the instance in question moves to a project with a comparable benefit sharing program?</li> <li>2. What should happen if a project adjusts or completely modifies the benefit sharing by joining a new project? Who assesses this and will there be a mitigation requirement in place to protect communities and other local stakeholders? Will there be a requirement to conduct/update FPIC?</li> </ul> </li> <li>viii. Monitoring             <ul style="list-style-type: none"> <li>1. The “new” project should have as accurate or more accurate monitoring in place.</li> </ul> </li> </ul>	<p>Therefore, the instance's start date would be fixed and could not be reset by joining a new grouped project. To operationalize this potential future update, grouped projects will need to begin reporting start dates as well as ERRs, buffer contributions and spatial data by instance.</p> <p><b>Baseline</b> - Verra generally agrees that the baselines should be kept constant or made more conservative; however, we recognize some complexity associated with this. This is something we intend to spend more time exploring in the coming months.</p> <p><b>Permanence</b> - All AFOLU projects with non-permanence risk must estimate the risk of reversal using the AFOLU Non-Permanence Risk Tool. This would remain the same for instances that transfer projects.</p> <p><b>Leakage</b> - Verra's current proposal is to limit transfers to projects using the same methodology, and therefore leakage should be calculated in the same way. For project types with leakage belts, this is more complicated, and hence why we are still determining whether this potential future update should apply to REDD projects.</p> <p><b>Benefit-sharing</b> - Benefit-sharing varies significantly by project type and location. One of the reasons Verra is considering allowing subsequent project instance registrations is to provide landowners the flexibility to pursue the best agreement available to them at the time. However, this is more complicated for some project types where benefits are shared through community-based projects instead of direct participant payments. Verra will explore this further in the coming months.</p>
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	<p>ix. Leakage area, reference area, baseline reference area, baseline control site, project area and project zone</p> <ol style="list-style-type: none"> <li>How will these be assessed? If instance x is sharing a reference area with another instance y in project a, then instance x transits to project b, will this overlap of reference area be permitted? If not, does instance x have to reestablish a new reference area or use the same as project b?</li> </ol> <p>x. Credit quality</p> <ol style="list-style-type: none"> <li>A perverse incentive exists on the part of individual instances to switch to a project that would issue them a larger volume of credits calculated in a less robust way.</li> </ol> <p>xi. Additional comments:</p> <ol style="list-style-type: none"> <li>Proposed text uses the word “chapter” instead of “Section” when referencing the VCS Standard.</li> <li>Proposed text uses the word “continuously” while historically the VCS Standard has opted for the word “contiguous”</li> </ol>	<p><b>Monitoring</b> - Verra's current proposal is that transfers will be limited to projects using the same methodology. Therefore, monitoring requirements should remain constant. As you note, this is more complicated for project types with leakage belts and reference areas. This is why Verra is still determining whether this potential future update should only apply to ALM, IFM and ARR projects or also include REDD and WRC projects.</p> <p><b>Credit quality</b> - To mitigate the risk of instances switching projects to obtain a larger volume of credits, Verra has proposed limiting transfers to projects using the same methodology.</p> <p>Thank you for your comments on the wording.</p>
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### 1.4.2 Should the flexibility for instances to change projects be expanded to other project types (i.e., non-AFOLU projects), and if so, under what circumstances might similar flexibility be needed in these projects?

Comment #	Issue Raised	Verra Response
145	Each case should be studied individually, as it is confusing to generalize the flexibility to change actions from AFOLU projects to non-AFOLU projects. If it is feasible, the flexibility would be to approve activities whose results can be measured on the same spatial-temporal scale and under compatible measurement parameters.	Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. At this time the proposal is limited to certain AFOLU
146	Yes. There is no logical reason to restrict this concept to AFOLU projects.	

147	<p>The flexibility for project activity instances should be expanded to other project types if they can be justified. These changes can be allowed if (i) landowners or their equivalents need a flexible procedure for withdrawing from one project to join another, (ii) the project opportunity has a shorter lifespan than the methodology requirement and if (iii) projects want to effectively and efficiently monitor, report and verify emission reductions and removals in transitioning of project activity instances from one project to the other.</p>	<p>projects. Verra may consider expanding this proposal to non-AFOLU project types after further consideration.</p>
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1.4.3 Should the ability for instances to subsequently register with another Verra project be limited to instances that initially participated in a tonne-year accounting project (i.e., from a tonne-year accounting project to another tonne-year accounting project or a tonne-year accounting project to a conventional accounting project)? Or should this flexibility also be granted to instances that did not initially participate in a tonne-year accounting project as currently written?

Comment #	Issue Raised	Verra Response
148	<p>We support this flexibility being granted to all types of instances.</p>	<p>Thank you for the feedback. No response is needed.</p>
149	<p>It should be possible for instances to move from one accounting structure to the other, with straightforward guidance for each scenario. For example, if moving from tonne-tonne accounting (TTA) to TYA, the project developer would either maintain the permanence of the original tonnes issued to the instance, or register a deduction in the process of converting the instance from TTA to TYA. Alternately, instances converting from TYA to TTA could simply move forward with no adjustment to past crediting (conservative) or the unrealized tonne-year value of the previous monitoring periods could be realized by the new project developer if and only if they make sufficient buffer pool contributions to take on the permanence obligation for previously-verification periods.</p>	<p>Thank you for the feedback. Verra has decided not to proceed with introducing tonne-year accounting to the VCS at this time.</p>
150	<p>The ability for instances to subsequently register with another Verra project should not be limited to instances that initially participated in a tonne-year</p>	<p>Thank you for the feedback. Verra has decided not to proceed with introducing tonne-year accounting</p>



	<p>accounting project. Each instance should be assessed on its own merit. To ensure stability of projects, there should be a limit to the number of times an instance can join a new project. Verra should require validation/verification bodies to assess every instance that comes from another project to ensure that none of the same emission reductions or removals are being quantified under multiple projects. This assessment should also assess the consistency of the instance with the project especially that the hosting project will assume long-term liability for credits issued prior to enlisting the new project.</p>	<p>to the VCS at this time. Further, Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra is not currently planning to limit the number of times an instance can join a new project, but we are planning to place a limit on the frequency of transfers. Verra is also planning to require validation and verification bodies to check the subsequent project's GHG accounting to ensure the GHG emission reductions and removals are only counted from the date the instance joined the project onwards.</p>
151	<p>No position. Shell believes that flexibility should be provided to all projects if the appropriate mechanisms can be designed to ensure credit quality is maintained.</p>	<p>Thank you for the feedback. Verra has decided not to proceed with introducing tonne-year accounting to the VCS at this time.</p>

#### 1.4.3.1 If you think this flexibility should be granted to all types of instances: Should there be any limits on the number of times an instance can join a new project?

Comment #	Issue Raised	Verra Response
152	No.	<p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra is not currently planning to limit the number of times an instance can join a new project, but we</p>
153	<p>There should be no registration limits, as the fact that an instance participates in several projects will depend on its capacity to reduce/remove emissions and not on the number of participations it has had.</p>	
154	No.	

155	While it may make sense to place a cap on the total number of times an instance can join a new project, we suggest that it may be best to limit how frequently an instance joins a new project and how many years occur between switching.	are planning to place a limit on the frequency of transfers.
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1.4.3.2 If you think this flexibility should be granted to all types of instances: Should Verra require validation/verification bodies to assess every instance that comes from another project to ensure that none of the same emission reductions or removals are being quantified under multiple projects (i.e., rather than allow sampling)?

Comment #	Issue Raised	Verra Response
157	Yes, however we support maintaining as much flexibility as possible for the project proponent to demonstrate this in a way that is satisfactory to the VVB, rather than being defined at the standard level, so as to keep this manageable and reduce time and other costs associated with this added assessment that could create barriers for landowners and/or project proponents pursuing this.	Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information.
158	<p>We support these changes as an important step towards increasing the opportunity for landowners to engage in forest carbon programs with varying timescales and commitments. Flexibility should be afforded to landowners and project developers with a clear and consistent, quantitative accounting approach. This in turn maximizes the number of landowners who can engage with carbon projects in this critical period for our planet.</p> <p>For projects that are developed using tonne-year accounting, climate impact is calculated for a relatively short activity period and verified upon its conclusion, and participants' commitments are completed once the activity period has concluded. Because tonne-year accounting mitigates non-permanence risk through immediate accounting of delivered carbon credits, there is no ongoing engagement for participants, and they can engage in other programs.</p> <p>It is therefore reasonable to make clear that these instances can subsequently register in another project, if they meet all requisite applicability conditions.</p>	Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. At this time, Verra is likely to limit transfers to between VCS projects. Verra is confident that it can establish robust systems to manage the double-counting risk within its registry, but this becomes more complicated with transfers from other carbon crediting programs, Scope 3 Programs, etc. Nonetheless, Verra may consider this flexibility in the future and has recently launched a Scope 3

	<p>Where an instance is registered in a project using conventional accounting, registration in another project should be associated with clear accounting for this as a reversal, due to the assumptions about non-permanence risk and associated accounting under traditional crediting structures.</p> <p>We note that this change in the VCS Standard clarifies only the situation for an instance that moves from one VCS project to another. We encourage Verra to further clarify what processes may be put into place to facilitate instances moving between VCS projects and projects under other standards (ACR, CAR, etc.).</p>	<p>Initiative and a Digital Monitoring, Reporting and Verification Working Group to explore such issues.</p>
159	<p>We believe that it is not necessary to check every instance coming from other projects. It would be sufficient to check only those projects of large size (to be determined).</p>	<p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra's current proposal is to conservatively require all instances to be assessed to ensure no double-counting of emission reductions and removals.</p>
160	<p>If they are coming from other VCS projects, this should be incredibly straightforward by simply comparing a list of unique instances between VCS projects. If they are coming from projects outside the Verra registry, then it will depend on what tracking systems are in place at the time of verification. If the verifier is able to reach reasonable assurance by assessing the tracking systems in place, then assessing every individual instance is likely unnecessary. However, if this is not the case, then yes, it may be necessary to assess every individual instance.</p>	<p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra's current proposal is to conservatively require all instances to be assessed to ensure no double-counting of emission reductions and removals.</p>
161	<p>It may be reasonable to assume that project instances switching between projects are more likely to contain errors and are at risk of double counting or mismatch between the former and the new projects' GHG boundary, MRV method, etc. that lead to incomparable accounting. Thus, it would be most conservative to require VVBs to census the project instances coming from another project. It may be burdensome and slow down an already</p>	<p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information.</p>

	<p>overburdened VVB process to require VVBs to assess every instance that comes from another project without placing some explicit additional requirements on project proponents to facilitate that process. Perhaps project proponents should be required to declare and document such instances in a manner and level of detail that eases some of the VVB burden. It may also be in Verra's long-term interest to compile the geospatial data (KLM or .shp files) provided by projects into a single map or database accessible to VVBs that could identify overlapping project instance boundaries occurring among different registered projects.</p>	<p>Verra's current proposal is to conservatively require all instances to be assessed to ensure no double-counting of emission reductions and removals. Verra agrees that it would be beneficial for projects to document their process for quantifying emission reductions and removals from transferred instances to ease the review. As you recommend, Verra will require grouped projects to report spatial data for every instance. This has been clarified in Section 3.10.2 of the VCS Standard.</p>
162	<p>Yes. VVBs should be required to assess each individual instance that migrates between projects in addition to usual the instance sampling conducted at validation/verification.</p>	<p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra's current proposal is to conservatively require all instances to be assessed to ensure no double-counting of emission reductions and removals.</p>

#### 1.4.4 General comments

Comment #	Issue Raised	Verra Response
218	<p>We appreciate the added clarity around the ability for project instances to move between grouped projects within the VCS program, or to move from a grouped project to an independent, standalone VCS project. A question is posed in the consultation as to whether this option should be limited to only projects that used TYA in the first instance. We do not think this type of limitation should be imposed. So long as an instance remains eligible, it would be preferable to provide increased flexibility and incentivize instances to continue MRV for as long as possible. Limiting this to only projects utilizing TYA reduces flexibility for landowners. It also doesn't seem necessary to impose a limitation on the number of times an instance can switch projects, so long as</p>	<p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra's current proposal is to conservatively require all instances to be assessed to ensure no double-counting of emission reductions and removals. At this time, Verra is likely to limit transfers to</p>

	<p>there are no gaps in monitoring (when not using TYA). However, it would be best for VVBs to assess double counting every time an instance changes projects. From that perspective, it may be wise to limit the movement of an instance to once per year, just to keep verification and project tracking more manageable. On that subject, it is also unclear how credits associated with actions from previous project instances will be clearly denoted in the registry to prevent double counting. For instance, if harvest is avoided in the baseline of an initial project instance under an extension of rotation age project, how will that harvest deferral be viewed if that instance re-enrolls in another ERA project? While there is nothing inherently wrong in allowing an instance to switch between projects – particularly if it keeps that landowner reporting their GHG removals/reductions for longer – there must be adequate protections in place to avoid double counting of benefits.</p> <p>Similarly, how would Verra evaluate a project instance attempting to enroll in a VCS project from another program or registry? It would be useful for the VCS program to address whether instance transfers are possible. Section 3.20.5 of the VCS Standard describes the process for gap validation for approved GHG programs – could this be pursued by instances or just by standalone or whole grouped projects?</p>	<p>between VCS projects. Verra is confident that it can establish robust systems to manage the double-counting risk within its registry, but this becomes more complicated with transfers from other carbon crediting programs, Scope 3 Programs, etc. Nonetheless, Verra may consider this flexibility in the future and has recently launched a Scope 3 Initiative and a Digital Monitoring, Reporting and Verification Working Group to explore such issues.</p> <p>Last, Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Therefore, this potential update is now focused on projects not using tonne-year accounting.</p>
223	<p>Section 5: Subsequent Project Instance Registrations</p> <p>TNC is supportive of this approach. However, we advise that further guidance will be required from Verra to help VVBs navigate this situation, particularly around reassessment of baselines and additionality when an “instance” switches from one project to another. For example: Should VVBs re-assess the additionality and baselines of a transferred instance?</p> <p>VCS Standard 3.5.15-3.5.16 makes it clear that grouped projects shall define eligibility criteria and that new project activity instances shall be validated against those criteria at the verification event following their inclusion in the project. Furthermore, VCS Standard 3.5.15, 4) and 5) make it clear that baseline scenario and additionality shall be among the eligibility criteria created for the inclusion of new instances.</p> <p>Since additionality is assessed during project validation and not on an ongoing basis, allowing instances to transfer between projects may result in unequal</p>	<p>Verra will not allow subsequent project instance enrolments in the immediate term; however, Verra has begun drafting a plan to allow transfers of project instances, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra is not currently planning to limit the number of times an instance can join a new project, but we are planning to place a limit on the frequency of transfers. Verra is also planning to require validation and verification bodies to check the subsequent project's GHG accounting to ensure the GHG emission reductions and removals are only counted from the date the instance joined the project. Further, Verra is currently planning to require instances changing</p>

	<p>treatment of additionality across projects. For example, if an instance transfers from project A to project B at year 10, the additionality of the instance will presumably be reassessed by the VVB against the eligibility criteria required by VCS Standard 3.5.15. However, if this same instance were to stay within project A, its additionality would not be reassessed. It is entirely plausible that the original justification of additionality for the instance would no longer be valid at year 10 based on changing regulations, market conditions, or other factors, yet this would only be detected for instances that choose to transfer to new projects. Despite the unequal outcomes created across projects, our recommendation is that baselines and additionality should be reassessed when instances transfer to a new project.</p> <p>This also raises a larger issue on whether additionality should be a one-time demonstration at the project validation or should be assessed in an ongoing way. We recommend that Verra adopt and incentivize approaches that provide ongoing assessment of additionality and baseline validity and commend recent steps in this direction such as dynamic baseline methodologies and shortening the baseline validity period for REDD projects.</p> <p>Finally, we recognize that it is likely impractical for a VVB to assess every instance that transfers from one project to another. We recommend Verra implements better transparency around the process, such as a dataset of unique identification codes to track which instances are associated with which projects every year.</p>	<p>projects to meet the eligibility requirements of the new project, including the baseline and additionality criteria. We appreciate your feedback on some of the challenges associated with this and will continue to explore how these issues may be addressed as we move forward.</p>
229	<p>Landowners' successive participation in different VCS projects</p> <p>Three main points concern us: the possible lack of commitment of the owner to the project, since he could migrate to another one whenever he wanted; the damage that can be generated to the project that first included that owner (and even subsequent projects, if he continues to migrate); how to ensure that no double counting will be generated by the credits.</p> <p>In case of ARR Projects, the highest costs are in the first years (planting and maintenance). And the entire financial model of these projects is based on this high initial cost and on sales estimates of future credits, in order to amortize investments and start generating profit. The departure of owners can derail the initial project. This would not only occur in such a proportion in projects in</p>	<p>Verra will not allow subsequent project instance enrolments in the immediate term; however, Verra has begun drafting a plan to allow transfers of project instances, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra is not currently planning to limit the number of times an instance can join a new project, but we are planning to place a limit on the frequency of transfers. Verra is also planning to require validation and verification bodies to check the subsequent project's GHG accounting to ensure the GHG emission reductions</p>

	<p>which the owner enters with own resources for the implementation of ARR activities.</p> <p>An alternative, in this sense, would be to allow owners/ instances to migrate from one project to another only if it holds the credits to be generated in your area.</p> <p>We recommend a plausible justification for the instance exit, and it should be clear a maximum limit of times when the instance can migrate to other projects, so as not to lead to a lack of commitment from the owner.</p> <p>Considering the importance of ensuring that there will be no double counting, we understand that there should be monitoring to verify the reduction and/or removal of GHG at the time the owner/instance leaves a project, and the monitoring methods (the same ones established in the methodologies for quantifying the reductions and removals of the project) should be validated/verified by the VVB. If preferable, this verification could be performed on the validation or verification of the new project itself (and should be aware that, in this case, the time 0 for removal projects would be that of the entry into the new project, even if there was a gap between the output and the entry into a new project).</p>	<p>and removals are only counted from the date the instance joined the project. Verra recognizes that allowing instances to change projects creates greater uncertainty for project proponents. To help manage the increased uncertainty that this may create, project proponents may wish to establish contracts with instances that outline the project participation terms.</p>
233	<p>With regards to the direction proposed to allow individual instances to move between VCS grouped projects without triggering a reversal of sequestered carbon, we recommend expanding these criteria to include grouped projects registered on equivalent carbon registries. At minimum, for agricultural land use projects, we recommend allowing project instances registered under VM42 to re-register under a grouped project using the Climate Action Reserve's Soil Enrichment Protocol. These methodologies are largely equivalent in their scope and permanence provisions; therefore, where grouped project developers can demonstrate project instances have registered under another grouped project, they should not be responsible for a reversal of sequestered carbon.</p> <p>We agree that Verra must have rules in place to ensure no double issuances as projects transition from one crediting program to the next. However, there must be clear accounting and verification guidelines to evaluate and ensure that no double issuances have occurred, particularly if they are changing methodologies and accounting practices. This is further complicated if projects</p>	<p>Verra will not allow subsequent project instance enrolments in the immediate term; however, Verra has begun drafting a plan to allow transfers of project instances, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. At this time, Verra is likely to limit transfers to between VCS projects. Verra is confident that it can establish robust systems to manage the double-counting risk within its registry, but this becomes more complicated with transfers from other carbon crediting programs, Scope 3 Programs, etc. Nonetheless, Verra may consider this flexibility in the future and has recently launched a Scope 3 Initiative and a Digital Monitoring, Reporting and Verification Working</p>

	switch from a methodology using LTA to a methodology with a buffer requirement. For example, different methodologies credit different carbon pools and activities, so there must be clear and verifiable rules in place to ensure emissions reductions are not issued twice for the same project action.	Group to explore such issues. Further, to avoid some of the challenges you mention related to methodological differences, Verra will likely limit transfers to those using the same methodology.
234	We believe there is insufficient guidance on how to handle different scenarios where instances leave grouped projects of different project types, and inconsistent interpretation of these rules will lead to inconsistent crediting across project types. We recommend that Verra provides example scenarios for different project types and methodologies to ensure programmatic consistency.	Verra will not allow subsequent project instance enrolments in the immediate term; however, Verra has begun drafting a plan to allow transfers of project instances, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra may provide example scenarios in the future.
238	Subsequent Project Instance Registrations. We support the flexibility for project activity instances to choose to leave one grouped project for another grouped project, however we strongly oppose the proposed mechanism. The proposed mechanism is to allow a methodology switch at the level of the instance from one grouped project to another. This proposed mechanism is not feasible for transferring carbon accounting, as described further below. We strongly encourage Verra to reconsider the mechanism for the transfer and the congruent effects of any transfer on carbon accounting.	Verra will not allow subsequent project instance enrolments in the immediate term; however, Verra has begun drafting a plan to allow transfers of project instances, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Verra will consider alternative mechanisms for implementation and would be happy to hear more about other possible options.
246	<p><b>SUBSEQUENT PROJECT INSTANCE REGISTRATIONS</b></p> <ol style="list-style-type: none"> <li>1. Section 3.5.5 states “there shall not be a gap in monitoring between when the instance leaves one project and starts with another, unless the emission reductions and removals generated by the instance were previously quantified and credited using tonne-year accounting.” <ol style="list-style-type: none"> <li>a. Without monitoring under a tonne-year accounting forestry project, there is a high potential to negate previously credited avoided emissions under the following example:</li> </ol> </li> </ol>	Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.



	<ul style="list-style-type: none"> <li>i. A harvest deferral project does not renew its crediting period after its first year, then harvests, for example, more than half of its standing carbon causing a net loss in carbon stocks, then re-enrolls other stands back into a harvest deferral project a few years later.</li> <li>ii. Clearly this type of scenario must be addressed through proper monitoring requirements.</li> </ul>	
<p>251</p>	<p>Clarification of rules around the subsequent registration of project instances in other VCS projects</p> <p>We would like to highlight that in grouped projects or projects with multiple project activities there are not only landowners but a relationship between the project developer administrating a grouped project and the project participant (landowner or right holder) that is part of an instance. This relationship is normally defined by private agreements that defines the responsibilities, liabilities, and rights of each party, including the aggregator entity in the case of project were multiple owners are part of each instance.</p> <p>Even if VCS does not prohibit landowners to participate in successive projects, this idea is completely different from one implying that landowners could be able to jump from an existing project operating and fulfilling all its legal engagements to any other project before the first project ends.</p> <p>We agree that long term engagement is a barrier for enrollment but putting more flexibility on one side will bring more rigidity on the other side not only penalising landowners but also significantly increasing the risk for developers and investors. Any proposal that could mean the modification of this agreements should consider the impact on the 3 parties and contribute to the objective of long-term engagement on mitigation activities.</p> <p>We also agree that the potential introduction of the tonne year approach could exacerbate this situation skimming existent grouped projects from their instances to projects with no long-term engagement and potentially very reduced costs. We strongly recommend that this approach should only be applicable when one project ends, giving the freedom to landowners to engage</p>	<p>Verra agrees that relationships are a key part of carbon credit project development and recognizes that project proponents usually have private agreements with project instances that define responsibilities, etc. Verra will not allow subsequent project instance enrolments in the immediate term; however, Verra has begun drafting a plan to allow transfers of project instances, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. To help manage the increased uncertainty that this may create, project proponents may want to establish contracts with instances that outline the terms of participation. To begin preparing for subsequent project instance enrolments and manage the risk of double-counting, Verra will need to collect more granular data on project instances, including emission reductions and removals, buffer contributions, start dates and spatial data by instance. This will help Verra and VVBs detect if the emission reductions and removals from an instance are double counted. Verra will likely be responsible for managing the geodetic polygons in its registry. Verra does not presently plan to label projects that include instances that have moved, but we may reconsider this.</p>

	<p>in a new project if all eligibility and additionality conditions are in place or reengage in the same project initiative.</p> <p>Under this proposal, how will the information generated during the monitoring process that belongs to the project proponent and not to the landowner be treated? What happens if the neither the landowner nor the new project developer are willing to compensate the first project developer for this information? Who will be in charge of managing the geodetic polygons to avoid double accounting? Will this data base will be public? How long will this process take and which resources that VCS will put for this purpose? Will there be any label on the VCU's generated by this instance to inform buyers of this situation? If a VVE is required to validate the transition from one project to another what incentive does the first project developer will have to participate in this process?</p>	<p>Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation. Therefore, the issue of tonne-year potentially exacerbating this issue has been addressed for now.</p>
263	<p><b>Clarification of Subsequent Project Instance Registrations</b></p> <p>IETA appreciates the clarity provided by these updates, on the ability for project instances to move between grouped projects within the VCS program, or to move from a grouped project to an independent, standalone VCS project. We also agree that Verra must have rules in place to ensure no double issuances as projects transition from one crediting program to the next. However, it is unclear how actions associated and credited for previous projects will be clearly separated from those of the new project. For example, if the initial methodology enrollment for a forestry project credits a harvest deferral, how would this be treated in a subsequent forest methodology enrollment? More specifics are needed on how to ensure emissions reductions are not issued twice for the same project action.</p>	<p>Verra will not allow subsequent project instance enrolments in the immediate term; however, Verra has begun drafting a plan to allow transfers of project instances, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Over time, Verra plans to provide more specific details on the proposed implementation.</p>

## 1.5 Non-Permanence Risk in Grouped Projects and Projects with Multiple Activity Instances

### 1.5.1 Do you agree with the proposed clarifications? If not, why?

Comment #	Issue Raised	Verra Response
163	<p>We do not support the proposed clarifications. These clarifications create more barriers and complexity than they alleviate. For the Family Forest Carbon Program, for example, while we are confident we can create a robust plan to maintain project longevity at the project level (and support that clarification to section 2.2.4 of the AFOLU Non-Permanence Risk Tool), we cannot reasonably predict or ensure that landowners will re-enroll in our program or another after their enrollment. Creating the rule that should they not re-enroll, we must count everything credited from them as lost, makes the only viable path that we must have 30-year agreement lengths at a minimum. So in effect, this update would mean that shorter landowner agreements that do not use tonne-year accounting are not viable for project proponents to offer.</p> <p>It is unclear why ensuring project longevity at the project level does not satisfy what Verra is looking to solve for here, and why there is a need to count instances who exit and do not re-enroll as lost, particularly when those instances would still be monitored long-term after existing by the LTRMS.</p> <p>Lastly, if the benefit credited for the instance by the original project is separate from the benefit credited for the instance by the subsequent project, then wouldn't the permanence liability for those two benefits also be separate? Why is it necessary that the full permanence liability transfer to the new project? Is the liability for what was credited by the original project only up to that project's 100-year permanence period, or would that permanence period expand to mean the permanence period for the new project? More clarity and simplicity could be used here.</p>	<p>Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.</p> <p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Further, Verra has tentatively decided that it would be too difficult to proportionately allocate responsibility for loss or reversal events to each project proponent (past and present) when an instance changes VCS projects.</p>
164	<p>Yes, security is generated when an instance abandons a project and it is not assumed as a loss associated with its actions, which normally damages the project. It also makes it very explicit that the project's permanence period must</p>	<p>Thank you for the feedback. No response is needed.</p>

	<p>be a minimum of 30 years. This clarification is in line with the other elements subject to discussion in this consultation.</p>	
<p>165</p>	<p>We agree with all except for the proposed language in Section 3.2.15. If an activity instance leaves a project and does not join another VCS project, there are multiple scenarios where it would be reasonable to not conservatively assume a loss of the previously credited carbon stock:</p> <p>If the project joins another project outside of VCS. This would be reasonable if the project proponent can demonstrate that the permanence management requirements are equal to or greater than the VCS Program in their stringency. This could be done at a programmatic level by Verra for common transfer scenarios.</p> <p>If the project developer can demonstrate to the satisfaction of Verra staff that they have the ability to remotely monitor and detect reversals on the activity instance which has left the project, as well as quantify the reversal obligation on that instance.</p>	<p>Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.</p>
<p>166</p>	<p>We welcome the clarifications, but believe that some improvements and clarifications are nonetheless needed.</p> <ul style="list-style-type: none"> <li>§ 3.2.15 “Grouped projects and non-grouped projects with multiple project activity instances shall conservatively assume a loss of the carbon stock previously credited when an instance leaves a project and does not join another project. This rule does not apply to projects using tonne-year accounting”</li> </ul> <p>We disagree with this formulation. The assessment of loss of the carbon stock for the definition of loss events takes place on the project level, and in our view one instance which leaves the project does not necessarily automatically mean a loss of carbon stock and occurrence of loss event. Our rationale is that: 1) The project activity may continue to implement the practices despite leaving the project, 2) new instances joining the project might compensate for any potential losses from the instances which have left the project. Therefore, we see the need for more clarification from VERRA on this point and text adjustment.</p>	<p>Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.</p> <p>In addition, Verra has revised the final update to more clearly define how project proponents can demonstrate a plan for maintaining project longevity at the group level.</p>

	<ul style="list-style-type: none"> <li>§ 2.2.4 3 “For grouped projects and non-grouped projects with multiple project activity instances where some of the contract lengths with instances are less than 30 years, a plan for ensuring 30-year longevity at the aggregate level shall be established.”</li> </ul> <p>We would welcome further clarification on the requirements as to the format and content of a plan for ensuring 30-year longevity at the aggregate level.</p>	
167	We agree with some of the proposed clarifications.	Thank you for your feedback. No response is needed.
168	We feel the proposed revisions place too great an emphasis on 30 year longevity when this timeframe is somewhat arbitrary and project longevity is hard to demonstrate. 30 year project longevity seems particularly disconnected from the period of risk of reversal for ALM projects, which are different from forestry projects with merchantable timber that may grow in value each year and present higher risk of reversal over time.	Verra thinks it is important that projects demonstrate at a minimum they can achieve 30-year longevity. Therefore, Verra will not change this requirement in the AFOLU Non-Permanence Risk Tool for ALM projects at this time. However, this update will allow grouped projects (which the vast majority of ALM projects are) to demonstrate longevity at the aggregate level creating some flexibility for these project types. Verra agrees that the risk of a full reversal associated with some ALM projects may decrease over time after the barriers to practice change have been overcome and the farmer has experienced potential yield or other benefits from their management changes.
169	Shell agrees with the proposed loss event amendments. However, there should be further guidance on loss events such as when an instance leaves a project. For example, if aggregated with thousands of small farms, the loss of a single farm may be considered de minimis. As such, projects should be afforded the opportunity to demonstrate lost instances as inconsequential to the overall scale of the project as a whole.	The VCS Program defines a loss event as any event that results in a loss of more than five percent of the previously verified emission reductions and removals due to losses in carbon stocks in pools included in the project boundary that is not planned for in the project description (e.g., harvesting as set out in management plans and described in the project description is not a loss event). Therefore, the loss of a single farm would be de minimis if the

		farm contributed less than five percent of the previously verified emission reductions and removals.
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1.5.2 Can non-permanence risk associated with landowner contract lengths of less than 30-years be appropriately managed to ensure 30-year project longevity in grouped projects and/or nongrouped projects with multiple activity instances? And if so, how?

Comment #	Issue Raised	Verra Response
170	<p>Yes, this non-permanence risk can be managed at the project level for landowner contracts of lengths less than 30 years. The project at the aggregate level would be responsible for maintaining permanence, and the less-than-30-year instances would still be responsible for the same mechanisms for permanence as currently used (assessing non-permanence risk, and contributing to the buffer pool, and long-term remote monitoring). For example, credits generated from an instance that leaves the project and does not re-enroll in another after 20 years would be monitored for permanence from years 21 – 121.</p> <p>Another alternative could be adding additional measures in the non-permanence risk tool that show the increased risk for projects that have 30-year longevity at the project level but not the instance level, as opposed to counting all those instances who do not make it to the 30-year period as lost.</p>	Verra has revised the update to more clearly state that grouped projects where contract lengths with individual project activity instances are less than the project longevity, the “without legal agreement or requirement to continue the management practice” in Table 4 shall be used to determine the project longevity risk rating.
171	We find Verra’s approach incentivizes project proponents to creatively manage non-permanence risk among their participating landowners. Project proponents can manage for 30-year longevity through a number of strategies including i) enrolling new landowners to compensate for landowners that exit the program prior to 30 years, ii) developing non-carbon finance funded business models	Verra has revised the update to more clearly define how project proponents can demonstrate a plan for maintaining project longevity at the group level. This includes requiring project proponents to describe how they will encourage contract renewals

	<p>that incentivize protection of the carbon stocks after initial sequestration (such as improved market access for sustainably produced food, fiber, and timber), and iii) providing incentives and support for landowners to renew contracts that are shorter than 30 years. With these strategies, even if a given project proponent fails to do so well, then the pooled buffer will compensate the atmosphere accordingly.</p>	<p>and expand their projects (e.g., by enrolling new landowners) to compensate for potential losses. Since projects with multiple activity instances cannot add new instances to the project after their start date, Verra has decided to limit this update to grouped projects.</p>
172	<p>Only for projects using tonne-year accounting. For the rest, it would not be possible.</p>	<p>Verra thinks that longevity can be maintained at the group level through several mechanisms. For example, enrolling new instances to compensate for instances who exit the program before the 30-year longevity period ends and incentivizing instances to extend their contracts. Please see the final update and responses to the other comments for additional information. Also, please note that Verra has limited this update to grouped projects since projects with multiple activity instances cannot add new instances to the project after the start date.</p>
173	<p>Yes, by placing the obligation on the project developer to maintain permanence (and demonstrate as much through monitoring and reporting) on the activity instances regardless of landowner contract length, or face the penalty of assuming reversal if and when the activity instance leaves the project (notwithstanding the scenarios described in our response to the question above).</p>	<p>Thank you for the feedback. Verra has provided more explicit guidance on how longevity can be maintained at the group level in the final update.</p>
174	<p>At Agoro Carbon Alliance, we see the following mechanisms as being able to mitigate such type of risk:</p> <ul style="list-style-type: none"> <li>• Project developers are able to provide initial training to farmers on the successful implementation of regenerative agricultural practices</li> <li>• Project developers can provide continuous support to the farmers through training and education on implementing regenerative agricultural practices over the project lifetime</li> </ul>	<p>Verra has included the provision of ongoing training and support as a example of one way project proponents may incentivize instances to renew their contracts in the AFOLU Non-Permanence Risk Tool.</p>

	<ul style="list-style-type: none"> <li>• Project developers can conduct monitoring of co-benefits and communicate these co-benefits to farmers</li> <li>• Farmers can receiving training and education support after leaving the project</li> </ul>	
175	<p>Yes, non-permanence risk associated with landowner contract lengths of less than 30-years may be appropriately managed to ensure 30-year project longevity in grouped projects and/or non-grouped projects with multiple activity instances. This could happen if a new project activity that was previously part of another VCS AFOLU project has a crediting period that stretches to or beyond 30th year of the aggregate project. The Non-Permanence risk can be managed through buffer stocks and tonne-year accounting if adopted.</p>	<p>Thank you for your feedback. No response is needed.</p>
176	<p>Risk of reversal in the ALM context largely stems from the financial risks to private landowners or climate/market/environmental conditions that lead to one-time or longer-term practice reversals; it is more likely a farmer will reverse practices or drop out of a carbon project if practice changes negatively impact yields, require overly burdensome/labor-intensive activities, or are highly costly and the carbon credit revenues and/or other co-benefits (such as improved soil health or reduced fertilizer or herbicide inputs) do not make up for these downsides. In the context of a grouped project working with private landowners, especially ALM projects, we feel that the risks of non-permanence can be effectively managed at the project level even with farmer contracts shorter than 30 years by: 1) ensuring sufficient program scale and diversification of ownerst; 2) developing vesting schedules and using contract lengths that keep growers in the carbon project through the highest risk time period—the initial years of new practice adoption; 3) using contract renewal and continuation terms that keep participants in the program and achieve long-term non-permanence risk reduction without onerous commitment terms; and 4) continuing to monitor project instances that leave the program, such as through the use of remote sensing, to determine if project activities and, thus, carbon removals are maintained, which may indeed be the case.</p>	<p>Verra has revised the update to more clearly define how project proponents can demonstrate a plan for maintaining project longevity at the group level, which includes some of the suggestions that you have made (e.g., contract renewal, ongoing monitoring, etc.).</p>
177	<p>Shell does not agree. In ALM projects there is uncertainty around reversals and their impact on SOC. As such it is hard to quantify the loss without follow-up</p>	<p>Projects are still required to ensure 30-year longevity, and therefore, project proponents will</p>



	<p>measurements, as such conservatively it is safe to assume total loss. Allowing less-than 30-year non-permanence with certain projects seems risky: it would be more appropriate for such projects to take advantage of tonne-year accounting if they are unable to commit their land for the required time to guarantee permanence.</p>	<p>continue to need to commit to this duration. However, this update has clarified that contracts with individual landowners (e.g., farmers) in a grouped project can be less than 30-years. If an instance (e.g., individual landowner) leaves a grouped project early, the project proponent will need to assume that all the carbon associated with the instance is lost and deduct this loss from its total emission reductions and removals in the next verification period; or continue to monitor the instance and quantify and account for any losses when they occur. The project proponent will also need a plan in place to help mitigate the risk of several instances leaving at the end of their contracts and potentially reversing their practices. This plan may include a strategy for replacing instances that leave with new instances, for example. Greater detail has been added to the update to clarify some of the approaches project proponents can use to mitigate this risk.</p>
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1.5.2.1 Can this risk be managed if none of the instances in the aggregate project have 30-year contracts? And if so, how?

No comments received for this question.

1.5.3 Should Verra also allow project proponents to monitor instances that leave a project and do not immediately join another project for loss events rather than require them to immediately assume a loss? If yes, how should these instances be required to be monitored (e.g., using remote sensing, as per methodology requirements)?

Comment #	Issue Raised	Verra Response
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178	<p>Yes, this should be allowed, particularly in tandem with Verra’s LTRMS. This will make landowner contracts of less than 30 years a viable option for projects wishing to offer them (and to landowners wishing to participate in them who are hesitant to participate in longer agreements), whereas the requirement to count those who do not re-enroll as a reversal makes shorter landowner agreements not a viable option for a program who would be forced to compensate for potentially a large amount of losses that may or may not have occurred. This presents untenable risk to project proponents and their investors that make the projects possible, and is not based on the reality of what is happening on the landscape.</p> <p>We believe remote sensing is a viable option for this, especially given Verra’s previous and upcoming deep research into developing its LTRMS. It could also be an option for the project proponent to remotely monitor this independently of the LTRMS, as could be set out in a monitoring plan or project description.</p>	<p>Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.</p>
179	<p>Verra should permit this approach based on the principles of conservativeness and accuracy. It would be overly conservative to assume a loss event immediately; remote sensing, combined with appropriately conservative default factors for biomass loss, can easily reach an acceptable level of accuracy to ensure permanence. There is no scientific basis for assuming a complete loss of carbon stocks on the day a forest exits a carbon program.</p>	<p>Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.</p>
180	<p>Yes. Such requirements will be different for different project types. In addition, options are likely to evolve over time, so it is inadvisable for Verra to lock in specific monitoring approaches via methodology requirements. Project proponents should propose and seek approval for their preferred monitoring approach(es).</p>	<p>Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval).</p>

		For additional information, please see Section 3.2.15 of the VCS Standard.
181	Absolutely yes, by whatever means are available to enable a VVB to determine that no loss event has occurred, to a reasonable level of assurance.	Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.
182	No, Verra should not allow project proponents to monitor instances that leave a project and do not immediately join another project for loss events rather than require them to immediately assume a loss, unless there is evidence the project activity instance will eventually join another project. If there are strong prospects of the project activity instance joining another project, the instances should be monitored using reliable methodologies, including field sampling, remote sensing, and other credible methodologies that generate precise and accurate activity data for estimation of ERRs.	Thank you for your feedback. Verra has revised the update to allow project proponents to monitor instances (on a case-by-case basis with Verra approval) and account for losses when they occur given technological advances in remote sensing and the level of support for this change from other commenters. Nonetheless, Verra agrees that reliable methods must be used and where this is not possible projects should assume an immediate loss.
183	Yes, Verra should allow projects to monitor project instances that have left the project for loss events rather than assume a full reversal. However, monitoring requirements should be defined in the methodology or otherwise approved by a VVB, and the principle of conservativeness applied where appropriate, i.e. if maintenance of a practice change or project activity cannot be confirmed remotely, the project should assume a loss. There may be several technologies or approaches that may work well for this purpose—especially remote sensing—but without protections could be easily gamed.	Verra agrees that the approach for monitoring should be conservative and shall follow the monitoring requirements in the methodology or be approved; however, we've clarified that the approval would be on a case-by-case basis as granted by Verra.

184	Shell agrees. If instances are open to such an arrangement it could benefit both the instance and the developer.	Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.
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1.5.4 Do you agree with the requirement for the new project proponent to assume full responsibility for the permanence of all credits issued by an instance since its start date when an instance joins its project from another project (unless tonne-year accounting is used)?

Comment #	Issue Raised	Verra Response
185	No, we do not agree with requirement. We don't see a need to pass the responsibility for the original credits issued to the new project, when the original project could still be responsible. If the benefit credited to the original project is truly separate from the benefit credited to the new project, couldn't and shouldn't the permanence of those benefits be similarly able to be separate?	Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Further, Verra has tentatively decided that it would be too difficult to proportionately allocate responsibility for loss or reversal events to each project proponent (past and present) when an instance changes VCS projects. The new project proponent will have more influence on the permanence of project activities moving forward (to some extent). Therefore, it would be unfair to subject past project proponents to losses that they

		cannot influence (e.g., losses due to poor management).
186	Yes, new project proponents should assume full responsibility for permanence as it would be impractical to parse out what % of a loss event should be allocated to the current versus the previous proponent. Additionally, to make this responsibility fairer, any release of buffer credits over time should be awarded to the new project proponent.	Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information.
187	Yes. While it may seem unfair to the new project proponent, it is also impractical to maintain participation of the original project proponent. This transfer of liability should therefore be reflected in the terms of transfer between the parties.	Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information.
188	Yes, we agree that Verra should allow project proponents to monitor instances that leave a project and do not immediately join another project for loss events rather than require them to immediately assume a loss. But this should be provided for within a given timeframe after which the project activity instance should lose VCUs. The project activity instances should be monitored according to the methodology requirements and any approved published methodologies.	Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.
189	Yes, we fully agree with this approach and do not think any different approach would be suitable.	Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information.

190	Shell agrees.	Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information.
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### 1.5.5 Are any further clarifications on managing non-permanence risk in grouped projects and nongrouped projects with multiple activity instances needed? And if so, what further guidance would be helpful?

Comment #	Issue Raised	Verra Response
191	<p>Yes, further clarification is needed on the proposed update to section 3.2.15 of the VCS Standard. As written, it reads as though any time an instance leaves a project and does not join another, the credits generated from that instance should be counted as lost. If this proposal goes through, some time bounds should be clarified. For example, if the instance was in the project for at least 30 years, does it still need to be count as lost when it leaves? It should be assumed that at some point (whether in 30 years or 100 years), nearly every instance will leave the project (and at some point, all projects). The way this is written as-is would mean that every credit generated from any instance would count as lost later when that instance leaves and does not join another project.</p> <p>Further clarification could also be used for instances in which an ownership may remain partly in one project and partly in another. For example, let's say a landowner with 300 hundred acres wanted to move 100 of those acres to another project and re-enroll the other 200 in the original project after the original project period. How this would be handled is unclear. Would the original project retain responsibility for 2/3 of the permanence liability, and 1/3 for the new project, even though acres don't necessarily equate to where the impact was generated? We would propose removing the transfer of permanence accountability to the new proponent to account for this, but if that transfer does happen, then more clarity is needed here.</p>	<p>Verra has revised the update to allow project proponents to either: 1) conservatively assume a complete loss when an instance leaves a project and does not join another project; or 2) continue to monitor the instance for the remainder of the instance's 30-year longevity period following the requirements of the methodology or in some limited cases using remote sensing (with Verra approval). For additional information, please see Section 3.2.15 of the VCS Standard.</p> <p>Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information. Further, Verra has tentatively decided that it will not allow partial transfers of instance areas.</p> <p>Last, Verra has decided not to move forward with incorporating tonne-year accounting into the VCS Program at this time due to the diversity of</p>

	<p>Lastly, what would happen if an instance moved from a non-tonne-year project to a tonne-year project, and the total time the instance was being credited was less than 30 years? And how would the tonne-year project take on the permanence obligations of the original project if it is not contributing to the buffer pool or assessing non-permanence risk, because it is a tonne-year project?</p>	<p>perspectives on this topic. Verra may revisit this decision at a future date. However, before introducing tonne-year accounting into the VCS Program, Verra would have a second consultation on this subject with proposed revisions based on the feedback received through this consultation.</p>
<p>192</p>	<p>Please review and consider whether the guidance is sufficient to handle situations where an activity instance may generate negative carbon sequestration over time and subsequently leaves the project. Or if two instances leave a project, one with positive contributions to the carbon sequestration and one with negative contributions. These negative impacts are accounted for immediately in the project level crediting, and it is necessary to later account for them when they leave in order to ensure that reversal obligations never exceed total credit issuance.</p>	<p>Thank you for the feedback. Verra feels that this is a related issue, but does not directly change the proposed update. Nonetheless, we are happy to discuss and explore this further to determine if other future updates are needed to clarify how we handle reversals associated with instances that have not generated any carbon credits.</p>
<p>193</p>	<p>The new guidance states: "Project longevity is assessed at the project level, not at the individual instance level, in grouped projects and non-grouped projects with multiple project activity instances."</p> <p>It should be the same for reversal risk. Currently, the program requires developers to run the risk tool separately for each project activity instance as if it were a stand-alone project, and contribute to the buffer at a level that assumes a loss of carbon at such an instance is necessarily a reversal for the project as a whole. In aggregations, even a complete loss at one or even several instances can be overwhelmed by gains at the other instances, such that across the aggregation, no reversal has occurred.</p> <p>VCS needs a mechanism to account for the basic fact that reversal risk dissipates as aggregations grow. Mathematically, a 15% risk per ranch shrinks to less than 0.0002% with seven ranches. We are not suggesting, though, that a project with, say, 20 ranches should contribute nothing to the AFOLU buffer. There are systemic risks, such as drought, that if they affect one ranch are likely to affect them all. We are suggesting that Verra modify its risk tool to isolate such systemic risks from instance-level risks, such as conversion to cropland or reversion to tillage, and tick down only the latter based on aggregation size. VCS should also build in a mechanism to account for the</p>	<p>Please note that Verra does not currently require project proponents to run the AFOLU Non-Permanence Risk Tool separately for each project activity instance in a grouped project or project with multiple activity instances, as if it were a stand-alone project. Where risks are relevant to only a portion of the project geographic area, the geographic area may be divided (See Section 2.1.3 in the AFOLU Non-Permanence Risk Tool); however, it is not necessary to complete the analysis for every individual project activity instance.</p> <p>This update does not include a mechanism to account for the potential lower reversal risk associated with grouped projects and projects with multiple activity instances. Nonetheless, Verra appreciates the feedback and may consider this in potential future revisions.</p>

	<p>relative size of the instances in the aggregation. An aggregation of 10 ranches has a higher risk across the aggregation if one ranch accounts for 75% of the acreage than if each accounts for 10%. We expect a good statistician could crack that nut.</p> <p>By not accounting for the dissipation of risk across aggregations, VCS is, at the margin, actively impeding the adoption of regenerative farming and grazing practices, by overtaxing them. These projects need every penny they can get to de-risk practice changes and motivate farmers and ranchers to make them.</p> <p>On a separate point, Verra should absolutely allow project proponents to monitor instances that leave a project and do not immediately join another project for loss events rather than require them to immediately assume a loss. We don't suggest specific monitoring requirements - just whatever it takes in the particular circumstances to enable the VVB to conclude, with reasonable assurance, that no loss event has occurred.</p>	
194	<p>Verra should further clarify how project activity instances are embedded in existing projects and implications for crediting period and non-permanence risk assessment and mitigation.</p>	<p>Project activity instances may be added to grouped projects over time as long as they meet a set of pre-defined eligibility criteria (See Section 3.5.15 of the VCS Standard). Guidance on crediting periods is found in Section 3.8 of the VCS Standard. Instances added to a grouped project after the projects start date are only eligible for crediting from the start date of the instance through to the end of the project crediting period (See Section 3.15.16 of the VCS Standard).</p>

### 1.5.6 General comments

Comment #	Issue Raised	Verra Response
219	<p>We believe this section needs additional clarification as to how 30-year longevity can be met at the aggregate level. For instance, if a grouped project operates with 20-year contracts, once individual landowners reach the end of</p>	<p>Verra has revised the update to more clearly define how project proponents can demonstrate a plan for</p>



	<p>their contracts, is Verra thinking it would be sufficient for the project proponent to replace them with new instances? This wouldn't address the potential for reversal from the first set of landowners after their contracts expire, but it seems unclear as to what Verra is proposing here. Does a project proponent need to continue to monitor those instances from the time the contract expires until year 30? Would this need to be guaranteed with a contractual agreement? Will those instances be monitored as part of Verra's proposal for long-term permanence monitoring? The logistics for implementing "30-year longevity at the aggregate level" is unclear, so it is challenging to assess whether this is appropriate. Furthermore, would non-ALM AFOLU instances be held to the minimum 20-year crediting period (Section 3.8.3 of the VCS Standard), or could that also be met on an aggregate basis? There seems to be a great degree of latitude left to project proponents to implement this policy when it would be better defined at the program level. This has the potential to yield wildly inconsistent results between projects.</p> <p>As mentioned above in our comments on TYA, project commitment terms cannot be evaluated in a vacuum. Project longevity is relevant to permanence, as well as additionality, and leakage risk. Credible, real, permanent carbon outcomes need strong additionality claims and mechanisms for accounting for leakage. Longer-term project commitments help reduce the risk of market-based leakage, and provide grounds for defensible additionality of baseline claims. For instance, if the underlying claim for an IFM project's baseline is avoided harvest – it may be reasonable to make claims about whether baseline harvests would have taken place over 30 years, but far more uncertain under shorter timeframes. We suggest that Verra consider the implications on additionality, baseline formation, and leakage when considering shorter minimum time commitments from project instances– with or without the use of TYA.</p>	<p>maintaining project longevity at the group level. If an instance (e.g., individual landowner) leaves a grouped project early, the project proponent will need to assume that all the carbon associated with the instance is lost and deduct this loss from its total emission reductions and removals in the next verification period; or continue to monitor the instance and quantify and account for any losses when they occur. The project proponent will also need a plan in place to help mitigate the risk of several instances leaving at the end of their contracts and potentially reversing their practices. This plan may include a strategy for replacing instances that leave with new instances, for example. Greater detail has been added to the update to clarify some of the approaches project proponents can use to mitigate this risk.</p>
247	<p><b>NON-PERMANENCE RISK IN GROUPED PROJECTS AND PROJECTS WITH MULTIPLE ACTIVITY INSTANCES</b></p> <ol style="list-style-type: none"> <li>Section 6.2, 2.2.4,3 states "For grouped projects and non-grouped projects with multiple project activity instances where some of the contract lengths with instances are less than 30 years, a plan for ensuring 30-year longevity at the aggregate level shall be established."</li> </ol>	<p>Verra has included more details on what a plan for ensuring 30-year longevity at the aggregate level should contain.</p>

	<p>a. Verra/VCS should detail explicit requirements of what a “plan for ensuring 30-year longevity at the aggregate level” should consist of, including penalties assessed for not meeting Project Longevity requirements, as anything short of legal contracts or clear established requirements and penalties will result in voluntary non-permanence.</p>	
<p>259</p>	<p>Non-permanence risk and grouped projects (clarifying questions)</p> <ol style="list-style-type: none"> <li>1) Would permanence be calculated by weight in the proposed aggregated solution (and thus the aggregated permanence would be set at a minimum of 30 years)? For example, an aggregated project with x number of projects with 50 years of permanence and x number with 10 years of permanence could weight the overall contribution on an aggregated scale to demonstrate an overall 30-year permanence.</li> <li>2) Would buffer contributions be associated with individual instances or calculated per project? How does Verra intend to track buffer contributions by instances that move between projects?</li> </ol>	<ol style="list-style-type: none"> <li>1) Project longevity will not necessarily be calculated using weighted averages. Projects are still required to ensure 30-year longevity, and therefore, project proponents will continue to need to commit to this duration. However, this update clarifies that contracts with individual landowners (e.g., farmers) in a grouped project can be less than 30-years. If an instance (e.g., individual landowner) leaves a grouped project early, the project proponent will need to assume that all the carbon associated with the instance is lost and deduct this loss from its total emission reductions and removals in the next verification period; or continue to monitor the instance for the remainder of the 30-year longevity period and quantify and account for any losses when they occur. The project proponent will also need a plan to mitigate the risk of several instances leaving at the end of their contracts and potentially reversing their practices. This plan may include a strategy for replacing instances that leave with new instances, for example. The update has added greater detail to clarify some of the approaches project proponents can use to mitigate this risk.</li> </ol>

		<p>2) Verra will not allow subsequent project instance registrations in the immediate term; however, Verra has begun drafting a plan to allow transfers, tentatively scheduled to start in Q4 2024. Please see the announcement on subsequent project instance registrations for additional information.</p>
<p>264</p>	<p>Non-Permanence Risk</p> <p>IETA requests further clarity on the proposed updates for non-permanence risk, specifically related to how 30-year longevity can be met at aggregate level. We are concerned that under this proposal as written, it will not appropriately address risks of reversal, but require clarification from Verra to properly assess these proposed updates.</p>	<p>Projects are still required to ensure 30-year longevity, and therefore, project proponents will continue to need to commit to this duration. However, this update clarifies that contracts with individual landowners (e.g., farmers) in a grouped project can be less than 30-years. If an instance (e.g., individual landowner) leaves a grouped project or project with multiple activity instances early, the project proponent will need to assume that all the carbon associated with the instance is lost and deduct this loss from its total emission reductions and removals in the next verification period; or continue to monitor the instance for the remainder of the 30-year longevity period and quantify and account for any losses when they occur. The project proponent will also need a plan to mitigate the risk of several instances leaving at the end of their contracts and potentially reversing their practices. This plan may include a strategy for replacing instances that leave with new instances, for example. Greater detail has been added to the update to clarify some of the approaches project proponents can use to mitigate this risk.</p>



## 1.6 Peer-Reviewed Literature Requirements

### 1.6.1 Do you agree that the Science Citation Index is an appropriate database to vet peer-reviewed literature, or would you recommend an additional or alternative source?

Comment #	Issue Raised	Verra Response
195	<p>Yes, we support this database, though it may be wise to provide a way for the specific database to be updated easily if that database at some point becomes no longer the most reputable source. We do not support this as the only acceptable database, however, and believe this could create an equity issue in which the most up-to-date, relevant research is available only locally to an area of the world, and is not included in this database (which lacks depth of research in some counties of the world, and can be biased to be mostly focused on western counties). There must be an option to use high-quality literature not available in this database to make methodologies and projects possible based on the best local research available for all areas in the world.</p>	<ol style="list-style-type: none"> <li>1) We will initiate a program update to change the requirement to use SCI as a first filter as needed if there is evidence that the quality of journals listed or literature cited in SCI declines.</li> <li>2) We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.</li> </ol>
196	<p>Yes, it is the most appropriate proposal.</p>	<p>No response needed.</p>
197	<p>Web of Science: Science Citation Index is a high quality and widely used database, but we do not agree that it should be used as a single mechanism to vet peer-reviewed literature.</p> <p>First, access to Web of Science is based on a paid subscription. Therefore, this proposed change would likely cause limitations to many, compared to access to a more open database like Google Scholar.</p> <p>Second, and more importantly, Web of Science is very broad - so, too, is Google Scholar and other peer-reviewed databases. The appropriateness of using peer-reviewed sources for a given default factor depends on the individual studies the peer-reviewed sources are reporting, how these studies were designed, and how they were received in the expert scientific community when published. Being indexed in Web of Science doesn't ensure any of these needs, making it unlikely to 'eliminate ambiguity and enhance assurances' around scientific integrity. Further, it does not ensure that a factor is drawn</p>	<ol style="list-style-type: none"> <li>1) It is free to search SCI to find out whether a journal is listed or not, <a href="https://mjl.clarivate.com/search-results">https://mjl.clarivate.com/search-results</a>. The proposed requirement is that the journal be indexed in SCI, not that it is used as a search engine to find peer-reviewed literature that has relevant data on default factors.</li> <li>2) We added a new clause that that the primary source of the default factor must be listed, if the paper used to establish the default factor is itself not the source.</li> <li>3) Pre-approving and vetting journals would be exceedingly complex and is outside of Verra's</li> </ol>

	<p>from its primary source. Even if peer-reviewed, a factor should not be used from a paper if the paper does not cite the original research from which the factor was derived.</p> <p>Instead, it would be more appropriate to identify a list of pre-approve journals from which peer-reviewed publications can be sourced. This list should be regularly updated with independent expert input to ensure it remains current with the best sources of information. Projects should be allowed to petition using peer-reviewed sources that are from a pre-approved journal, giving evidence for the quality of the study and the quality and independence of the review process it went through.</p>	<p>domain. Rather, we want to point to databases that do this as their business, i.e. SCI.</p>
198	<p>The Web of Science (WoS) is certainly an appropriate index to vet peer-reviewed scientific literature. However, some other high quality materials that aren't published in scientific journals, like IPCC and FAO reports, could be used as well. For this reason we would like to suggest the inclusion of additional databases such as Google Scholar or "USDA Ag Data Commons" to source high quality reports and data not published in journals.</p>	<p>Google Scholar allows any individual author to upload their paper for indexing without any vetting, hence does not include quality control criteria and is not sufficient for the intended purposes.</p>
199	<p>We are concerned this would limit the ability to use newer, better data that hasn't yet made it to the database.</p> <p>Clarification on the definition of "default factors and/or standards" to which this requirement would apply would be helpful.</p>	<ol style="list-style-type: none"> <li>1) We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.</li> <li>2) I don't know what is meant by "standards" in S2.5.2. This however is not part of the proposed update. The term default factors is clear and the updates pertain solely to default factors, not to "standards".</li> </ol>
200	<p>We agree that the Science Citation Index is an appropriate database to vet peer-reviewed literature.</p>	<p>No response needed.</p>
201	<p>The Application of the Science Citation Index is an appropriate database for examining peer-reviewed literature. We understand the choice of this basis to address the question about the quality of scientific works used in the projects,</p>	<p>We included a new clause to allow project proponents to propose information sources not</p>

	<p>but we do not fail to worry about the non-possibility of referencing authors and works with credibility, but published in smaller and national journals (often linked to research institutes and/or universities). Within the scope of forest carbon projects, we deal with several specific fronts and parameters/variables that are not always published in journals, mainly due to the punctuality and size of the research, such as specific information for species or gender regarding basic density at different ages, carbon content, expansion factor, root-to-shoot, among others. Thus, if only the Science Citation Index is chosen as a database, there is a risk of exclusion from other trusted sources that will not be covered in this selection. Perhaps a selection/list of researchers is an option for an additional basis, in which the presence of this researcher (either as author, co-author or even advisor) could give credibility to the article, technical series or thesis.</p>	<p>listed in SCI and which must be accompanied by evidence that the source is robust and credible.</p>
202	<p>We would propose that allometric equations from gray literature should be allowed when peer-reviewed sources are not available.</p>	<p>We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.</p>
203	<p>Shell agrees. This is seen as an improvement to the standard and key that it still allows for regional journals to be included.</p>	<p>No response needed.</p>

### 1.6.2 Are there other ways besides journal databases to vet the quality of peer-reviewed literature?

Comment #	Issue Raised	Verra Response
204	<p>We support this change, though we note that developers should not be overly reliant on indexing in the Web of Science as indicative of high-quality research. Even when considering peer reviewed publications, there still needs to be critical evaluation of primary sources and the claims that are made when citing a peer reviewed publication. We further note that not all agency publications, such as USFS reports, are indexed in the Science Citation Index - we support continued acceptance of those sorts of publications and reports regardless of indexing status.</p>	<ol style="list-style-type: none"> <li>1) We added a new clause that that the primary source of the default factor must be listed, if the paper used to establish the default factor is itself not the source.</li> <li>2) We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied</li> </ol>

		by evidence that the source is robust and credible.
205	If there were any other option, Verra should validate the alternative.	No response needed.
206	<p>The best way to vet the quality of peer-reviewed literature is to engage independent scientific experts to review and approve how literature is being used. This could be included as part of the project’s process for submission- for example, a VMD53 Model Validation Report. At the very least, projects need to make their literature sources publicly available in order to give access to the larger scientific community interested in vetting protocols, methodologies, and projects.</p> <p>Critically, peer-reviewed literature can be limited in many parts of the world. In these situations, finding appropriate publications for certain regions, management systems, practices, etc may require novel use of publications, or inclusion of publications that are not published in the most impactful journals. For example, publication fees can limit publication options for researchers in many parts of the world. Petitioning to include publications outside the pre-approved journal list will be critical for a project operating in these types of circumstances.</p> <p>Ensuring rigor while minimizing limitations requires transparency as well as vetting processes that engage the independent scientific expert community.</p>	<p>1) Individual methodologies could include additional scientific vetting provisions for peer-reviewed literature but at the VCS Methodology Requirements level that would be onerous. Rather, we included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible. This should address the commenter’s concern around inclusivity and costs.</p>
207	Demonstration of appropriateness and quality of the data through attestation from an expert in the field.	We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.
208	There are other credible scientific institutions (i.e. IPCC, CGIAR) that are appropriate to vet peer-reviewed literature.	We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.



209	Journal databases are generally managed by companies with an incentive to be more inclusive - by providing access to more journals, they can charge higher fees to universities. Further, there's a broad range in the quality of literature across peer-reviewed journals. Impact factors or other journal scoring metrics could help to filter out lower quality journals, although this approach would also run the risk of unfairly excluding emerging journals or ones from specific geographies, particularly in areas that are not primarily English-speaking.	We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.
210	Shell agrees.	No response needed.

### 1.6.3 General comments

Comment #	Issue Raised	Verra Response
211	Page 7, section 2.4.3. I think the math is misrepresented in the text. If the Discount Factor is a negative percentage as stated then Conservatively discounted estimate = Estimate * (100 + Discount factor)/100 would be correct. Anybody that has worked on this stuff to any degree should be able to figure it out, but given my experience with auditors, you can short stop a bunch of questions by correcting it early in the process.	Yes, thank you. We have removed the minus sign.
212	While I agree that Web of Science is an excellent and reputable tool for determining a high quality of peer review, it's scope does not often include dissertations. Dissertations are important because they often convey the most recent research. Given that it can take more than a year to get research published in a respected journal, or longer in a flagship journal. In a cutting edge arena such as climate change and plastic pollution, having a rigid standard like Web of Science may hinder the latest research being acceptable.  If the research being presented is from a university then that should be a strong consideration of acceptability.	We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.

	<p>If the research is still suspect, then VERRA can send it out for its own peer review using its network of experts..... still not perfect.</p> <p>VERRA really should have enough scientific expertise in-house to be able to write an informed rebuttal if research is not acceptable. Likewise, it should be able to use the same expertise to send the research to the appropriate sources for peer review. Not an easy task, I know; I have had an article rejected because it was sent to a totally inappropriate peer reviewer, ironically I knew one of them and I was able to discuss with him why he had miss interpreted the science. Alas, it was too late for the publication, but was a valuable lesson.</p>	
220	<p>We support Verra’s changes to provide additional guidance on what qualifies as appropriate peer-reviewed literature, and have no objections to this proposed index.</p>	<p>No response needed.</p>
224	<p>Section 7: Peer-Reviewed Literature Requirements</p> <p>There are a few approaches Verra might consider to vet the quality of peer-reviewed literature:</p> <ul style="list-style-type: none"> <li>• The ISI Impact Factor for a journal, for example, can give insight into such quality. Similarly, peer-reviewed literature should not be listed on Beall's List, a common tool used by researchers to identify disreputable journals.</li> <li>• Additionally, Verra could examine the citation rates of individual journal articles, although this needs to be corrected for the number of years that a journal article is in existence (i.e. a paper cited 20x per year has more community support than one cited 2x per year, assuming those 20 people citing it aren't pointing out that it is a fatally-flawed analysis).</li> </ul>	<p>We want to steer clear of setting thresholds via journal impact factors and/or citation rates for individual papers which would set an even higher bar than the journal simply being listed in SCI. Beall's List is an interesting resource but it is maintained by an individual without any institutional backing and is not appropriate for referencing in the VCS Standard.</p>
235	<p>Bluesource supports efforts to standardize and vet peer-reviewed literature that is accepted across all methodologies and project types. While the Web of Science: Science Citation Index is a good resource, there need to be some exceptions to be able to utilize government resources, such as US Forest Service technical publications, or state government reports. In addition, there may be reputable industry publications that may be valuable resources that are not peer reviewed. We recommend that Verra provide some flexibility in at</p>	<p>We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.</p>

	least allowing the use of reputable government technical reports and publications in addition to the Web of Science: Science Citation Index.	
252	Refinement of requirements for qualifying acceptable peer-reviewed literature In general terms we agree with the idea of needing clarification on what is a quality source including peer reviewed literature when developing default factors. This makes the standard more transparent and reliable. However, it should be considered that this central library does not include in many cases international accredited universities as source of reliable information. For projects implemented in developed countries, student thesis and other research papers are source of excellent information, especially in countries where the reality of the land use change is different between regions. We are concerned that in many cases important sources of information are published as scientific articles.	We included a new clause to allow project proponents to propose information sources not listed in SCI and which must be accompanied by evidence that the source is robust and credible.
260	Peer Reviewed Literature (additional recommendation)  References lists should be included as an appendix following APA or MLA formatting requirements. This would allow better scrutiny of reference sources rather than relying solely on project description footnotes.	This proposal is outside of the scope of the proposed update. As long as the citation provided in a given document clearly points to the source paper, the citation formatting (e.g., APA or MLA) is unnecessary to specify
265	Requirements for Peer-Reviewed Literature  IETA supports Verra's proposed updates to provide guidance on qualifying peer-reviewed literature.	No response needed.