PUBLIC CONSULTATION ON VERSION 5 OF THE VERIFIED CARBON STANDARD PROGRAM

September 19, 2024

INTRODUCTION

Verra is launching a public consultation to gather stakeholder feedback on the initial updates for the next version (Version 5) of the Verified Carbon Standard (VCS) Program.

About this consultation

The proposed updates in this consultation contribute to the three priority objectives that Verra has identified for VCS Version 5:

1) Increase the ambition for program integrity. The consultation includes proposals to refresh the VCS Program principles and the program fundamentals of additionality, conservativeness, and permanence. It also includes high-level plans to raise the bar for safeguards, stakeholder engagement, and sustainable development goal contributions through more rigorous requirements and a more program-agnostic approach to safeguard assessments.
2) Improve the program's transparency and usability. This consultation also marks the launch of the Verra Digital Project Submission Tool and includes a proposal to enable the issuance of credits for projects using a fully digital measurement, reporting, and verification (DMRV) system integrated into the tool, which is a key change to get credits to market sooner and enhance data quality and transparency.
3) Ensure that the VCS Program's scope is fit for purpose to maximize impact. The consultation proposes to revise VCS Program scope exclusions and introduce a new sector for ocean carbon activities to unlock new sources of climate action. Verra also proposes to phase out the concept of approved greenhouse gas (GHG) programs (e.g., Clean Development Mechanism) to ensure all methodologies and projects accepted into the VCS fully meet evolving VCS Program requirements.

The consultation document includes specific proposals for stakeholder feedback, as well as high-level proposals on potential VCS Version 5 updates. Each proposal includes a background section explaining the rationale behind the proposal. Verra will build on stakeholder feedback to iterate on these and other concepts in the subsequent rounds of public consultation for VCS Version 5.

About the development of VCS Version 5

In early 2023, Verra launched work on version 5 of the VCS Program by running a high-level consultation on the program's rules and requirements. Based on feedback received during this consultation and insights from additional internal and external stakeholder engagement, Verra developed three priority objectives for the next version of the VCS Program: (1) increase the ambition for program integrity, (2) improve the VCS Program's transparency and usability, and (3) ensure that the VCS Program's scope is fit for purpose to maximize impact.

This consultation is the first consultation on proposed changes to the VCS Program for VCS Version 5. Many of the proposed updates are high-level, and Verra will include more specific changes and additional proposed updates in future public consultations on VCS Version 5. The publication of Version 5 of the VCS Program may proceed in phases to enable quicker implementation of updates that are fully developed and awaited by the market.

In conjunction with these updates, Verra is undertaking other organization-wide initiatives that will create an enabling environment for version 5 of the VCS Program. They include improvements to the Verra Registry and digital tools, strengthened oversight of validation/verification bodies (VVBs), and alignment of Verra's sustainable development programs. Verra will run consultations on these organization-wide initiatives over the coming year.

Consultation process and timeline

The planned timeline for implementing the consultation is set out in the table below.

Tentative Dates	Activity
September 19–November 4, 2024	Public consultation period
September 30, 2024	Consultation webinar
Q1 2025*	Second round of public consultation for VCS Version 5 (TBD)
Q2 2025*	Final round of public consultation for VCS Version 5 on full drafts of program documents

* Timing is approximate and subject to change

Comments should be submitted electronically via the provided link to the online public consultation form by 11:59 p.m., Anywhere on Earth (AoE), (UTC−12) Monday, November 4, 2024.

Verra is piloting its digital public consultation form on the Verra Project Hub for this consultation. For instructions on how to use the digital public consultation form, please see the external user guide

published on the consultation announcement. The tool allows users to submit responses and come back to the form to edit completed responses up until the deadline.

Verra recognizes that this is a significant consultation with many topics, not all of which will be relevant to all stakeholders. All questions and sections of the consultation form are optional. We look forward to your feedback. Please let us know if you have any questions as you engage in this consultation or any issues responding via the electronic form by emailing programupdates@verra.org.

Consultation Contents

Use this table to navigate the consultation document and view specific consultation topics.

1 REFRESHING THE VCS PROGRAM FUNDAMENTALS

1.1 Revising the VCS Program principles

1.1.1 Background

The VCS Program principles are a core component of the VCS Program. They provide the basis for the VCS rules and requirements and guide the application and interpretation of these requirements.

Currently, in addition to a set of VCS Quality Assurance Principles on the Verra website, there are two sets of distinct but connected principles within VCS Program documents:

- *VCS Standard, v4.7,* Section 2.2.1. These principles are taken directly from *ISO 14064-2* and apply to the VCS Program rules and requirements to support robust GHG impact quantification.
- *VCS Program Guide, v4.4*, Section 3. These principles describe the shared characteristics of all reductions and removals verified under the VCS Program and issued as VCUs.

1.1.2 Proposal

Verra proposes to consolidate and update the existing VCS Program principles into one set of comprehensively applicable principles. The revised set of principes will align with *ISO 14064-2* and with the Core Carbon Principles (CCPs) developed by the Integrity Council for the Voluntary Carbon Market (ICVCM). The revised set of VCS Program principles will help guide other program update decisions for Version 5 and beyond.

The revised set of VCS Program principles will fall into two categories: quantification and impact. All GHG emission reductions and carbon dioxide removals verified under the VCS Program and issued as VCUs will meet the high threshold for integrity set by these VCS Program principles.

Quantification Principles

These principles apply to the way in which GHG emission reductions and carbon dioxide removals resulting from VCS projects are quantified, assessed, and reported. They guide Verra's development and interpretation of VCS Program rules and requirements to help ensure the credibility and consistency of resulting VCUs. Project developers and validation/verification bodies (VVBs) shall refer to these principles to guide their decision-making where there is room for flexibility or discretion when determining how to quantify, assess, or report reductions and removals in conformance with the VCS Program rules. Verra may cite these principles in project review decisions where discretion is needed.

Quantification Principles	
Accurate and conservative	Reductions and removals are represented fairly, as far as can be judged according to the available data and information, based on sound scientific methods. Uncertainty and bias in quantification are minimized as far as is practical. Conservative assumptions, values, and procedures are used as a moderator to any residual uncertainty and to avoid overestimating reductions and removals.

Complete	All relevant information about the project and its reductions and removals is included in project reporting to support assessment against requirements and procedures. All relevant sources and sinks are included in the reduction and removal calculations.
Consistent	Rules, requirements, methodologies, and assumptions are applied and assessed in a consistent manner to enable meaningful comparisons of GHG-related information.
Measurable	All reductions and removals are quantifiable using recognized measurement tools (including adjustments for uncertainty and leakage) against a credible emissions baseline.
Relevant	The selected GHG sources, sinks, reservoirs, data, and methodologies are relevant and appropriate to the needs of the intended user.
Transparent	Comprehensive and appropriate project and GHG-related information is publicly disclosed in an accessible manner to allow intended users to make decisions with reasonable confidence and to enable scrutiny of mitigation activities, results, and claims.

Impact Principles

These principles describe the shared impact of all project activities and reductions and removals verified under the VCS Program and issued as VCUs. All components of the VCS Program – including the rules and requirements, guidance, templates, methodologies, auditing procedures, and registry – are designed and implemented to achieve these shared impact characteristics for all VCS projects and VCUs. Project proponents and VVBs achieve these principles for their projects by ensuring that they are in full conformance with the VCS Program.

Impact Principles	
Additional	The project activity results in reductions or removals that exceed what would be achieved under a "business as usual" scenario, and the activity would not have occurred in the absence of the incentive provided by carbon markets.
Permanent	Where reductions or removals are generated by project activities that carry a risk of reversal, there are adequate safeguards in place to minimize this risk. Any reversals of reductions or removals that have been credited are compensated.
Contributing to sustainable development and net zero transition	Project activities: • conform with or go beyond widely established industry best practices on social and environmental safeguards, including no-net-harm to the environment, communities, and economies, while delivering positive sustainable development impacts, and • seek to avoid locking in GHG emissions, activities, or technologies that are incompatible with the objective of achieving net zero GHG emissions by mid-century.
Independently verified	All reductions and removals are grounded in independent assurance provided by an accredited validation/verification body with appropriate expertise for the country and sector in which the project activity occurs.
Not double counted	There is no double counting of the reductions or removals; they are only counted once toward achieving mitigation targets or goals.

	Double counting includes double issuance, double claiming, and double use.
Tracked	The Verra registry uniquely identifies, records, and tracks project activities and issued VCUs to ensure credits are identified securely and unambiguously.

1.1.3 Requested Feedback

1) Is it clear that Verra expects all project developers and validation/verification bodies to adhere to the quantification principles when quantifying, assessing, and reporting project and GHG-related information?
2) How can Verra more clearly and effectively enforce the quantification principles in situations where there is room for flexibility or discretion when determining how to quantify, assess, or report reductions and removals in conformance with the VCS Program rules?
3) Are there any principles that you would consider removing or adding? If so, what are they?
4) Verra combined the principles of accuracy and conservativeness in this proposal to address the contradiction between them and emphasize that accuracy is the first priority and conservativeness is used to account for practical limitations to accuracy and to avoid overestimation of reductions and removals within the most accurate approach available. Do you agree with this approach?
5) Are there any principles which are unclear or which you have suggestions for improving? Please be specific in which principles you are referring to and include the proposed changes in your response.

1.2 Additionality: Demonstration of regulatory surplus

1.2.1 Background

The regulatory requirements for additionality ensure that VCUs represent GHG emission reductions or carbon dioxide removals that exceed those required by relevant legal requirements.

The current rules for demonstrating regulatory surplus are provided in the *VCS Standard, v4.7*, Section 3.14.1:

> The project shall demonstrate regulatory surplus at validation and each project crediting period renewal. Regulatory surplus means that project activities shall not be mandated by any law, statute, or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute, or other regulatory framework.

Section 3.2.6(4) of the *VCS Standard, v4.7* also requires projects to "include an evaluation of the impact of new relevant national and/or sectoral policies and circumstances on the validity of the baseline scenario" during baseline reassessment, for projects that are subject to baseline reassessment requirements. This is intended to be treated the same as a regulatory additionality reassessment, which will be made clearer through VCS Version 5 updates.

1.2.2 Proposals

1.2.2.1 Transition from Annex 1 to High Income country lists

The proposed modifications to the *VCS Standard, v4.7,* Section 3.14.1 to align with the CCP Assessment Framework[1] are as follows (corresponding updates would also be made to the *VCS Methodology Requirements*):

> The project shall demonstrate regulatory surplus at [timing of the demonstration of regulatory surplus (see options in Section 1.2.2.2 below)]. Regulatory surplus means that project activities are not mandated by any systematically enforced law, statute, or other regulatory framework.~~, or for UNFCCC non-Annex I countries, any systematically enforced law, statute, or other regulatory framework .~~
>
> 1) For high-income countries:[1] All legal requirements shall be considered enforced.
> 2) For other countries: Legal requirements shall only be considered unenforced where the lack of enforcement is demonstrated by authoritative and up-to-date information relevant and applicable to the project activity.
>
> [1] Source: Country Classification, World Bank Country and Lending Groups, https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

1.2.2.2 Timing of regulatory surplus demonstration

Option A: Demonstration at validation, baseline reassessment, and crediting period renewal, with a reporting-only requirement for interim changes

In this option, regulatory surplus must be demonstrated at validation, baseline reassessment, and at each crediting period renewal. Changes in legal requirements or enforcement would only be considered at those specific intervals. Projects would be eligible for crediting throughout the rest of the crediting period, even if a new legal requirement is created or an existing legal requirement becomes fully enforced. A requirement is proposed for projects to only have to report on interim changes to legal requirements and their enforcement:

> Where a new legal requirement is enacted, or a previously unenforced legal requirement becomes fully enforced, the project proponent must report this change in the next monitoring report.

Regulatory surplus would also have to be demonstrated when changing the applied project methodology, which will be specified in forthcoming guidance from Verra.

Option B: Demonstration at validation, verification, and crediting period renewal, with flexibility for government agreements

In the event that a new legal requirement is enacted or a previously unenforced legal requirement becomes fully enforced, the project activity shall only be credited until the legal requirement takes

[1] CCP Assessment Framework, Section 4, Criterion 8.2 Existing host country legal requirements

effect or is fully enforced. The project proponent must assess and report any changes in regulatory frameworks during each monitoring period and at the crediting period renewal to ensure ongoing conformance with regulatory surplus. However, there is flexibility where a government agreement is in place or where carbon credits are integral to the legal requirement. This option reduces potential barriers for projects where governments are introducing increasingly stringent requirements and could allow for credit-sharing agreements similar to the Jurisdictional and Nested REDD+ Framework.

> Where a new legal requirement is enacted or a previously unenforced legal requirement becomes fully enforced, the project proponent shall report this change and shall only request credits for the monitoring period up to the date on which the legal requirement takes effect or is fully enforced. However, crediting may continue where one of the following conditions are met:
>
> 1) Carbon credits are integral to the legal requirement: the new or enforced legal requirement explicitly incorporates the use of carbon credits (e.g., for the measurement and reporting of its impact or enforcement of the legal requirement), or allows for carbon credits.
> 2) The project proponent has an official agreement in place with the relevant governmental authority specifying the terms under which carbon credits will be used to comply with or support the legal requirement.

Option C: Demonstration at validation, verification, and crediting period renewal, no flexibility

This option is the same as option B, but does not allow for flexibility for government agreements.

> Where a new legal requirement is enacted or a previously unenforced legal requirement becomes fully enforced, the project proponent shall report this change and shall only request credits for the monitoring period up to the date on which the legal requirement takes effect or is fully enforced.

1.2.3 Requested Feedback

1) Should the *VCS Standard, v4.7,* Section 3.14.1 be modified to base the determination of systematic enforcement on the high-income country list instead of the Annex I country list to align with the CCP Assessment Framework?
2) Which of the options (A, B, or C) for timing of reassessment and demonstration of regulatory surplus do you think would best promote early climate action without compromising integrity? Are there specific challenges you foresee? Please provide an explanation.
3) What do you think of the proposal to allow flexibility for government agreements or legal requirements in Option B? Do you think this may incentivize the creation or enforcement of legal requirements through carbon credits without compromising integrity? Are there any additional conditions or modifications you would recommend for this addition?
4) Do you have any further proposals for alternative approaches or modifications to the proposed requirements for timing of reassessment that could improve the regulatory surplus requirement? Please describe.

1.3 Additionality: Reconsidering project method additionality requirements

1.3.1 Background

Methodologies set out procedures for demonstrating additionality using a project method or a standardized method (i.e., performance method or activity method).

Project methods require an assessment of i) regulatory surplus, ii) implementation barriers, and iii) common practice.

- Implementation barriers may be demonstrated through either an investment analysis (e.g., comparing the project with and without carbon pricing to an accepted financial benchmark, or comparing project and alternative scenarios to one another using a financial indicator) or a barrier analysis (identifying barriers that would prevent a project from proceeding in the absence of the VCS project).
- Common practice assessment tests how common the proposed project activity is in a given region. After an activity becomes common practice, it is no longer additional.

Standardized methods include activity methods, which require an assessment of i) regulatory surplus and ii) compliance with a positive list (a list of activities deemed additional directly in the methodology rather than assessed at the project level), and performance methods, which require i) regulatory surplus and ii) meeting specified performance benchmark criteria.

In the VCS Program, standardized methods are reassessed every five years to reflect evolving conditions. If a project no longer meets the positive list or benchmark criteria at the time of the crediting period renewal, it is not able to renew its crediting period. This effectively results in a periodic additionality reassessment at each crediting period renewal.

On the other hand, for project methods, only regulatory surplus is reassessed at the crediting period renewal. Implementation barriers and common practice are assessed only once, at the time of validation. However, changing investment or implementation conditions (such as reduced cost of technology, new promotional policies, or greater adoption of alternative practices) within the relevant sector and region could reduce the ongoing need for carbon credits. In such cases, the project activity would potentially become the “business as usual” scenario and could be implemented without carbon credit revenues.

Verra is considering introducing a requirement to reassess additionality for project methods (similar to standardized methods) to further strengthen the consistency and integrity of the VCS Program.

However, the reassessment for certain methods will require different approaches and pose difficulties in ensuring robustness, workability, and verifiability.

For barrier analysis, reassessment based on the existing approaches of the additionality tools should be feasible, following the same procedures and requirements to reassess previous and potentially new barriers. The same holds true for common practice analysis, which requires external data to reassess the context and activities in the sector.

Investment analysis (both benchmark analysis and investment comparison analysis) is more challenging. According to the additionality tools, input values must be valid and applicable at the time of investment decision. This approach will not work for a reassessment, or would require a new hypothetical investment decision date, scenario, and context. Key sources of information, such as third-party quotations for construction, equipment, or tree planting or third-party studies used for the original project implementation, would no longer exist for the new scenario. Alternative information such as market studies or industry reports might not be available nor fully reflect the project conditions, or may be difficult to validate with high confidence in the project context.

A reassessment could compare the initial estimations with the actual values**.** However, this may not be fair when considering the decision taken at that time, with uncertain parameters, assumptions, and expectations that may or may not have materialized.

Updating the investment analysis from the current point in time onwards may be an option to focus on the carbon finance needs as per up-to-date expectations and the current situation of the project. However, investment comparison analysis will be more complicated since detailed information is needed for each alternative, further increasing the challenge for project proponents to reassess additionality and for VVBs to validate it with high confidence.

1.3.2 Proposals

1.3.2.1 Enhanced transparency of actual results relative to additionality assumptions

To enhance the transparency of projects, we propose introducing a requirement or option for projects to report actual results for each monitoring period against key assumptions made in the additionality assessment. This would include VCU sales and other project revenue sources, project costs, and any other key assumptions.

1.3.2.2 Timing of additionality reassessment

To enhance the consistency and integrity of the VCS Program and ensure projects require ongoing revenue from carbon credits, we are considering the following timing options for reassessing additionality for project methods, listed in order of increasing scrutiny:

1) Reassess additionality in full at each crediting period renewal or baseline reassessment
2) Reassess additionality at shorter intervals (e.g., every five years)
3) Reassess additionality where the actual project conditions materially differ from assumptions in the original additionality assessment

1.3.2.3 Additional crediting period renewals

Verra is requesting feedback on whether projects should be allowed additional crediting period renewals where ongoing additionality and need for carbon finance is demonstrated. For example, a project that has ongoing costs and no revenue or cost savings other than from the sale of VCUs could be allowed to demonstrate this and renew the crediting period beyond the current VCS crediting period limits.

1.3.3 Requested Feedback

1.3.3.1 Reassessment transparency and timing

1) Do you agree that there is a need to reassess additionality of registered projects that use a project method for additionality? Please justify your response.
2) If Verra provides a pathway for projects to report on the actual results relative to additionality assumptions and for enhanced transparency about ongoing additionality within a crediting period, should this be optional or mandatory?
3) Which of the proposed options for timing of the additionality reassessment would best promote climate action without compromising integrity and workability? Please provide the frequency you consider appropriate and explain your answer.
4) Should projects be allowed additional crediting period renewals where ongoing additionality and need for carbon finance is demonstrated at the end of their allowed crediting periods? If so, what specific requirements should be met to justify additional renewals? Please provide a rationale.

1.3.3.2 Reassessment approach

1) Do you expect project proponents and validation/verification bodies to face any challenges when reassessing and revalidating implementation barriers following the same rules as the existing additionality tools? If any, how could these challenges be addressed?
2) Should the investment analysis reassessment process rely on external data (such as market data or industry reports) or should it also consider real project data, even if such data would not be available for a hypothetical investment decision scenario? Please explain and provide a rationale.
3) Should the investment analysis reassessment focus on i) what really happened in the past crediting period, ii) the updated expectations for the next crediting period, iii) the current state of the sector/technology on a broader basis, or iv) other alternatives?
4) Do you have any other suggestions on how the challenges outlined in the background section related to investment analysis can be addressed to ensure robustness, workability, and verifiability of the reassessment?

1.4 Additionality: Strengthening demonstration of prior consideration for projects and instances

1.4.1 Background

Additionality is an important characteristic of VCS projects and verified carbon units (VCUs). An additional project is one where the project activities:

- result in reductions or removals that exceed what would be achieved under a “business as usual” scenario, and
- would not have occurred without the incentive provided by carbon markets.

The ICVCM has specific requirements for how carbon crediting programs (e.g., VCS) allow projects to show consideration of carbon revenue prior to a project's start date – a concept called **prior consideration**. ICVCM has signaled that in the next iteration of the Assessment Framework,[2] they will reconsider the effectiveness of the currently approved Criterion 8.3 approaches[3] and are likely to exclude Approach B and Approach A(4).[4] The VCS Program currently has prescribed maximum timelines from the start of project activities to validation and registration but does not explicitly require demonstration of prior consideration.

In response to the ICVCM proposal, Verra is considering which VCS Program requirements can be adjusted to satisfy Approaches A1–3, in addition to the requirements of Approach B, which it currently applies. The table below summarizes those ICVCM approaches using Verra terminology.

Approach A: Demonstration through evidence		
The carbon crediting program shall require the following:		
A(1):* Publicly available documented evidence of prior consideration prior to the project start date (e.g., stakeholder consultation) must be provided and assessed by a validation/verification body (VVB) at validation; AND	**A(2):** Evidence of prior consideration must be provided to Verra within one year of the project start date; AND	**A(3):** The VCS Program must limit the allowable time period between the documented date of evidence of prior consideration and the project registration.

*The *VCS Standard, v4.7* already requires project proponents to consult local stakeholders before implementing project activities. This information is also assessed by a VVB at validation.

1.4.2 Proposals

The following proposals are intended to strengthen the VCS Program's integrity, close loopholes, and align with anticipated ICVCM prior consideration requirements. Proposals may be linked to one or more ICVCM Criterion 8.3 approaches or the concept of prior consideration more generally. Verra is considering the implementation of all three proposals but may consider implementing a subset of the proposals based on stakeholder feedback.

1.4.2.1 Require all projects to list on the VCS pipeline before the start of project activities to increase transparency of prior consideration

The first date that a project requests VCS pipeline listing (as under development or as under validation) will serve two purposes:

[2] Table 8.11 of the ICVCM Core Carbon Principles Assessment Framework
[3] Table 8.3 of the ICVCM Core Carbon Principles Assessment Framework
[4] Approach B requires carbon crediting programs to limit the time between the project start date and validation (or submission for registration) by a validation/verification body (VVB). Approach A(4) allows projects to provide publicly available or credible third-party attested evidence that they considered carbon finance before the project start date, assessed by a VVB or the carbon program.

1) As the date of prior consideration on which the project proponent considered carbon revenue. This date must be before the project start date and before any major investments are made; and
2) As the date that the project provides evidence of prior consideration to Verra. The pipeline listing process will standardize how the project description and supporting files (e.g., the evidence of prior consideration) are made public.

This proposal, in combination with existing stakeholder consultation rules and information already assessed as part of validation, satisfies ICVCM Criterion 8.3, Approach A, requirements 1 and 2. This proposal also avoids requiring separate documentation of prior consideration such as through board meeting minutes.

Verra proposes the following:

- Adding a new rule to the *VCS Standard* requiring projects to request pipeline listing (as either under development or under validation) before the project start date. Projects must still conduct stakeholder consultation before the project start date, in line with Section 3.18.2 of the *VCS Standard, v4.7*.
- Removing the agriculture, forestry, and other land use (AFOLU)-specific pipeline listing deadline (Section 3.8.2 of the *VCS Standard, v4.7)* as this requirement would be superseded by the proposed update.
- Adjusting Section 3.1.3(1) of the *Registration and Issuance Process, v4.5* to require project proponents to also complete Sections 3.4 (baseline scenario) and 3.5 (additionality) of the *Project Description Template* when requesting pipeline listing as under development.

Refer to Sections 1.4.2.2 and 1.4.2.3 on how VCS proposes to strengthen alignment with Approach A, requirement 3.

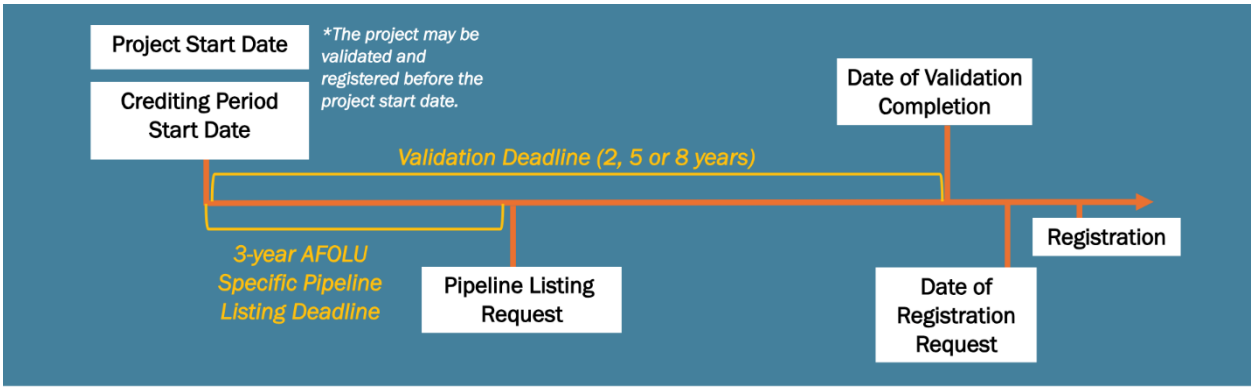
1.4.2.2 Revise project deadline requirements to:

Part A: Replace the validation deadline with a registration deadline, and

Part B: Adjust the registration deadline to limit the time between the pipeline listing request (i.e., date of evidence of prior consideration) and the registration request

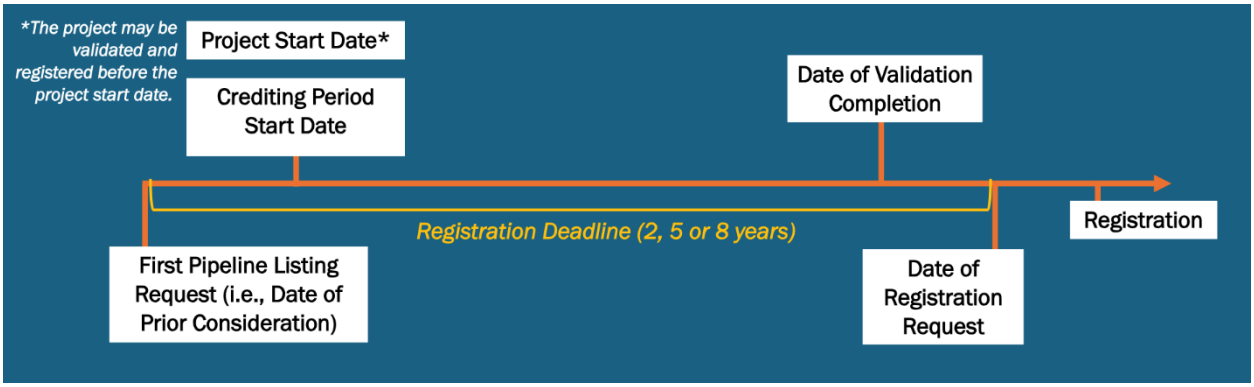
The *VCS Standard, v4.7* currently limits the time between the project start date and the completion of validation with deadlines that vary by project type and scale. Non-AFOLU projects have two years from the project start date to complete validation (*VCS Standard, v4.7* Section 3.8.1), while AFOLU projects must initiate the pipeline listing process within three years of the project start date (Section 3.8.2) and must complete validation within five or eight years of the start date (Sections 3.8.3 and 3.8.4).

Figure 1: Current start date and validation deadlines



To strengthen financial additionality claims, ICVCM Criterion 8.3, Approach A(3) aims to reduce the time between the date of evidence of prior consideration and the date of registration. Verra is considering replacing the deadline to complete validation within a certain number of years of the project start date with a deadline to submit a registration request. As outlined in Section 1.4.2.1, Verra is considering using the initial pipeline listing request date to establish the date of evidence of prior consideration. The listing date would then represent the beginning of the period that needs to be limited.

Figure 2: Proposed start date and registration deadlines



Verra is proposing the following:

a) **Replace the validation deadline with a deadline tied to the date of a project's first registration request.** These changes would affect requirements in *VCS Standard, v4.7*, Sections 3.8.1, 3.8.3, and 3.8.4, and other revisions throughout to ensure consistent terminology. Using the date on which a project first requests registration has three benefits:

- Clear alignment with ICVCM Criterion 8.3, Approach A(3)
- Greater transparency regarding the date on which registration is requested, as the date that validation is completed is often difficult to prove in a standardized way
- Verra can automatically check a project's conformance with a registration request deadline, reducing the need for manual checks and supporting Verra's effort to streamline the review process.

b) **Adjust deadlines to limit the time between the first request for pipeline listing and the registration request, instead of the period between the project start date and the completion of validation.**
    - This would involve changes to the *VCS Standard, v4.7,* Sections 3.8.1, 3.8.3, and 3.8.4. This change clearly aligns with ICVCM Criterion 8.3, Approach A(3) by reasonably limiting the time between the date of prior consideration and the date of registration.

1.4.2.3 Create a new listing process for project instances prior to the start of activities

This proposal is an instance-level approach designed to complement the project-level approach outlined in Section 1.4.2.1. Since every project is made up of at least one instance, projects in simple terms are the sum of their parts. If a project includes some instances for which prior consideration cannot be demonstrated (e.g., did not require carbon finance, were already implementing activities, had arbitrary start dates), these instances jeopardize the additionality demonstration of the entire project. Transparency regarding demonstration of additionality at an instance (and smaller unit) level is key to building a robust case for prior consideration. However, there is currently no formal registry process or guidance in the VCS project templates to facilitate the reporting or verification of prior consideration at an instance level. This proposal outlines procedures and requirements designed to strengthen prior consideration and limit gaming of instance-level start dates by designing a mandatory pipeline listing process for project instances prior to the start of instance-level activities.

If implemented, an instance-level pipeline listing process would lead to greater transparency of the reductions and removals generated at the instance level and enable tracking of VCUs from each instance on the Verra registry.

This proposal would rely on a clarified definition of project activity instances, which will be assessed and proposed in a later VCS Version 5 public consultation.

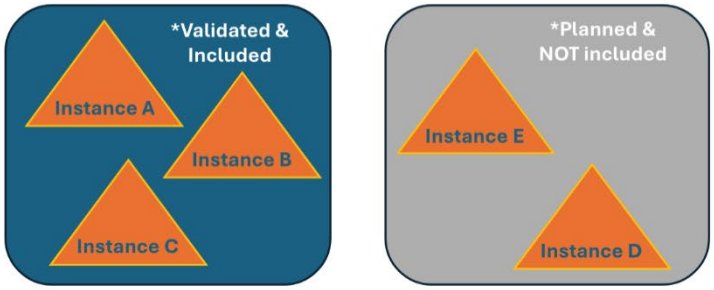
Verra proposes the following:

- **Creating an instance listing process to facilitate demonstration of prior consideration at an instance level.** Each instance listing:
    - Would leverage digitized templates to expedite information entry and later verification of the instances
    - Could happen simultaneously or separately from pipeline listing (under development and under validation)
    - Would not duplicate information provided during pipeline listing and would only require specific information about a project instance, for example geographic area in which the instance is designed (and for which the corresponding additionality demonstration and baseline scenario were determined at validation – see the *VCS Standard, v4.7*, Section 3.6.10), information on sub-units within the instance (e.g., list of farms), and anticipated start date.

- **Requiring instances to list on the pipeline before the start of instance-level activities.**
    - This change establishes a public date of prior consideration at an instance level.

- When an instance is included, a VVB would confirm at the next verification or validation activity that each instance (and any smaller units, e.g., farm) was listed on the pipeline and that activities were not implemented in that area before the pipeline listing date.
- Proposed changes would need to be reflected in the *VCS Standard* eligibility requirements (e.g., Sections 3.6.16–3.6.17).

Figure 3: Proposed transparent instance-level tracking for date of prior consideration (DPC)



Instance Name	Status	Listing (DPC)	Instance Start Date
A	Included	01 Jan 2020	01 July 2020
B	Included	01 Jan 2020	01 July 2020
C	Included	01 Jan 2020	01 Mar 2021
D	Planned & Listed	01 Feb 2024	TBD
E	Planned	TBD	TBD

*DPC = Date of Prior Consideration

Project-Level Timeline	Date
Pipeline Listing (under development) (i.e., DPC)	01 Jan 2020
Instance Listing (DPC)	01 Jan 2020
Project Start Date**	01 July 2020
Pipeline Listing (under validation)	01 Mar 2021
Instance Listing (DPC)	01 Mar 2021
Registration Requested	01 Nov 2021
Registration Deadline	*01 Jan 2022*
Verification Approval Requested	01 May 2022
Instance Listing (DPC)	01 Feb 2024

** Aligns with the earliest instance start date

1.4.3 Requested Feedback

1.4.3.1 Require pipeline listing before start of project activities

1) Does requiring projects to list on the pipeline prior to the start date strengthen a project's demonstration of prior consideration?
2) Since prior consideration is tied to additionality, should project proponents be required to complete Sections 3.4 (baseline scenario) and 3.5 (additionality) of the *Project Description Template* prior to requesting pipeline listing as under development?

1.4.3.2 Revise project validation/registration deadlines

1) Should the validation deadline be replaced with a registration request deadline for the purposes outlined in Section 1.4.2.2?
2) If you answered yes to the previous question, which of the following proposals do you support? Please provide a justification.
    a) Limiting the number of years between the first pipeline listing request (i.e., representing the date of prior consideration) and the first registration request
    b) Limiting the number of years between the project start date and the first registration request

3) Should the current deadlines (2, 5, and 8 years) be maintained for the proposed registration request deadline? Or do the proposed changes affect the project development timeline enough to warrant extending the deadline? If so, which project types require more time?

1.4.3.3 Create a new project instance listing process

1) Do you broadly support the concept of instance listing? Do you believe this process would strengthen prior consideration demonstration at the instance level? Do you have any specific concerns with the instance listing process?
2) Should instances be required to list prior to beginning instance-level project activities? Are there limitations we should be aware of?

1.5 Conservativeness: Revising definition of project start date and treatment of pre-project emissions

1.5.1 Background

The current definition of project start date (also the crediting period start date) in the *VCS Program Definitions, v4.5* is as follows:

> For non-AFOLU projects: "the date on which the project began generating GHG emission reductions or removals."
>
> For AFOLU projects or JNR programs: "the date on which activities that led to the generation of GHG emission reductions or removals are implemented (e.g., planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans)."

Some non-AFOLU project activities may involve emissions from pre-project activities such as construction or equipment fabrication that are significant enough to not be considered de minimis. In the current VCS Program rules, it is not clear how or whether the project should account for these emissions that occur before the project start date.

Verra consulted on options for accounting for these pre-project emissions in the June 2023 public consultation. Based on the feedback received, Verra is now proposing the following new and revised definitions.

1.5.2 Proposal

Part 1: Revise the definition of project start date (and crediting period start date) in the *VCS Program Definitions*

> Project start date
>
> The ~~start date of a non-AFOLU project is the~~ date on which ~~the project began generating~~ GHG emission reductions or carbon dioxide removals resulting from the project activity begin occurring. ~~The start date of an AFOLU project or jurisdictional REDD+ program is the date on~~

~~which activities that led to the generation of GHG emission reductions or removals are implemented (e.g., planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans).~~; Equivalent to "Project Start Date" and "Program Crediting Period Start Date."

Setting the start date as the date that the project began generating reductions and removals limits the possibility of over-crediting for certain project types (especially AFOLU) because it eliminates the possibility for projects to argue that arbitrary or loosely related activities serve as the justification for their project start date.

Part 2: Add a new definition for pre-project emissions and require those emissions to be accounted for in the first crediting period

The following definition would be added to the *VCS Program Definitions:*

> Pre-project emissions
> Emissions from project activities that occur prior to the project start date and result in project reductions and removals. Such activities may include preparation such as construction, equipment fabrication, planting, and preparing land.

The following requirements would be added to Section 3.15 of the *VCS Standard:*

- Where pre-project emissions are not considered to be de minimis or equivalent to the baseline emissions scenario, the project proponent shall quantify and report pre-project emissions at first validation.
- These quantified pre-project emissions shall be deducted from the achieved reductions and removals across the first project crediting period. The project may amortize those emissions equally across each vintage period (calendar year) in the crediting period, unless otherwise specified in the applied methodology.

Clear guidelines on assessing whether these emissions are considered de minimis may be developed at the methodology level with flexibility for assessment at the project-specific level.

This proposal would standardize the practice of accounting for pre-project emissions across all project types, providing a more transparent and holistic assessment of a project's overall environmental impact.

1.5.3 Requested Feedback

1) Should the definition of project start date be the same for all project types? If not, do you have another suggestion to limit over-crediting through arbitrary start date justification?
2) Do you have any comments or concerns on the definition of pre-project emissions?
3) Do you think that requirements on determining whether pre-project emissions are de minimis should be included at the methodology level, or should some flexibility for specific project contexts be permitted? If the latter, what sort of flexibility is needed?

1.6 Conservativeness: Reconsidering the de minimis threshold

1.6.1 Background

There are two different but related concepts in the VCS Program that reflect the level of accuracy required for estimating net reductions and removals – the concepts of de minimis and materiality.

The *VCS Standard* allows projects to exclude baseline, project, and/or leakage emissions where they are considered de minimis. The purpose of this concept is to reduce monitoring burden for very small sources that have very limited impact on VCU quantities. According to the *VCS Methodology Requirements,* carbon pools and GHG sources in the AFOLU sector may be considered de minimis where together they account for less than 5% of the total GHG benefits. For non-AFOLU methodologies, the *VCS Standard* and *VCS Methodology Requirements* do not explicitly mention de minimis. However, this concept is indirectly addressed through the conservativeness and relevance principles. Where a methodology conservatively excludes a source or sink (e.g., excludes a source that only exists, or is higher, in the baseline scenario), this does not count towards the de minimis threshold.

"Materiality" is the concept applied to determine whether errors, omissions, and misstatements in information could affect the GHG statement and influence decisions resulting from it. Materiality is assessed by the validation/verification body (VVB) during validation and verification as the aggregate of errors, omissions, and misrepresentations relative to the total reported reductions and/or removals. The allowable materiality thresholds in the *VCS Standard* are applicable to all project types and are differentiated by the project scale: 1% for large projects (greater than 300 000 t CO_2e per year) and 5% for other projects.

A 5% de minimis threshold may be too lenient for large projects to ensure overall accuracy and conservativeness. A more conservative de minimis threshold may consider scale, as the materiality threshold does. Aligning the de minimis and materiality concepts would improve consistency and ensure conservativeness and alignment with practices from other carbon standards.

1.6.2 Proposal

Verra is considering the following proposals:

1) Expand the de minimis requirements to apply to all project types (both AFOLU and non-AFOLU), and explicitly define the default de minimis threshold for both. In some cases, a more stringent de minimis threshold may be set on a methodology-specific basis.
2) Align de minimis with the materiality treatment to better account for differences in project scale. For example, a large-scale AFOLU project may have a different de minimis than a non-AFOLU project that is not large-scale.
3) Require methodologies and projects to maintain conservativeness when treating sources and sinks as de minimis by applying a conservative discount factor.

1.6.3 Requested Feedback

1) Should the de minimis requirements be expanded to apply to both AFOLU and non-AFOLU projects? Please justify your response.
2) Should there be a different de minimis threshold for AFOLU and non-AFOLU projects, or for any more specific project types? Are there specific cases where the de minimis threshold should be determined at the methodology level?
3) Should the de minimis threshold be differentiated to better account for project scale?
4) Should a discount factor be applied to ensure conservativeness when treating sources and sinks as de minimis?
5) Do you have any other suggestions or feedback related to the de minimis requirements in the VCS Program?

1.7 Permanence: AFOLU buffer pool management and loss event procedures

1.7.1 Background

Verra is seeking feedback on four buffer pool management topics:

1) **Buffer credit contribution and release vintages:** Lack of clarity on buffer credit contribution and release vintages has caused confusion amongst project proponents. To resolve this issue, Verra would like to standardize how buffer credit contributions are made and released. Newer vintage credits tend to be more highly valued in the market, but older vintage credits have been durable longer, and therefore have lower non-permanence liability. To balance these factors, Verra proposes that buffer credit contributions and releases be made proportionally by vintage to ensure the buffer is appropriately capitalized with a mix of older and newer credits.
2) **Long-Term Monitoring System use:** In December 2022, Verra announced that it had begun developing the Long-Term Monitoring System (LTMS) – a system for remotely monitoring and quantifying loss and reversal events in AFOLU projects. Verra is ready to begin using the system in some situations such as when projects have withdrawn from the VCS Program or failed to submit a verification report for several years.
3) **Time to buffer credit cancelations after withdrawal:** Verra is considering whether it should shorten the timeframe before it acts when projects withdraw from the VCS Program. Currently, there is a 15-year delay before buffer credits are canceled. While this timeframe is appropriate where a project has not formally withdrawn, it may be unnecessarily long where a project has notified Verra that it would like to withdraw from the VCS Program. Verra is seeking further input regarding this timeframe.
4) **Magnitude of buffer credit cancelations:** Where a project withdraws from the VCS Program (and does not register in another GHG program) or fails to verify for 15 years, Verra currently assumes (being most conservative) that 100% of the credits issued are eventually reversed. Other carbon crediting programs take a less conservative approach and cancel the project's buffer contributions. If the project's buffer contribution accurately represents the long-term risk, then this latter approach is reasonable. Verra is seeking feedback on whether its current

approach is overly conservative and whether it should instead take the same approach as other GHG programs.

In addition to the above topics, a handful of *Registration and Issuance Process* and *VCS Standard* clarifications related to buffer pool management are included below for reference. The proposed rewrites are meant to show the intention of the changes; they are not indicative of the final comprehensive changes or section numbers. All relevant text will be updated to reflect the changes throughout the VCS program documents upon final launch. Further permanence-related changes may also be proposed in future VCS v5.0 consultations.

1.7.2 Proposal

Verra proposes the following changes to program documents.

VCS Program Definitions

Add the following:

Long-Term Monitoring System (LTMS)

A platform for remotely monitoring AFOLU projects, detecting loss events, and quantifying reversals

Registration and Issuance Process

4.7 Step 7: Project Maintenance

4.7.2 Where the project proponent wishes to withdraw the project from the VCS Program (e.g., ~~in order~~ to transfer the project to another GHG program), the following applies:

1) The project proponent shall submit a letter (in English) on its organization's letterhead, to the Verra Registry, requesting that the project be withdrawn. Such a letter shall include the project name, project ID, the reason for the withdrawal request, and the signatures and contact information of all project proponents.
2) Verra reviews the withdrawal request and may request additional information prior to approving the request.
3) Upon approval, Verra updates the status of the project to withdrawn. The project information shall remain publicly available on the Verra Registry, but the project will not be able to issue VCUs, including from previously verified monitoring periods.
4) In the case of an AFOLU project where VCUs have been previously issued, the following applies:
    a) The project shall not be eligible for any release of buffer credits.
    b) Where Verra confirms that the project has registered with another GHG program, all buffer credits associated with the project shall be canceled.
    c) Where Verra is unable to confirm the project has registered with another GHG program, all buffer credits associated with the project are immediately put on hold. Where the project does not rejoin the VCS Program and no subsequent verification report is

submitted within [5, 10, or 15] years, and the project crediting period has not yet expired, the following applies:

i) Buffer credits are canceled in an amount equivalent to [the total number of VCUs issued to the project (including buffer credits put on hold) / all buffer credits associated with the project]; or

ii) Where reversals are detected using Verra's Long-Term Monitoring System,[5] buffer credits equivalent to the reversal amount are canceled. ~~buffer credits shall be canceled over time in accordance with the rules set out in Section 5.3.6 below.~~

5) Withdrawn projects may rejoin the VCS Program where the project proponent submits a letter to the Verra Registry requesting same. Such a letter shall include the information specified in Section 4.7.1(1) above. Verra reviews the project to determine whether it is eligible to rejoin the VCS Program and notifies the project proponent of the outcome of the review. Where the project is eligible to rejoin the VCS Program, Verra updates the status of the project accordingly. Where the project is not eligible to rejoin the VCS Program, the project shall remain withdrawn.

5 AFOLU Pooled Buffer Account

5.1 Assignment of Buffer Credits at ~~First~~ Request for Issuance

At ~~first~~ VCU issuance, buffer credits shall be deposited into the AFOLU pooled buffer account, in accordance with the procedures below.

5.1.1 The number of credits to be deposited in the AFOLU pooled buffer account is determined by the non-permanence risk report assessed by the validation/verification body(s), in accordance with the requirements set out in the VCS Standard. The report establishes the non-permanence risk rating, and this percentage is applied proportionally by vintage to the net change in the project's carbon stocks (stated in the verification report) to determine the number of credits to be deposited in the AFOLU pooled buffer account. For example, if the net change in the project's carbon stocks is 400 t CO_2e in 2022 and 600 t CO_2e in 2023, and the project's non-permanence risk rating is 20%, then the project would need to contribute 80 buffer credits with a 2022 vintage and 120 buffer credits with a 2023 vintage.

5.1.2 Buffer credits are not issued a VCU serial number, nor are they considered to be VCUs. They are not subject to the VCU issuance levy.

5.2 Assignment and Release of Buffer Credits at Subsequent Approved Verification Requests

A portion of a project's buffer credits may be released to incentivize continued verification, risk mitigation, and recognize that certain project risks decrease over time.

[5] Or an equivalent monitoring system

5.2.1 Projects are eligible for buffer credit releases when the non-permanence risk rating in the latest approved verification report remains the same or decreases from the previous verification report. Buffer credit releases occur after the subsequent verification request is approved by Verra. Project proponents may request a buffer release within 3 months after Verra approves a verification request. The request must be sent via ~~an~~ email to registry@verra.org. Buffer credits released from the AFOLU pooled buffer account will be issued as VCUs into the designated Verra Registry account after the project proponent has:

1) Requested issuance for all verified credits; and
2) Paid the VCU issuance levy.

.....

5.2.5 Projects are not eligible for buffer credit releases where:

1) the non-permanence risk rating of the latest approved verification report is higher than the non-permanence risk rating of the previous approved verification report; or
2) The project proponent has reported a loss.

5.2.6 Buffer credits are released proportionally to previous vintage contributions. For example, if 100 credits are eligible for release and the project previously contributed 400 credits with a 2023 vintage and 600 credits with a 2024 vintage, the release would comprise 40 credits with a 2023 vintage ((400/(400 + 600)) × 100) and 60 credits with a 2024 vintage ((600/(400 + 600)) × 100).

5.3 Cancellation and Holding of Buffer Credits

5.3.1 Where a loss event occurs (see the *VCS Program Definitions* for the definition of a loss event), the project proponent shall:

1) Notify Verra via email within 30 days of discovering the loss event, and
2) Where VCUs have been previously issued, prepare and submit to registry@verra.org a loss event report within two years of discovering the loss event. Projects that do not submit a loss event report within two years of the loss event's discovery date are not eligible to issue further VCUs until the report is submitted. Upon receipt of the loss event report, Verra puts AFOLU pooled buffer account credits on hold equivalent to the estimated loss ~~in the loss event report~~.

.....

5.3.5 The following applies with respect to the VCU issuance after a reversal:

1) Where the reversal is an unavoidable reversal (see the *VCS Program Definitions* for the definition of unavoidable reversal) the following applies:
   a) GHG credits shall be deposited in the AFOLU pooled buffer account in an amount equivalent to the additional number of buffer credits canceled after the reversal, above what has been previously contributed by the project. For example, if the project previously contributed 100 buffer credits and 150 credits were canceled from the AFOLU pooled buffer account after a reversal, the project would deposit 50 buffer

credits (to replenish the pool at large). Buffer credits deposited to replenish the pool after a reversal (50 in the example above) willshall never be eligible for release back to the project.

b) Where further GHG credits are available for VCU issuance after replenishing the AFOLU pooled buffer account, additional buffer credits shall be deposited in the AFOLU pooled buffer account in accordance with Section 5.12 (applying the non-permanence risk rating only to those remaining GHG credits eligible for VCU issuance).

2) Where the reversal is an avoidable reversal (see the *VCS Program Definitions* for the definition of avoidable reversal), the following applies:

a) GHG credits shall be deposited in the AFOLU pooled buffer account in an amount equivalent to the full reversal. No further VCUs will be issued to the project or any other VCS project registered solely with the same project proponent, or combination of project proponents, until the deficit is remedied. Buffer credits deposited to replenish the pool after a reversal will never be eligible for release back to the project.

b) Where further GHG credits are available for VCU issuance after replenishing the AFOLU pooled buffer account, additional buffer credits shall be deposited in the AFOLU pooled buffer account in accordance with Section 5.12 (applying the non-permanence risk rating only to those remaining GHG credits available for VCU issuance).

5.3.6 Where a project fails to submit a verification report to the Verra Registry within five years of its last approved verification report, all50 percent of the buffer credits associated with the project are shall be put on hold.

~~5.3.7 Where a project fails to submit a verification report within ten years, all its remaining buffer credits shall be put on hold.~~

5.3.8 Where no subsequent verification report has been submitted within a period of 15 years, and the project crediting period has not yet expired, the project's status is changed to inactive, and the following applies:

a) Buffer credits are canceled from the AFOLU pooled buffer account in an amount equivalent to [the total number of VCUs issued to the project (including buffer credits put on hold) / all buffer credits associated with the project] and the project's status will be changed to inactive; or

b) Where reversals are detected using Verra's Long-Term Monitoring System, buffer credits equivalent to the reversal amount are canceled.

5.3.9 Inactive projects shall apply the latest version of the applicable methodology and VCS Program rules and reassess the baseline when reactivating.

5.3.10 Where a project has not been verified because it has transitioned to another GHG program (e.g., integrated into a government program), its status will be changed to project transferred to other GHG program instead of inactive, and the remaining balance of buffer credits is canceled.

5.3.11 Where buffer credits are put on hold because a project does not submit a verification report within five years of the previous verification, the project may re-claim buffer credits. A new verification report shall be submitted prior to the expiration of the project crediting period. Upon receipt, Verra removes ~~reassigns~~ the hold on the buffer credits ~~that have been put on hold in accordance with the procedure set out in Section 5.1.1 above. The remaining balance of buffer credits associated with a project will be canceled at the end of the project crediting period~~.

5.3.12 At the end of the project longevity or the end of monitoring, whichever is later:

a) The remaining balance of buffer credits associated with a project is canceled; or
b) Where reversals are detected using Verra's Long-Term Monitoring System, buffer credits equivalent to the reversal amount are canceled.

VCS Standard

Non-Permanence Risk

3.2.26 Each project proponent shall sign Verra's AFOLU Buffer Account Compensation for Reversals Deed~~a written agreement with Verra to compensate the AFOLU pooled buffer account for reversal events~~.

3.2.27 At the end of the project longevity or the end of monitoring, whichever is later:

a) The remaining balance of buffer credits associated with a project is canceled; or
b) Where reversals are detected using Verra's Long-Term Monitoring System,[6] buffer credits equivalent to the reversal amount are canceled.

~~The remaining balance of buffer credits is canceled at the end of the project longevity or at the end of monitoring, whichever is later.~~

1.7.3 Requested Feedback

1) Should buffer credit contributions be made and released proportionally by vintage? Please justify your response.
2) If you replied no to Question 1, how do you think the vintage of buffer credit contributions and releases should be determined?
3) Should Verra wait 5, 10, or 15 years after a project withdraws from the VCS Program (and has not registered in another GHG program) to conservatively cancel buffer credits or monitor and cancel credits when reversals are observed (see proposed update to Section 4.7.2(4)(c) of the *Registration and Issuance Process*)? Please justify your response.
4) Where a project withdraws from the VCS Program (and has not registered with another GHG program) or fails to submit a verification report for 15 years, should Verra cancel buffer credits from the AFOLU pooled buffer account in an amount equivalent to:
    a) the total number of VCUs issued to the project; or
    b) all buffer credits associated with the project?

[6] Or an equivalent monitoring system

Please justify your response.

1.8 Permanence: Allowing any VCS credits to be used as buffer contributions

1.8.1 Background

The VCS Program and JNR Framework address non-permanence risk by requiring project proponents to deposit a percentage of their credits into a pooled buffer account, which may be drawn upon to compensate the atmosphere in the case of a reversal event (e.g., forest fire or hurricane). The AFOLU, geologic carbon storage (GCS), and JNR non-permanence risk tools determine how many credits projects must contribute to the respective pooled buffer account for each monitoring period.

Currently, buffer credit contributions must come directly from the project issuing credits. However, since all VCUs represent one tonne of carbon dioxide equivalent and are fungible across project types, this requirement may be unnecessarily restrictive. Allowing any VCS credits to be used as buffer contributions could result in the buffers being capitalized with more diverse and durable credit types (e.g., non-reversable credits such as relatively permanent carbon dioxide removals and non-conservation related reduction credits). However, it could also lead to the dominance of one credit type in the buffers, and therefore less diversity and potentially less resilience.

1.8.2 Proposal

Verra is considering allowing project proponents to make buffer contributions using credits from their other projects or credits purchased on the market. Current procedures require buffer credit contributions to come directly from the project issuing credits.

1.8.3 Requested Feedback

1) Should Verra allow projects to contribute VCS credits from any project to the buffer? Why or why not?
2) If Verra allowed projects to contribute VCS credits from any project to the buffer, what limitations (if any) should be placed on this flexibility (e.g., only Core Carbon Principle-labeled credits, only relatively permanent removals, a limit based on a percentage of buffer contributions, only credits of the same vintage)?
3) Should Verra require projects to contribute some credits with minimal or no reversal risk to the buffer (e.g., relatively permanent carbon dioxide removals such as biochar, and non-conservation related reductions)?
4) Alternatively, should Verra require a portion of buffer credit replenishments (i.e., after a reversal) to consist of credits with minimal or no reversal risk?

2 RAISING THE BAR FOR SAFEGUARDS, STAKEHOLDER ENGAGEMENT, AND SUSTAINABLE DEVELOPMENT IMPACT

2.1 Stakeholder engagement

2.1.1 Background

Verra aims to strengthen stakeholder engagement requirements and guidance to reflect the value of stakeholder engagement beyond the design phase and ensure stakeholders are protected throughout a project's lifetime. This section contains the stakeholder engagement updates that Verra is considering for VCS Version 5.0. All relevant text will be updated to reflect the changes throughout the VCS program documents upon final launch. Further stakeholder engagement-related changes may also be proposed in future VCS v5.0 consultations.

2.1.2 Proposal

General Updates to *VCS Standard, v4.7* Section 3.18

Verra is considering the following updates to *VCS Standard* stakeholder engagement requirements:

1) Create a common set of stakeholder engagement requirements that apply to all Verra programs (i.e., VCS, Climate, Community & Biodiversity Standards, Sustainable Development Verified Impact Standard, Jurisdictional and Nested REDD+ Framework, and Plastic Waste Reduction Standard) and specify requirements that may only be applicable to certain project activity types.
2) Consolidate stakeholder engagement requirements within the *VCS Standard* safeguard requirements section to better communicate how stakeholder engagement and safeguards can be implemented jointly.

In addition to the general updates outlined above, Verra is considering the following updates to the stakeholder engagement requirements in the *VCS Standard*:

- **Stakeholder Engagement:** Require project proponents to submit a stakeholder engagement plan at validation, including a description of the stakeholder identification process, evidence of stakeholder consultation, and monitoring and evaluation plan, that has provisions beyond the project design including ongoing participation in decision-making and implementation throughout the project lifetime.
- **Language:** Require the stakeholder engagement process to be held in the language(s) commonly spoken in the project area, and in contexts of low literacy rates have simplified language and visual aids available to enable proper participation.
- **Indigenous Peoples (IPs), local communities (LCs), and customary landowners:** Clarify existing requirements related to engagement of IPs, LCs, and customary landowners when present in the project area to ensure they are included in project design, decision-making, and implementation.

- **Cultural heritage:** Add a provision on how cultural heritage needs to be addressed as part of the stakeholder engagement process in alignment with national and local laws and regulations to ensure its protection and conservation.
- **Free, Prior, and Informed Consent (FPIC):** Require FPIC beyond the instance of changing of property rights, including where there is presence and/or participation of IPs and LCs and specify how and when FPIC should be conducted and reported on an ongoing basis.
- **Grievance Mechanism:** Require a locally based redress mechanism to report, handle, and resolve community feedback and complaints within a reasonable time. The mechanism must consider the communities' traditional and culturally appropriate conflict-resolution methods to successfully address all grievances. It must be publicly accessible to all project stakeholders, be available in the local language(s) commonly spoken, and allow for confidentiality of grievances. Where applicable, include differentiated measures to allow effective participation of marginalized groups.
- **Marginalized Groups:** Add a requirement to identify all marginalized groups present in the project area or impacted by project activities, conduct impact assessments to understand the differentiated impacts of the project activities on these groups, and ensure adequate mechanisms are in place to prevent and minimize negative impacts and enable their equitable participation and benefit-sharing. Add a specific provision on anti-discrimination throughout the stakeholder engagement process, particularly to ensure that all demographic groups, including all genders, ethnicities, elders, youth, persons with disabilities, and other marginalized groups are equally able to participate and contribute meaningfully to project design and implementation.
- **Transparency:** Add requirements to publicly disclose and report on a regular basis the decision-making processes conducted within the stakeholder engagement process. Add requirements on the type of information that must be available throughout the stakeholder engagement process with provisions on data protection for consulted stakeholders.

2.1.3 Requested Feedback

1) Are there any additional general updates that could help strengthen or clarify VCS stakeholder engagement requirements? Please describe.
2) Do you disagree with any of the proposed new or updated stakeholder engagement requirements? Please explain why.
3) What components of stakeholder engagement do project proponents and VVBs need the most guidance on if they are to implement/audit them successfully?

2.2 Social and environmental safeguards

2.2.1 Background

In 2023 and 2024, Verra updated the VCS Standard to strengthen the safeguard requirements and ensure alignment with initiatives such as the ICVCM and the Carbon Offsetting Reduction Scheme for

International Aviation (CORSIA). Verra recognizes there are opportunities to further strengthen and clarify the safeguard requirements and develop guidance to support their implementation and assessment. In addition to maintaining clear requirements, Verra aims to develop guidance for implementing VCS Program safeguards to help project proponents prevent, minimize, and address potential risks and to increase the resilience and benefits of projects using the VCS Program. The following updates aim to increase transparency and accountability of all project impacts. Further safeguard-related changes may also be proposed in future VCS v5.0 consultations.

2.2.2 Proposal

General Updates to *VCS Standard, v4.7* Section 3.19

Verra is considering the following updates to VCS Program safeguard requirements:

1) Create a common set of safeguard requirements that are applicable under all Verra programs (i.e., VCS, Climate, Community & Biodiversity Standards, Sustainable Development Verified Impact Standard, Jurisdictional and Nested REDD+ Framework, and Plastic Waste Reduction Standard) and specify requirements that may only be applicable to certain project activity types.
2) Communicate the rationale for each requirement and revise the requirements language to ensure requirements can be transparently and credibly implemented and assessed, including defining key terms and indicators, and specifying the necessary evidence to ensure all safeguard requirements are easily and appropriately understood, interpreted, and audited.

In addition to the general updates outlined above, Verra is considering the following updates to the safeguard requirements in the *VCS Standard*:

- **Language:** Require project proponents to provide a written summary of the project documentation in the local language(s) commonly spoken. This requirement would specify the sections of the project description and monitoring report that must be included in the summary.
- **Benefit Sharing:** Define benefit sharing as the monetary or in-kind distribution of revenue generated from the sale of VCUs, and require the establishment of a benefit-sharing mechanism that operates both when property rights are affected and in cases where there is the presence and/or participation of Indigenous Peoples (IPs), local communities (LCs), and customary landowners. The agreement must be inclusive of all stakeholder groups with property and customary rights within the project.
- **Respect for Human Rights and Equity:** Specify the eligible sources of information and the appropriate evidence that should accompany the risk assessment of conformance to all safeguard requirements.
- **Property Rights:** Include monitoring requirements, indicating the types of evidence required to demonstrate displacement or other loss of use or rights have not occurred.
- **Just Transition**: Require consideration of a just transition (safeguarding against unemployment and ensuring fair and available work alternatives) for all relevant project types, including

requirements for employee transition plans, compensation to external dependants, and upskilling.

- **Armed personnel**: Include requirements to safeguard the operations and impact of armed personnel in projects, such as armed rangers in conservation areas. The requirements will include having in place a policy covering rules of engagement, proper training, correct use of force and de-escalation, protocol to report misuse of weapons or physical force, background checks, quantification standards like physical fitness and psychological stability, and limitations on use and deployment of arms.
- **Ecosystem Health:** Enhance requirements to identify pollutants and waste from the project activity and how they should be mitigated within the project area and beyond the project boundary. For projects that release pollutants that may negatively impact water bodies, add a requirement to monitor and report on the quantity and quality of water bodies within the project area and/or those beyond the project boundary that are impacted by project activities. For projects that may impact drinking water quality and/or access, add a safeguard for safe drinking water and provisions on access and quality.
- **Ecosystem Conversion**:
    - Clarify the evidence needed to demonstrate that degradation of the project area within the past ten years prior to project start was not caused to enable participation in the project.
    - Enhance all definitions that support the ecosystem conversion requirements by:
        - clearly distinguishing ecosystem conversion and ecosystem restoration.
        - clarifying what the "degradation" and "ecosystem degradation" program definitions mean for different ecosystem types.
        - adding new definitions that increase the objectiveness of the requirements, such as the definition(s) that relate to different restoration types, reforestation, revegetation, commercial forest plantations, degradation of non-forest ecosystems, anthropogenic and mosaic landscapes, and more.
        - specifying the requirements for different types of restoration and under which conditions they are allowed, while considering local context appropriateness and the need for climate change adaptation.
        - defining the appropriate evidence that shall be acceptable to comply with all requirements and program definitions.

2.2.3 Requested Feedback

1) Should there be a common set of safeguard requirements for all Verra programs?
2) Are there any additional general updates that could help strengthen or clarify the VCS safeguard requirements?
3) Do you disagree with any of the proposed new or updated safeguard requirements? Please explain why.
4) What do project proponents and validation/verification bodies need the most guidance on when it comes to safeguards?

2.3 Sustainable development contributions and indicators

2.3.1 Background

Verra seeks to deliver climate action at the scale, pace, and integrity needed to support global climate ambitions. Climate action is intrinsically linked to sustainable development. Therefore, high-integrity climate outcomes that reduce GHG emissions and remove carbon dioxide should improve people's well-being and livelihoods while protecting nature.

Currently, VCS projects registered on or after January 2023 must demonstrate contributions to at least three United Nations (UN) Sustainable Development Goals (SDGs), one of which can be SDG 13, Climate Action. Projects registered before this date will be required to demonstrate SDG contributions after January 2025. To comply with this requirement, projects have two options:

- Report their contributions using the SDG indicators.
- Self-define their indicators when an appropriate indicator is unavailable in the UN SDG metadata. Self-defined indicators are often required because the SDG indicators were designed to measure country-level progress toward sustainable development (e.g., universal health coverage) instead of project-level interventions (e.g., setting up and running a mobile health clinic).

Furthermore, VCS projects can certify additional sustainable development benefits using other Verra programs, such as the Climate, Community, & Biodiversity Standards (CCBS) or the Sustainable Development Verified Impact Standard (SD VISta).

2.3.2 Proposal

Verra envisions a holistic approach to sustainable development within our standards programs. We aim to enhance program usability and quality, reduce burden, and standardize project measurement, reporting, and verification. This approach entails providing tools that support project proponents to efficiently and in a standardized, yet flexible, way:

1) Report their required SDG contributions, and

2) Optionally, demonstrate their sustainable development benefits using simple methods.

Verra is exploring developing a tool (e.g., an indicator catalog) that helps projects select adequate and standardized common SDG contribution indicators by project activity type, along with more detailed guidance for quantifying and assessing contributions.

2.3.3 Requested Feedback

1) Which features would be most useful in a tool for SDG contribution indicators?
2) To increase integrity and ease of use, do you have suggestions for streamlining and aligning VCS with other Verra certifications linked to sustainable development benefits (e.g., CCBS or SD VISta)?

3) Do you have suggestions to minimize the burden on projects seeking to demonstrate robust sustainable development benefits?
4) How would a project's sustainable development benefits be best communicated to buyers?

2.4 New definitions to enable smallholder and community-driven projects

2.4.1 Background

Small-scale and smallholder projects often struggle to access the VCS Program. Small-scale projects typically refer to projects that generate a limited amount of GHG emission reductions or carbon dioxide removals a year (e.g., less than 16 000 t CO_2e per year). A smallholder generally refers to an actor managing or cultivating a small area of land (e.g., less than 3 ha).[7] Small-scale and smallholder project types are distinct but face similar barriers and may cover various project activity types, such as ALM, ARR, WRC, and more.

Barriers

Small-scale projects may have the same fixed costs as large projects, but fewer VCUs are issued, resulting in lower revenues. Smallholders typically need to aggregate in large numbers for a project to be cost-effective, which can create fragmented projects that are difficult to manage. The need for upfront investment and lengthy project payment cycles can lead to liquidity challenges that are particularly hard for small-scale and smallholder projects to overcome.

The VCS Program does allow multiple projects to combine into one larger project to reduce administrative costs. In these cases, each small project is referred to as an instance and the project may be a grouped project where further instances will be added throughout the project crediting period. Multi-instance or grouped projects are not always feasible though, and do not address all barriers faced by smallholder projects.

Initial exploration of the barriers facing small-scale and smallholder projects indicates that there are few one-size-fits-all solutions to promote access for these projects. This is partly because small-scale and smallholder projects can cover many activity types.

Options

One solution Verra is considering is to introduce program-level definitions for small-scale projects and smallholder projects to enable methodology-specific GHG monitoring and quantification pathways (e.g., an ALM methodology could provide methods tailored to smallholder projects).

Another possible solution is to introduce an optional default non-permanence risk rating for small-scale projects. Risk ratings are based on the assessment of risk factors, including internal, external, and natural risks. Projects must assess key risks, provide evidence of mitigation where relevant, and generate a non-permanence risk report (NPRR).

[7] As per the Food and Agriculture Organization (FAO)

A default risk rating for small-scale projects could lower the burden of project development, as projects would not have to produce a complete NPRR. In some cases, using a default value may result in higher withholdings, so should be optional. However in other cases, a default deduction could disincentivize projects from mitigating known risks to a project's permanence. There are two options to mitigate this risk:

1) Maintaining the specific criteria within the AFOLU non-permanence risk tool (NPRT) that "automatically" result in some projects failing the risk assessment. This would help safeguard against projects that would have failed the NPRT passing the risk assessment by using the default risk rating.
2) Limiting the use of the optional default risk rating to a project's first one or two monitoring periods. As projects often lack upfront investment, this could help reduce liquidity challenges faced by small-scale projects in their early years.

2.4.2 Proposal

Part 1: New definitions for small-scale and smallholder

Verra is considering program-level definitions of small-scale and smallholder to enable alternative pathways for these project types within VCS methodologies (e.g., default values for smallholder activities):

Small-scale AFOLU project
An AFOLU project where the total reductions and removals from all instances and activities are equal to or less than 16 000 t CO_2e/year

Smallholder
An actor who owns, leases, or works no more than 3 ha of land. In the context of community-owned land, land assigned to each community member is 3 ha or less.

Subsistence farmer
Smallholder producers loosely, or not at all, connected to commodity markets

Part 2: Introducing a default risk rating for small-scale projects using the AFOLU NPRT

Verra proposes implementing an optional 20% default risk rating for small-scale projects (e.g., projects with less than 16 000 t CO_2e reductions or removals/year). Automatic fails would be maintained, and the use of the default risk rating could be restricted to a project's first (or first and subsequent) monitoring periods.

2.4.3 Requested Feedback

New Definitions

1) What are the greatest barriers preventing smallholders and small-scale projects from participating in VCS projects? Please make it clear in your response whether the barrier is relevant to smallholders, small-scale projects, or both.

2) Could providing smallholder or small-scale specific pathways within VCS methodologies enable access for these project types? Why or why not? Which VCS methodology pathways could enable access?
3) Do you agree with the proposed definitions for small-scale AFOLU project, smallholder, and subsistence farmer? Why or why not?
4) Are there any other opportunities to streamline processes that could benefit smallholders and small-scale projects using the VCS Standard?

Default Risk Rating

1) Should Verra introduce a default risk rating for small-scale projects? Would this help small-scale project development? Please justify your response.
2) Is the proposed 20% default risk rating too high, low, or just right?
3) If Verra introduced a default risk rating, should this be restricted to a project's first monitoring period, first and subsequent monitoring period, or not restricted at all?

3 ENHANCING DATA TRANSPARENCY AND USABILITY THROUGH DIGITAL TOOLS

3.1 Enabling High-Frequency Digital Measurement, Reporting, & Verification (DMRV) Based Issuances

3.1.1 Background

Verra aims to revolutionize the Verra project cycle by digitizing it to enhance efficiency, speed, reliability, and transparency. This digitization focuses on DMRV (Digital Measurement, Reporting, and Verification), in which digital verification, a component dedicated to verifying monitoring reports, is a tool to bolster the credibility of Verra's programs.

Verra launched the DMRV pilot program in December 2022 to develop and test the implementation of DMRV technology tools and platforms in the VCS Program. Verra's Project Hub, which includes digital methodologies, forms a foundation for advancing digital verification.

There is a growing trend among project proponents towards digitizing their monitoring systems and data, alongside a rise in digitally enabled methodologies. Digital tools facilitate access to extensive sets of monitoring data, which can be processed through data pipelines. Validation/verification bodies (VVBs) are also developing digitally integrated auditing tools that employ algorithms for quality checks, including import, statistical, and cross-checks to interface with the project proponent and Verra systems. DMRV has the potential to significantly improve quality of data and calculations, reduce administrative costs, and enhance the transparency of project information with benefits for project proponents, VVBs, Verra, and VCU buyers.

The VCS Program does not restrict the frequency of project verification approval requests. A project could submit more than one monitoring report and verification approval request in a given year. There

are however, practical limitations to verification frequency using current approaches due to the time required for verification after each monitoring period.

3.1.2 Proposal

In VCS Version 5, Verra aims to fully enable DMRV-based issuances of VCUs on a much higher cadence than is currently common practice (moving from issuances every few years to monthly or even more often). DMRV approaches are already integrated into many projects for some monitoring parameters. A full DMRV project would involve digitization of all measurement, verification, calculation, and reporting with direct data linkages from the meter or other monitoring source through to the final reporting into Verra. Potential benefits of this approach include:

- reduced risk of data and calculation errors.
- reduced administrative costs for proponents, VVBs, and Verra.
- accelerated revenue generation for projects and Verra (avoids delay between review costs and issuance fee collection).
- enhanced transparency of project data for investors, buyers, and stakeholders.

To enable full DMRV-based issuances, Verra needs to update the VCS Program rules around validation of DMRV systems, timing of verification, monitoring and verification of safeguards, and site visits. We also need to create or update processes to determine eligibility for full DMRV-based issuances, and for review of full DMRV issuance requests. Some methodologies may also require updates, which would be addressed through the methodology development and review process.

The following updates are proposed to the VCS Program to enable DMRV-based high frequency issuances.

DMRV-based Issuance Eligibility Criteria

Projects may only be approved for high-frequency DMRV-based issuances where:

1) Verra has approved a verification review request within the last 12 months for a monitoring period that ended within the last 24 months.
2) The most recently approved verification was completed under version 4.5 or later of the *VCS Standard* and using version 4.3 or later of the *VCS Monitoring Report Template* and *VCS Verification Report Template.*
3) No project description or methodology deviations or updates have occurred since the last verification or validation. For example, if the project is a grouped project, no instances have been added since the last verification. Where such a deviation occurs, it shall not impact monitoring parameters and a full verification and validation is needed before DMRV-based issuances may resume.
4) A digital and accessible ongoing communication and grievance redress procedure as described in Sections 3.18.3–3.18.5 of the *VCS Standard, v4.7* is fully operational.
5) There are no significant outstanding stakeholder concerns or comments sent to the project proponent by Verra that have not been addressed.

6) No unmitigated safeguard risks were identified in the most recent project description, validation report, or the most recent verification report or monitoring report.
7) The DRMV system includes all monitoring parameters that form the calculation of reductions and removals.
8) The DMRV system has been validated by the VVB.
9) Verra has released a digital version of the methodology used by the project.

Application Process

A project proponent and their chosen VVB may apply to Verra for approval to conduct high frequency DMRV-based issuances by submitting a DMRV-based issuance request on the Verra Project Hub. The steps of the request process include the following.

1) The project proponent develops and documents the digital measurement and reporting system for all methodology parameters.
2) The project proponent establishes a digital measurement and reporting connection to the Verra Project Hub.
3) The project proponent identifies a VVB that can conduct digital verification of the project's digital measurement and reporting.
4) The VVB validates the digital measurement and reporting system and confirms project DMRV-based issuance eligibility in a digital measurement and reporting validation report.
5) The VVB establishes and documents the digital verification system and connects to the Verra Project Hub.
6) The project proponent and VVB prove DMRV system functionality with test data.
7) The project proponent submits a DMRV approval request to Verra including demonstration of eligibility, documentation of digital measurement and reporting system, validation report, and digital verification system description.
8) Verra reviews the request.

Issuance Process

For projects approved by Verra for high-frequency issuance, the project proponent shall:

1) Generate DMRV-based monitoring reports using a Verra-approved digital methodology on the Project Hub.
2) Have the DMRV-based monitoring report verified by the approved VVB (note that verification activities may be ongoing at the same time as digital measurement).
3) Pay the issuance fee for the total VCUs in the verification report, minus the holdback noted below.

At the end of the approved DMRV-based issuance period (1–3 years), the project proponent shall:

1) Prepare a full monitoring report for the entire DMRV period, completing all sections of the monitoring report template, and reporting on any adjustments to the DMRV-based monitoring reports from the DMRV-based issuance period (e.g., meter reconciliation results).
2) Have the monitoring report verified.

3) Submit a verification approval request no later than 12 months after the submission date of the most recent DMRV-based monitoring report.

VCU Holdback

Verra will only issue 50–80% of VCUs requested based on DMRV-based monitoring reports, depending on the complexity and risk level for the project. Upon Verra approval of a non-DMRV based verification approval request for the monitoring period, the remaining VCUs approved in such a request may be issued.

Validation of Project DMRV Approval Requests

1) A VVB validating a project DMRV approval request shall only issue a positive validation opinion where:
    a) all monitoring parameters that form the calculation of reductions and removals are included in the digital measurement and reporting system.
    b) the VVB can verify the data and calculations produced by the system.
    c) all DMRV-based issuance eligibility criteria are met.

Verification of DMRV-based Monitoring Reports

1) Notwithstanding Section 4.1.1 of the *VCS Standard, v4.7*, and the associated requirement in ISO 14064 and 14065 to conduct verification after monitoring finishes, VVBs verifying DMRV-based monitoring periods may conduct verification activities during the monitoring period.
2) A VVB verifying DMRV-based monitoring reports shall assess and only provide a positive verification opinion where:
    a) all monitoring parameters that form the calculation of reductions and removals are reported accurately.
    b) no significant outstanding unaddressed stakeholder comments or concerns were received through the project's ongoing communications and grievance redress processes or through Verra's stakeholder comment process.
3) The verification opinion for DMRV-based monitoring periods shall clearly state whether a positive verification opinion has been reached for the reduction and removal calculation and shall clearly state which VCS Program requirements were verified.

DMRV-based Issuance Pilots

To enable further development and proof of DMRV-based issuances, Verra is expanding the DMRV pilot program to allow qualifying projects to start DMRV-based issuances in parallel with this consultation and the development of VCS Version 5.

To participate in the pilot, projects must meet all eligibility criteria and requirements and follow all processes above, including for application to Verra for DMRV-based issuance approval. In addition:

1) Pilot projects must use an ANSI National Accreditation Board (ANAB)-approved VVB. As part of the approval process, we require:
    a) At least 60 days' notice of the first pilot verification audit.

   b) Verra and ANAB to be invited to observe the first DMRV pilot audit.
2) Pilots will last for up to one year. At the end of the pilot period, project proponents shall complete a full monitoring report demonstrating conformance to all VCS Program rules, including any reconciliation of data as necessary. The VVB shall complete a full verification of the monitoring report.
3) Pilot project proponents and their VVB must provide a Pilot Results Report to Verra at the end of the pilot, providing feedback on the program rules and tools and identifying any needed improvements for full VCS Program roll out.

Project proponents interested in participating in the DMRV pilot can contact DMRV@verra.org for more information and to apply.

3.1.3 Requested Feedback

1) Should DMRV-based high-frequency issuances be enabled, supplemented by periodic full verifications?
2) Should a portion of VCUs be held back until full verification is complete and approved by Verra? If so:
   a) Is 20–50% the right threshold of credits to hold back?
   b) Should the amount of credits held back vary by project type?
   c) What is the right frequency for full verifications: 1, 3, or 5 years?
3) How can stakeholder concerns be dealt with fairly during the DMRV-based issuance period?
4) Are there any risks to this approach that you are concerned about and how would you suggest mitigating them?
5) Do you have any other feedback on any of the other proposed rule changes or process proposals?

3.2 Enabling digital project submission and data monitoring

3.2.1 Background

Verra is modernizing its processes and tools through digitized capabilities to improve processing times, ensure data accuracy, and provide increased insights for stakeholders throughout the project cycle. This includes enabling stakeholders to submit information in a web-based digital format, submit project data including the automated calculation of reductions and removals, track and monitor project status, and efficiently review monitored data and parameters through an intuitive interface.

Verra recently launched the Digital Project Submission Tool Pilot to enhance the efficiency of processing, reviewing, and registering carbon projects. Project proponents and validation/verification bodies (VVBs) were invited to test the tool before launch. Over 140 stakeholders provided feedback, including recommendations for improving the tool, which were incorporated into the product launch. This tool is a crucial offering within the digitalization initiative under the New Era for Verra.

The Digital Project Submission Tool offers several key features. It provides a guided selection of digitalized methodologies, allowing for precise quantification of expected and actual emission reductions and removals based on raw input data. The tool generates electronic project descriptions and produces standardized, streamlined reporting documents such as monitoring, validation, and verification reports. It also hosts all project information and data, ensuring easy access and the ability to make revisions as needed. Additionally, the tool includes a parameter library relevant to methodologies, aiding project proponents in drafting comprehensive project documents.

As part of the soft launch of the tool, Verra has made the following limited set of methodologies and templates available:

Templates:

- VCS Program Templates, v4.3 (Project Description, Monitoring Report, Validation Report, Verification Report)
- Plastic Program Templates, v1.0 (Project Description, Monitoring Report, Validation Report, Verification Report)
- SD VISta Program Templates, v1.0 (Project Description, Monitoring Report, Validation Report, Verification Report)

Methodologies:

- Custom Methodology – A versatile template customizable to any VCS-approved methodology. It does not require data and parameter checks but offers a digital interface for creating project documents and monitoring reports where methodology-specific data and parameters are unavailable or where there is a need for methodology deviation.
- VMR0006 Energy Efficiency and Fuel Switch Measures in Thermal Applications, v1.2
- VM0044 Methodology for Biochar Utilization in Soil and Non-soil Applications, v1.1
- AMS-III.BM Lightweight Two and Three-wheeled Personal Transportation, v2.0
- PWRM0001 Plastic Waste Collection Methodology, v1.1
- PWRM0002 Plastic Waste Recycling Methodology, v1.1
- SDVM001 Methodology for Time Savings from Improved Cookstoves, v1.0

Any projects that are interested in using the above templates and methodologies now are encouraged to do so by contacting hubsupport@verra.org to request access. Verra will add additional methodologies and templates in the coming months.

3.2.2 Proposal

The VCS Program does not restrict how project documents are submitted to Verra. However, as more digital tools become available, Verra is considering transitioning to requiring all project documents to be submitted via the Digital Project Submission Tool.

As part of the transition to VCS Version 5, Verra aims to enable digital project submissions for the most frequently used methodologies. This includes digital project templates and methodologies and the

digital tracking of monitored data and parameters on a centralized platform. A full digital project submission would involve digital project document submission and all monitoring, verification, calculation, and reporting with direct data linkages from the meter or other monitoring source through to the final reporting into Verra. Potential benefits of this approach include increased efficiency in project cycle management through guided methodology selection, seamless project data input, and streamlined review and reporting.

To enable full digital project submission, Verra needs to update the VCS Program rules around how projects submit their project documentation and keep track of their monitored data.

The following updates are proposed to the VCS Program to enable digital submissions:

VCS Standard, v4.7 Section 3.5 Project Documentation

- Projects proponents shall submit their project documentation digitally via the Digital Project Submission Tool where the applied methodology and applicable templates are available in the Verra Project Hub.
- If the applicable methodology is not available or the project is applying a methodology deviation, the "Custom Methodology" template shall be used in the Digital Project Submission Tool.

VCS Standard, v4.7 Section 3.16 Monitoring

- Where the data and parameters used for the quantification of reductions and removals are available in a digital format, the project proponent shall provide and update them in the Digital Project Submission Tool.

Various updates to the *VCS Registration and Issuance Process* would be made to reflect the proposed requirements above.

3.2.3 Requested Feedback

1) Should use of the Verra Project Hub for digital project submissions be required where digital versions of the templates and methodologies are available?
2) Should project proponents be required to provide data and parameters in the Digital Project Submission Tool where they are available in a digital format?
3) Do you have any other feedback on the proposed changes?
4) Do you have any feedback on the Digital Project Submission Tool and the digital template and methodologies themselves? Feedback on Verra's digital tools can be submitted via this consultation and anytime by emailing hubsupport@verra.org.

4 REFINING THE PROGRAM SCOPE FOR MAXIMUM IMPACT

4.1 Removing the concept of approved GHG programs

4.1.1 Background

The *VCS Program Guide, v4.4*, Section 8 outlines the concept and functions of "approved GHG programs." The concept allows:

1) the cancelation of GHG credits under approved GHG programs to be issued as VCUs.
2) validation/verification bodies (VVBs) under approved GHG programs to become approved VVBs under the VCS Program.
3) project proponents to use methodologies under approved GHG programs in VCS projects.

A project registered under an approved GHG program is permitted to transfer to the VCS Program via a gap validation, which is a simplified validation process. The Climate Action Reserve (CAR), the Clean Development Mechanism (CDM), and the Joint Implementation (JI) mechanism are approved GHG programs.

Since the inception of these rules, Verra has made significant improvements to the VCS Program. New and revised VCS Program requirements now go above and beyond approved GHG program requirements. The recent updates to the *VCS Standard* introduced enhanced stakeholder engagement requirements and safeguards, and incorporated restrictions on double registration to align with ICVCM and CORSIA guidelines.

Further, Verra's procedures have evolved, rendering some of the approved GHG program functions ineffective. Verra no longer accepts VVBs accredited as designated operational entities (DOEs) under the CDM and requires VCS-approved VVBs to be accredited by a member of the International Accreditation Forum (IAF) (see Section 5 of the *VCS Program Guide, v4.4*).

Verra maintains a list of active methodologies on the Verra website, which includes methodologies from other GHG programs. Project proponents may continue to apply an active methodology from this list under the VCS Program, notwithstanding the proposed update.

Verra proposes removing the concept of approved GHG programs and the gap validation pathway, and revisiting the conditions for projects transferring from other GHG programs. This would strengthen the program's overall integrity and align the VCS Program with the strategic direction of the broader voluntary carbon market.

4.1.2 Proposal

Verra is considering removing the concept of approved GHG programs. CAR, CDM, and JI would no longer be recognized as approved GHG programs under the VCS Program. The proposed change would mean:

1) project proponents could no longer cancel credits from other GHG programs and issue them as VCUs.
2) projects registered under CAR, CDM, or JI could no longer gap validate to register under the VCS Program.

To maintain a pathway for projects to register under the VCS Program where they are or were registered under other GHG programs,[8] the following is being considered:

1) **Eligibility criteria for projects registered under other GHG programs**. Projects would need to:
   a) be registered or previously registered under another GHG program. Verra is considering whether projects from any GHG program would be eligible or whether a list of eligible programs should be posted on the Verra website.
   b) demonstrate that a stakeholder consultation was held prior to the project start date, for projects with a start date on or after 1 October 2023.
   c) Demonstrate prior consideration under the other GHG program. The proposal may depend on the VCS Program updates for prior consideration (see Section 1.4). Project proponents must:
      i) demonstrate that they provided evidence of prior consideration to the other GHG program within one year of the start date (e.g., CDM prior consideration notification), and
      ii) have requested registration under the other GHG program within two years of the project start date.
   d) have a project start date within five years of the VCS Program registration request date. AFOLU projects may have longer periods.
2) **Process for projects registered under other GHG programs**. Projects would need to:
   a) follow the VCS Program rules around demonstration of date of project inactivity under the other GHG program when requesting registration under the VCS Program.
   b) apply the most recent version of an active methodology and associated tools and modules under the VCS Program. Consequently, project proponents must:
      i) reassess regulatory surplus.
      ii) reassess additionality using the new applied methodology.
      iii) reassess the baseline scenario using the new applied methodology.
   c) validate against the most recent version of the VCS Program rules and applicable methodology, tools, and modules.
   d) complete all required documents and follow the processes outlined in Sections 3 and 4 of the most recent version of the *VCS Registration and Issuance Process*.
   e) use the applicable VCS Program project crediting period length, determined from the project start date (see *VCS Program Definitions, v4.5*).

4.1.3 Requested Feedback

[8] The proposal would replace the criteria outlined in Sections 3.23.9 –3.23.13 of the *VCS Standard, v4.7*.

1) Should projects that were registered under any GHG program be eligible to register under the VCS Program or should a list of eligible programs be posted on the Verra website? Why?
2) Verra is proposing that projects must have a project start date within five years of the VCS Program registration request date. Is this an appropriate number of years? Please explain your answer.
3) What are the challenges project proponents will face when reassessing their project's additionality and baseline scenario based on the project start date (i.e., date when the project started generating reductions and removals)? How can these be addressed?
4) Should projects that were registered under another GHG program be permitted to use the full VCS Program crediting period length, instead of the original GHG program crediting period length as per Section 3.9.7 in the *VCS Standard, v4.7*?
5) What other considerations should Verra evaluate in removing the concept of approved GHG programs?

4.2 Activities excluded under the VCS Program

4.2.1 Background

Table 1 in the *VCS Standard* was introduced in version 4.0 and outlines excluded project activity types. This table has been a source of confusion for project proponents as it leads to ambiguity on project eligibility.

In the past, the VCS Program allowed projects to use any methodology from approved GHG programs, including all CDM methodologies, where they adhered to all VCS Program rules. However, the VCS Program now only allows projects to use certain approved active CDM methodologies, which are listed on the Verra website. Because projects are only permitted to implement activity types which are covered by these approved methodologies, the need for Table 1 is diminished. However, some exclusions from Table 1 are not yet mentioned in the active CDM methodologies. Concurrently, Verra will revise CDM methodologies or tools to enable ICVCM CCP eligibility. This presents an opportunity to consider broadening scope eligibility for regions that are currently excluded for certain project activity types (e.g., grid-connected renewable energy generation). The current restriction may inhibit meaningful climate action in countries where climate finance incentives are still needed, making such projects additional.

4.2.2 Proposal

- Remove Table 1 from Section 2.1.3 in the *VCS Standard, v4.7* and instead integrate specific eligibility criteria (such as whether an activity is eligible in a non-LDC country versus an LDC country, small-scale versus large-scale) directly into the methodology requirements and the applicability conditions of active, VCS-approved versions of the CDM methodologies as new or updated Verra Methodology Revision (VMR) documents.
- Verra is considering allowing grid-connected renewable electricity generation projects in low, and lower-middle income countries (as defined by the World Bank), or countries where certain

eligibility conditions are met, instead of only allowing projects in LDCs (as defined by the UN) as is the current practice.

4.2.3 Requested Feedback

1) Should Table 1 be removed from the *VCS Standard* and eligible activities described within the relevant methodologies instead? Why or why not?
2) Which active CDM methodologies should be considered for inactivation under the VCS? Please provide a justification.
3) Should program scope exclusions for grid-connected renewable electricity generation be reduced in countries where climate finance may still be needed? If so, what criteria should be met to determine the eligibility conditions?
4) What threshold should be used to differentiate small-scale and large-scale grid-connected electricity generation? Why?
5) How can we ensure a fair transition to revised methodologies, considering the impact on existing projects?

4.3 Requirements for the use of biomass

4.3.1 Background

Several existing or under-development VCS methodologies use biomass to generate reductions and removals. Verra seeks to introduce safeguards to ensure that biomass is sourced and used in a sustainable manner that mitigates negative socio-economic and environmental impacts.

4.3.2 Proposal

1) Add the following clause describing rules for the use of biomass to the *VCS Standard.*

Use of biomass

3.19.30 Project activities that use biomass to generate GHG emission reductions or carbon dioxide removals through a means other than improving combustion efficiency (i.e., not cookstove projects) must comply with safeguard requirements appropriate to the biomass type at the methodology level.

2) Add the following definitions to the *VCS Program Definitions*.

Biomass

Non-fossilized and biodegradable organic material originating from plants, animals, fungi, and micro-organisms (e.g., agricultural and forest residues, purpose-grown organic material, non-fossilized and biodegradable organic fractions of industrial and municipal wastes), and the gases and liquids recovered from the decomposition of organic material

Biomass from by-products

Biomass that is a secondary output of the processing of primary products

Biomass from waste

Biomass that would otherwise be discarded or disposed of at the end of a production or harvesting process in the absence of a VCS project. This includes biomass that would only be collected for disposal or treatment.

Renewable biomass

Biomass produced in a manner that maintains stable or increasing carbon stocks over time (allowing only temporary decreases in carbon stocks due to harvesting), that meets all applicable national and regional conservation or production regulations and:

1) Originates from one of the following:
    a) Forests, croplands, and/or grasslands, and the land area remains, respectively, a forest, cropland, and/or grassland, or reverts to the natural ecosystem
    b) Aquatic ecosystems that are not converted or negatively impacted by biomass sourcing activities
    c) The cultivation of micro- and macroalgae under controlled conditions that do not negatively impact food security or the aquatic ecosystem
    d) A VCS AFOLU project, where full, conservative account of carbon stock change is documented and not double counted
2) Or is one of the following:
    a) An agricultural or forest residue used in a manner that does not decrease total carbon stocks – particularly dead wood, litter, and soil organic carbon – on the land areas from which it originates
    b) A byproduct, including waste and processing residues, of aquaculture production
    c) The biogenic fraction of industrial or municipal waste
    d) A terrestrial invasive species or aquatic nuisance species procured through corrective strategies to manage their proliferation

Supply chain traceability

The ability to track detailed information regarding the movement and transfer of goods and materials from the original production area to end-use

3) Add the following requirements to the *VCS Methodology Requirements, v4.4*.

Using Biomass

Methodologies for project activities that use biomass to generate GHG emission reductions or carbon dioxide removals through a means other than improving combustion efficiency (e.g., not cookstove projects) must:

1) include requirements for detailed traceability of biomass used in project activities, throughout the supply chain from production location, through any aggregators or intermediaries, to end-use. (i.e., a robust chain of custody system subject to validation/verification body (VVB) audits).
2) require the use of only renewable biomass.
3) include requirements for renewable biomass to meet sustainable management practices[9] appropriate for the biomass types relevant to the project activities, including avoiding ecosystem conversion and separate requirements for biomass from waste and/or by-products.
4) identify acceptable methods for demonstrating that the requirements in (3) have been met, through:
   a) certification through an international standard (e.g., International Sustainability and Carbon Certification (ISCC), Roundtable on Sustainable Biomaterials (RSB), Forest Stewardship Council (FSC)),
   b) Management plans or compliance reporting materials accepted by a regulatory body, or
   c) A combination of the above.
5) exclude the generation of credits from uses of biomass where it is not demonstrated that the requirements in (1) have been met, or limit to, at maximum, use of biomass that would have been used in the baseline scenario.
6) account for the upstream emissions from cultivation, transportation, and processing of biomass as leakage based on the relative change in biomass consumption between the project and the baseline.

4.3.3 Requested Feedback

1) Are there other requirements Verra should include in addition to or in place of those suggested? If so, what are they and, where relevant, which requirements should they replace?
2) Are the proposed requirements sufficiently detailed without being overly prescriptive?
3) Does this approach allow robust coverage of projects in cases where biomass is sourced from outside the project boundary? If not, how can robust coverage for sustainable biomass sourcing be improved?
4) Are the proposed requirements and definitions clear and enforceable? Do you have any suggested improvements?
5) Are the proposed requirements compatible with aquatic ecosystems and applicable sustainable aquaculture management?
6) Do any of the above requirements lead to a conflict with the scope and applicability of existing VCS-approved methodologies which would impact project implementation?
7) Is leakage accounting necessary where sustainable biomass certification is required?

[9] An example is available in the draft *Tool for Differentiating Reductions and Removals in CCS Projects* available here.

4.4 A new sectoral scope and requirements for open ocean project activities

4.4.1 Background

Verra is exploring expanding the VCS Program to support emerging open ocean reduction and removal activities (e.g., seaweed/kelp farming and avoided bottom trawling). Due to the immense size of the oceans and the buffering capacity of seawater, open ocean activities that avoid, reduce, or remove emissions offer substantial potential to divert carbon from the atmosphere.

Projects, activities, or methodologies can currently be developed under 16 VCS sectoral scopes. The VCS Program includes methodologies for conserving and restoring coastal blue carbon ecosystems (i.e., the atmospheric carbon captured and stored in mangroves, tidal salt marshes, and seagrass meadows) under sectoral scope 14, agriculture, forestry, and other land use (AFOLU). However, the current *VCS Methodology Requirements* limit blue carbon project activities to coastal blue carbon ecosystems, supported by the wetland restoration and conservation (WRC) requirements. Verra is also considering dividing the AFOLU sectoral scope into smaller subsectors. A proposal on this division will be included in a future consultation.

Ocean carbon pools and oceanic uptake, transport, and storage dynamics are not well suited to existing sectoral scopes and carbon accounting procedures, which were originally developed primarily for land-based ecosystems where carbon sequestration largely occurs autochthonously (i.e., in the same habitat in which it is produced). Marine environments pose unique challenges in quantifying, monitoring, and verifying the impacts of reduction and removal activities and, therefore, require their own sectoral scope.

4.4.2 Proposal

Add a new sectoral scope for open ocean projects that is distinct from sectoral scope 14, AFOLU. This will allow us to set standard- and methodology-level requirements specific to open ocean projects.

4.4.3 Requested Feedback

1) Should Verra create a new sectoral scope for projects implementing activities in the open ocean? Why or why not?
2) Which open ocean activities offer a significant opportunity for climate mitigation action in the near-term and have sufficient science to support crediting under the VCS Program?
3) Should Verra consider expanding the new sectoral scope to include open freshwater bodies, such as pond and lake ecosystems?

4.5 Geologic carbon storage (GCS) requirements

4.5.1 Background

Verra developed requirements for geologic carbon storage (GCS) and a *GCS Non-Permanence Risk Tool* (NPRT) in 2022. As part of continuous improvement and to align better with *VCS Methodology VM0049 Carbon Capture and Storage*, Verra is proposing a variety of updates to these program documents.

4.5.2 Proposal

Initial proposed changes are included in public consultation draft versions of the *GCS Requirements* and the *GCS Non-Permanence Risk Tool* in the appendix of this consultation document. The changes include:

- improvements to workability based on feedback from jurisdictional reviews and prospective project developers.
- elimination of a specific minimum reservoir depth for saline aquifers.
- elimination of the design risk element for the number of confining layers.
- clarifications to text.

4.5.3 Requested Feedback

1) Do the changes to ownership rights reduce burden for projects where pore space tenure and surface access are unlikely to be disputed? Why or why not?
2) Which countries could be considered for a positive list where regulatory oversight is sufficient and Section 3.1.3 in the attached *GCS Requirements* is unnecessary? Why?
3) How valuable was the requirement for investigations based on modeled non-negligible CO_2 containment loss in Section 3.4.6 of the *GCS Requirements*?
4) Does removing the design risk rating for confining layers (formerly Table 5 (b) in the *GCS Non-Permanence Risk Tool*) reflect the realities of the risk or reversal better and prevent unfair buffer scores? Why or why not?
5) How could changes to the scoring in the *GCS Non-Permanence Risk Tool* be improved to better reflect the risk of reversal in GCS projects?

Verified Carbon Standard
A VERRA STANDARD

Geologic Carbon Storage (GCS) Requirements

19 September 2024

Draft for public consultation

ABOUT VERRA

Verra sets the world's leading standards for climate action and sustainable development. We build standards for activities as diverse as reducing deforestation, to improving agricultural practices, to addressing plastic waste, and to achieving gender equality. We manage programs to certify that these activities achieve measurable high-integrity outcomes. And we work with governments, businesses, and civil society to advance the use of these standards, including through the development of markets. Everything we do is in service of increasingly ambitious climate and sustainable development goals – and an accelerated transition to a sustainable future.

Verra's certification programs include the Verified Carbon Standard (VCS) Program and its Jurisdictional and Nested REDD+ (JNR) framework, the Climate, Community & Biodiversity Standards (CCBS) Program, the Sustainable Development Verified Impact Standard (SD VISta) Program, and the Plastic Waste Reduction Program.

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CONTENTS

1 INTRODUCTION

This document provides project-level requirements for geologic carbon storage (GCS) project activities. GCS is an umbrella term and broadly refers to carbon capture and storage activities, geologic carbon mineralization, and carbon capture, utilization, and storage in geologic reservoirs. In its current version, this document provides requirements for CCS projects only. Subsequent versions may have additional sections to provide requirements for more GCS activity types and may evolve as methodologies are developed under this scope.

In addition to the requirements set out in this document, GCS projects must conform with all applicable VCS Program rules to be eligible for registration, VCU issuance, and release of buffer credits from the GCS pooled buffer account.

The material in this document has been inspired by and adapted from the following sources:

1) US EPA. (2002). Part 146- Underground Injection Control Program Class VI Requirements (40 CFR § 146.86) – Injection Well Construction Requirements. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-146/subpart-H/section-146.86

2) US EPA Office of Water. (201). Underground Injection Control (UIC) Program Class VI Well Site Characterization Guidance. https://www.epa.gov/sites/default/files/2015-07/documents/epa816r13004.pdf

3) European Union. (2009). European Parliament and the Council of the European Union (2009) Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC. https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0114:0135:EN:PDF

4) California Air Resources Board. (2018). Carbon Capture and Sequestration Protocol under the Low Carbon Fuel Standard. https://ww2.arb.ca.gov/sites/default/files/2020-03/CCS_Protocol_Under_LCFS_8-13-18_ada.pdf)

5) International Organization for Standardization. (2017). ISO 27914-2017 – Carbon dioxide capture, transportation and geological storage – Geological storage. https://www.iso.org/standard/64148.html

Although not required, these sources can be used as guidance for project proponents and storage site operators.

2 GENERAL GCS REQUIREMENTS

Each GCS project type (CCS, GCM, or CCUS) will have unique requirements. This section sets out the rules and requirements applicable to all GCS projects under the VCS Program and is in addition to requirements set out in the VCS Program document *VCS Standard*. CCS-specific requirements are set out in Section 3 below.

Appendix 2 illustrates the timelines and milestones relevant to GCS projects.

2.1 Ownership

Concept

Project proponents must demonstrate that they have the legal right to control and operate project activities. Given that GCS projects may be developed as vertically integrated or cooperative hubs, and because the risk of reversal at GCS storage sites persists beyond the crediting period, there are distinct considerations for ownership.

Requirements

2.1.1 The project description shall be accompanied by evidence establishing project ownership accorded to the project proponent(s) for the plant, equipment, and processes at all capture facility site(s), transportation system(s), and storage sites(s). The *VCS Standard* gives types of evidence.

2.1.2 For each storage site, evidence shall establish that each of the following either is the project proponent(s) or vests project ownership to the project proponent(s) through an enforceable and irrevocable agreement:

1) the pore space tenure holder(s).

2) the storage site operator(s).

2.1.3 Pore space tenure holders shall establish tenure for the target injection zone which spans the anticipated CO_2 storage area by having one of the following:

1) Title(s) ~~or lease(s)~~ to the pore space supported by relevant documents evidencing that title.

2) Lease(s) to the pore space, meeting the following conditions:

a. Where the GCS storage site is in a jurisdiction or a distinct part of a jurisdiction (e.g., the offshore) where all pore space is vested in the state, evidence of registration of the lease in the state registry.

b. Where the GCS storage site is in a jurisdiction where some pore space is privately held, a~~A~~ legal opinion from a qualified, independent lawyer, licensed to practice within the jurisdiction where the storage site is located, that endorses that the

tenure has been transferred, granted, or leased by the person(s) with the authority or ownership rights to the relevant pore space.

2.1.4 Storage site operators shall establish operatorship for a storage site by having:

1) Valid licenses, permits, or other such authorizations issued by the regulating jurisdiction to:

a. Drill injection and monitoring wells.

b. Operate the storage site(s).

2) Access rights to all ~~onshore surface and offshore~~ locations with injection and monitoring wells by having the following: ~~.~~

a. Where the GCS storage site is located in a place where there are no private surface owners, both:

i. results of a land title(s) search from a government registry for the relevant surface locations, and

~~i.~~ii. a reference to the constitution or law of that jurisdiction confirming that there are no private surface ownership rights relevant to the project or in that distinct part of the jurisdiction (e.g., offshore) in which the project is located.

b. Where the GCS storage site is located where some surface is privately held, a ~~A~~ legal opinion from a qualified, independent lawyer, licensed to practice within the jurisdiction where the storage site is located, that endorses that access rights have been granted by the person(s) with the authority or ownership rights to the relevant locations.

2.1.5 When an agreement evidences that a storage site operator vests project ownership to the project proponent:

1) The agreements shall include clauses that assign responsibility for each of the following at the storage site(s):

a) Storage site closure and/or post-closure requirements, including the effort and cost of site remediation (remedial liability), as well as redress for the release of injected CO_2 (climate liability).

b) Funding for post-injection site care (PISC) costs as per the Non-Permanence Risk Tool for Geologic Carbon Storage.

2) The project proponent(s) shall have a legal opinion from a qualified, independent lawyer, licensed to practice within the jurisdiction where the project is located, that endorses that the agreements or laws of that jurisdiction assign all the responsibilities described in Section 2.1.5(1).

2.1.6 Where project ownership changes or the parties to the agreements referenced in Section 2.1.5 change, the project proponent shall have:

1) An executed assignment and novation agreement, or equivalent, such that the new owners and contractual parties assume all the rights and obligations in the original agreements and pore space tenure instruments.

2) A legal opinion from an appropriately qualified, independent lawyer, licensed to practice within the jurisdiction where the project is located, that endorses that the assignment and novation agreement or equivalent, serves to transfer to the new owners and contractual parties all the rights and obligations in the original agreements and pore space tenure instruments.

2.2 Project Location

2.2.1 The project location shall be specified in the project description, with the following information provided:

1) The GHG emissions source location(s) at the capture site(s), specified by a geodetic coordinate.

2) The planned transportation network specified by a geodetic polygon, modes of transportation to be used, and their respective anticipated transport distances (if applicable).

3) The geographic area(s) of any expansion of project activities, specified by geodetic polygons.

4) The flowing CO_2 connection point(s) between the added project activities and the original or previously added project areas, with each connection point specified by a geodetic coordinate.

5) The injection and monitoring wellhead surface location(s) and bottom hole location(s) from deviated and/or horizontal wellbores when applicable, specified by a geodetic coordinate(s), along with the bottom hole depth.

6) A vertical surface projection of the storage reservoir area of review delineated with geodetic polygons provided in a KML file.

7) The total area of the storage reservoir surface footprint.

2.3 Non-Permanence Risk

Concept

To safeguard against the risk of CO_2 loss (a reversal) from a GCS project, the Verra Registry maintains a GCS pooled buffer account that holds a percentage of all GCS project credits. Buffer credits are cancelled to cover carbon known, or believed, to be lost. As such, the VCUs already issued to projects that subsequently fail are not cancelled and do not have to be “paid back”. All VCUs issued to GCS projects (as with all projects) are permanent. Processes related to the GCS buffer credits and the buffer

pool shall be advanced in accordance with the VCS Program document *Registration and Issuance Process* which is subject to forthcoming changes.

Requirements

2.3.1 Projects shall prepare a non-permanence risk report in accordance with the VCS Program document *GCS Non-Permanence Risk Tool* at validation and each verification. The non-permanence risk report shall be prepared using the *GCS Non-Permanence Risk Assessment Calculator* and shall be included as an annex to the project description or monitoring report, as applicable, or provided as a stand-alone document. ~~The report shall be prepared using the *VCS Non-Permanence Risk Report Template*.~~

2.3.2 The project may use multiple geologic storage zones. A risk analysis shall be carried out by the project proponent for each respective storage site and storage zone in accordance with the VCS Program document *GCS Non-Permanence Risk Tool*. The highest risk rating obtained for an individual storage site or zone shall be applied across the entirety of the project.

2.3.3 Buffer credits shall be deposited in the GCS pooled buffer account based on the non-permanence risk report assessed by the validation/verification body. Buffer credits are not VCUs and cannot be traded. The full rules and procedures for the deposit of buffer credits are set out in the VCS Program document *Registration and Issuance Process*.

2.3.4 Validation of non-permanence risk analyses may be conducted by the same validation/verification body that is conducting the validation or verification of the project and at the same time as the validation or verification of the project, as applicable.

2.3.5 Where an event occurs that is likely to qualify as a loss event, the project proponent shall follow the loss event reporting requirements set out in the VCS Program document *Registration and Issuance Process*.

2.3.6 At the verification event after the loss event, the monitoring report shall restate the loss from the loss event and calculate the net GHG benefit for the monitoring period, including the loss event, in accordance with the requirements set out in the methodology applied and the VCS Program document *Registration and Issuance Process*.

2.3.7 At a verification event where a reversal has occurred, the project proponent shall follow the buffer account reconciliation requirements set out in the VCS Program document *Registration and Issuance Process,* and no further VCUs shall be issued to the project or any other project with the same project proponent, or combination of project proponents, until the deficit is remedied. The deficit is equivalent to the full amount of the reversal, including GHG emissions from losses to project and baseline carbon stocks.

2.3.8 As set out in the VCS Program document *Registration and Issuance Process*, where projects fail to submit a verification report within the prescribed period from the previous verification event, a percentage of buffer credits is put on hold under the conservative assumption that the carbon benefits represented by buffer credits held in the GCS pooled buffer account may have

been reversed or lost in the field.

2.4 Expansion of GCS Projects

Concept

A GCS project includes the full value chain of capture, transport and storage. GSC projects may be expanded over time by adding additional elements of the value chain such as. ~~GCS projects may expand over time by adding~~ capture, transport, or storage sites~~/zones~~ and sharing existing infrastructure.

The ~~expanded~~ new element ~~of~~added to a project does not represent the full value chain of capture, transport, and storage itself~~themselves~~, as such ~~they are~~it is not a standalone project. ~~They are~~It is not another instance of a project activity and ~~are~~ is not a grouped project. A project expansion is not a unison of multiple projects but rather is restricted to the addition of project activities (capture, transport and/or storage sites~~/zones~~).

A project expansion can occur at any time and may not have been planned during the initial project design. Note that the initial project before an expansion may include multiple transport facilities and capture and/or storage sites. Therefore, the initial project may have either a cooperative hub or vertically integrated operating model, and both operating models can have project expansions.

The expansion of GCS Projects is managed on a case-by-case basis through the existing project description deviation requirements, with specific considerations for GCS project types.

Requirements

Eligibility Criteria

2.4.1 Expanded projects shall have a dedicated connection of CO_2 flowing to or from the expansion and the initial project, or other previous project expansions. A dedicated connection may include, among other things, a pipe connection, or a CO_2 transfer terminal for ships.

Project Description for Expanding GCS Projects

2.4.2 The project expansion shall be documented as a project description deviation in accordance with the requirements set out in the VCS Program Document *VCS Standard.*

2.4.3 Both the original and expanded project description documents shall be made available at all subsequent verifications.

2.4.4 ~~Regardless of whether or not the project expansion impacts the applicability of the GCS methodology (or modules), additionality or appropriateness of the baseline, t~~The project description shall be revised to include the following:

1) A description of the project expansion.

2) A description for the use of any additional GCS methodologies or module(s) (if applicable).

3) The location of project expansion areas and connection points as specified in Section 2.2.

4) Details of any new project proponents or other entities involved in the expanded project.

5) Determinations that the expanded project conforms with the applicability criteria of the methodology.

6) A description of how the expansion impacts additionality or the appropriateness of baseline scenario.

3 CCS REQUIREMENTS

3.1 CCS Specific Matters

Regulatory Oversight

3.1.1 The ~~project~~ storage site shall be located in a jurisdiction where regulatory oversight is provided by the government or a government agency (i.e., a statutory regulator) and meets the requirements in 3.1.2 and 3.1.3.

3.1.2 Where the regulatory program meets the minimum criteria set out in Section 3.1.3 below, regulatory oversight may be demonstrated through receipt and continued validity of a permit, license, or other such authorization to construct and operate injection wells and store CO_2 in geological reservoirs. Regulatory oversight may exist at various combinations of supra-national (e.g., the European Union), national, and sub-national levels.

3.1.3 Regulatory oversight means the following characteristics of a project are regulated:

1) Storage site(s) selection and reservoir characterization – Regulators have evaluated, and found adequate for the project activity, at least all the following:

   a) Reservoir capacity, including the geometry and extent of storage, and the spatial distribution of relevant geologic properties (e.g., porosity, permeability, pressure, temperature and/or fluid saturation).

   b) Injectivity of the storage reservoir, including a geological and hydrogeological characterization of the storage reservoir.

   c) Trapping mechanism(s), including characterization of the primary seal, secondary seals (if present), any other confining strata, faults, and fractures.

   d) The integrity of ~~both pre~~ existing ~~and new~~ wells that penetrate the reservoir~~, including their design and future ability to confine fluids~~.

   e) ~~Proximity to and p~~Potential ~~impacts to/from~~ interaction with other subsurface activities ~~and/or resources~~ including hydrocarbons, mineral resources, geothermal energy sources, dissolved minerals, ~~waste disposal~~ and other CCS projects.

f) Geochemical interactions~~properties~~ of the caprock, ~~/~~storage reservoir rock, and~~/or~~ injected fluid ~~interaction~~.

g) Geo-mechanical properties including natural seismicity, tectonic activity, faults, in-situ stress properties, and rock mechanical properties of both the storage reservoir and seals.

~~Characterization and protection of aquifers used for potable water or other water resources.~~

2) Well design, construction, and operating limits – Regulators have evaluated, and found adequate for the project activity, at least all the following:

a) Well designs meet the injection depth and injection rate for the project while maintaining wellbore integrity for the anticipated lifetime of the project until storage site closure, protecting groundwater sources, and withstanding anticipated conditions during the project.

b) Well casing, tubing, strings, and liners are of appropriate strength, material, and geometry to withstand the anticipated project conditions for the lifetime of the project until storage site closure, including pressure, corrosivity, temperature, and stress.

c) Cementing procedures and materials structurally support the well and casings, provides annulus seals below the base of protected groundwater, isolation at different reservoir intervals, and are appropriate to withstand the anticipated project conditions and post-injection conditions.

3) Monitoring requirements – Regulators require a monitoring program for the project activity that includes at least all the following:

a) The CO_2 storage ~~reservoir~~ complex is monitored during the injection and closure period.

~~b) The monitoring results support the identification of CO_2 loss in the storage reservoir.~~

~~c)~~b) Responsibility for monitoring is unambiguously assigned.

4) Storage site closure requirements – Regulators have a documented ~~and enforced~~ process for the closure of storage sites that includes at least all the following:

a) Storage sites are closed at their end-of-life ~~following specified timelines or conditional timelines driven by specified criteria~~.

b) Conditions, or qualifying criteria to be evaluated, are defined ~~and met~~ for successful site closure.

c) Responsibility for storage site closure, post-injection site care funding and post-closure liabilities are ~~unambiguously~~ defined. Post-closure liabilities include the effort and cost of site remediation (remedial liability), ~~as well as~~but do not need to

include redress for the release of injected CO_2 to the atmosphere or other zones (climate liability).

Reservoir Management

3.1.4 The storage site operator shall operate the storage site(s) such that the reservoir pressure does not reactivate faults or fracture the caprock at any point in time, and:

1) For depleted oil and gas reservoirs, the reservoir pressure shall not exceed the original pressure of the reservoir except locally around injectors during injection and well stimulation where it must remain below the caprock fracture pressure.

2) For ~~all other reservoirs~~saline aquifers, the reservoir pressure must remain below the caprock fracture pressure ~~except locally around injectors during injection and well stimulation~~.

3.2 Project Design

3.2.1 For injection in saline aquifers, ~~T~~the storage reservoir(s) shall ~~be at~~have a temperature and pressure ~~a depth no shallower than 800 m from the surface, such that the temperature and pressure of the storage reservoir are~~ sufficient to maintain the CO_2 in a liquid, supercritical, or dense phase.

3.2.2 A project may have multiple storage sites only where all the following criteria are met:

1) All storage sites in a project have a common storage site operator.

2) All storage sites in a project have interconnect~~inged surface~~ infrastructure.

3) All storage sites in a project are located within the same jurisdictional boundary (capture and transport may be in different jurisdictions).

4) All storage sites in a project are overseen by the same regulatory authorities and operate under ~~the same~~an integrated regulatory approval (this may include through revisions, renewals, extensions or updates to previous approvals).

3.3 Project Crediting Period

3.3.1 The project crediting period shall be seven years, five times renewable for a total of up to 42 years.

3.4 Monitoring

Concept

Monitoring ~~CCS projects~~requirements in this section consist~~s~~ of modeling activities using a reservoir model, geologic evaluations, a CCS monitoring program, and storage site closure activities. These

monitoring activities seek to detect CO_2 leak precursors at a storage site to prevent and detect CO_2 leaks and quantify GHG emissions from a reversal should it occur.

A monitoring program used to satisfy jurisdictional regulatory requirements can be used to fulfill VCS monitoring requirements if it meets the requirements in this section.

Requirements

Reservoir Model

3.4.1 The storage site operator shall create the following:

1) A reservoir model based on numerical ~~modeling~~modelling simulation tools.

2) A geologic evaluation that is supplemental to the reservoir model where dynamic data limitations and uncertainties exist.

3.4.2 The reservoir model and geological evaluation shall incorporate geological and geophysical data obtained from storage site selection activities, reservoir characterization activities, and ongoing results from the monitoring program. This may include well log data, petrophysical ~~data~~analysis, core data, test data, geophysical ~~analysis~~ data (i.e., seismic, gravity, etc. ~~data~~), pressure data, and any other relevant data or analyses available ~~to build and make effective use of a representative model and geologic evaluation~~.

3.4.3 The reservoir model shall include at least the following two elements:

1) Geostatic model – A representation of the storage complex that allows evaluation of potential behaviors.

2) Flow model – A representation of the flow of CO_2 and other fluids through the storage complex. This shall built ~~d~~ from the geostatic model, using pressure- and saturation-dependent properties, well locations, and geometries to calculate the pressure/saturation distribution in the reservoir, and the injection profiles over time.

3.4.4 The geologic evaluation shall include a geo-chemical ~~evaluation~~ and geo-mechanical evaluation that is based on ~~the estimated pressure and CO_2 migration~~outputs from ~~in~~ the reservoir model. The evaluations shall predict stress changes, deformations, risks of induced seismicity, and CO_2 interactions with minerals and fluids in the geological complex.

3.4.5 The storage site operator shall apply the reservoir model and geologic evaluation to:

~~1) Replicate the actual past behavior of the injected CO_2 over time.~~

1) Assess the risk of ~~stored~~ CO_2 loss (i.e., leaks) ~~and characterize the distributions and uncertainty of the outputs~~.

2) Evaluate the conformance of plume behavior against expectations as the project activity progresses.

3) Estimate the pressure differential between pre-injection and post-injection pressures in the injection zone(s).

4) Predict the CO_2 plume extent and ~~associated~~ pressure front at the expected time of site closure and ~~throughout~~ the end of the post-injection assessment period (PIAP).

3.4.6 Any reservoir model or geologic evaluation indicating potential non-negligible CO_2 containment loss shall be:

1) ~~Identified and discussed~~Included in an update to the monitoring program as a concern and vulnerability ~~being investigated through a specifically designed study~~.

2) Investigated within nine months of the indication through a specifically designed study that seeks a CO_2 leak signal using techniques that have a reasonable likelihood of detecting the type and quantity of CO_2 loss if it were to occur.

3.5 CCS Monitoring Program

CCS Monitoring Program Document

3.5.1 The project description shall be accompanied by a CCS monitoring program document ~~with, at a minimum~~that includes, at least~~,~~ the following elements:

1) ~~Project specific m~~Monitoring objectives and performance metrics based on systematic risk analysis and identification of potential leakage pathways~~, including the use of monitoring data for history matching and otherwise addressing uncertainties~~.

2) A description of methods used to assess the movement of the injected CO_2 plume or change in saturation, characterize the conformance of CO_2 behavior to expectations, and confirm the containment.

3) A description of each ~~M~~monitoring techniques including all the following:

   a) Instruments and equipment used,

   b) The contribution to the monitoring objectives and performance metrics established in 3.5.1 (1),

   c) Its application to the near-surface (including around any existing or abandoned wellbores) and sub-surface,

   d) Its application during pre-injection, injection, closure, and post-closure,

   e) Technical specifications such as sensitivity, range, depth~~. For each monitoring technique, the locations, parameters, tools~~, detection thresholds, detection frequencies, vertical and spatial resolutions~~, and a description of how these contribute to the project-specific monitoring objectives and performance metrics are established in Section 3.4.7(1) above~~.

4) A discussion of concerns and vulnerabilities ~~based on previous monitoring program results and reservoir model results,~~ including:

   a) the highest risks to permanent containment based on a systematic risk analysis,

   b) ~~a description of~~ any ~~specifically designed studies to investigate~~ non-negligible CO_2 containment loss model results as per Section 3.4.6, and

   c) any relevant updates arising from on-going monitoring program results and reservoir model results.

~~5) Methods used to assess the movement or change in saturation of the injected CO_2 plume, characterize the conformance of CO_2 behavior to expectations, and confirm the containment.~~

~~6)~~5) Urgent response and remedial plans in the event of a leak.

~~Conditions and a frequency for updating the monitoring program.~~

Operations and Monitoring

3.5.2 The storage site operator shall execute the activities described ~~by the elements~~ in the monitoring program document for the duration of the project injection period and the post-injection period until storage site closure. The project proponent shall execute post-closure monitoring where this is defined in the monitoring program.

3.5.3 The combined duration of monitoring post-injection until storage site closure and post-closure shall be no less than ~~ten~~ seven years. ~~This does not preclude longer monitoring durations where required by the regulator and/or desired by the project proponent(s).~~ Where regulators allow storage site closure before ~~ten~~ seven years, post-closure monitoring is required and must be defined in the monitoring program document.

3.5.4 The monitoring program shall be updated, at a minimum, ~~as follows~~according to each of the following:

1) At ~~least once during~~ each project crediting period renewal.

~~2) According to any conditions or frequency specified in the monitoring program as defined in Section 3.4.7(6).~~

~~3)~~2) Upon prediction of a non-negligible CO_2 containment loss in the reservoir model as set out in Section 3.4.6.

~~4)~~3) Upon identification of CO_2 loss by the monitoring program.

~~5)~~4) ~~At the discretion of the storage site operator.~~

CCS Monitoring Program Results

3.5.5 The project proponent shall ~~document~~ summarize monitoring program results for each monitoring period in the monitoring report ~~and shall include~~including at least the following

elements:

1) Results of monitoring program activities, performance metrics, and confirmation of containment or ~~declaration~~ assertion of leak volume.

2) Uncertainties in measured data~~/calculated~~ and performance metrics from the monitoring program~~, and the extent to which monitoring has changed containment uncertainties~~.

3) ~~Descriptions of monitoring techniques used, including locations, parameters, tools and equipment, detection thresholds, detection frequencies, spatial resolutions, analytical methods, and a~~A description of deviations or departures from the monitoring program ~~techniques defined in the monitoring program document~~.

4) Responsibilities of key personnel involved in the execution of the monitoring program, including their names, and roles for the reporting period.

5) Updated results ~~and commentary of subsurface behavior~~ from the reservoir model and geologic evaluations as per each task in Section 3.4.5 ~~using the latest monitoring program results~~.

6) ~~Updates and c~~Commentary on concerns and vulnerabilities identified in the monitoring program or from the reservoir model and geologic evaluations.

7) Modifications to the monitoring program going forward, including justification.

8) Storage site closure conditions that have been met (for when monitoring program ~~results~~ reports ~~that~~ cover closure ~~events~~periods).

3.5.6 The project proponent shall document CCS monitoring program results at least annually after the entire project crediting period has ended for post-injection monitoring (including closure and post-closure) and shall include each of the elements in Section 3.5.5 and if applicable 3.6.3. Post-injection monitoring program results shall be accompanied by an opinion from a third-party verifier affirming the confirmation of containment or ~~declaration~~ assertion of leak volume.

3.6 Storage Site Closure

Closure Plan

The closure plan describes the storage site closure activities, sets conditions for progression through the steps to close the storage site(s), and ensures that no CO_2 will leak after the storage site closure.

3.6.1 The storage site operator shall create and maintain a closure plan document. The closure plan shall include the following elements:

1) Closure conditions required by regulators as set out in Section 3.1.3(4).

2) Any additional ~~C~~closure conditions specified by other stakeholders including the project proponent, pore space tenure holder(s), and storage site operator(s).

3) The duration of the post-injection site care period ~~and a schedule of the processes, events, and site activities used to close the storage site(s)~~.

4) A description of each of the ~~post injection site care~~PISC period activities, ~~such as~~ (e.g., monitoring, abandonment of wells and facilities, corrective actions, remediation of the site(s)), ~~and other storage site closure and post closure activities~~.

5) Cost estimates for activities in the PISC ~~Post injection site care~~ period ~~cost estimates put forward when the closure plan is developed~~, discounted to present value. PISC costs include the monitoring program costs (from the end of injection to site closure), site closure costs, remediation costs, any corrective action costs, and post-closure monitoring costs. The discount rate shall be the most recently available headline consumer price index inflation for the country in which the storage site(s) is/are located, as defined by the latest World Bank Global Database of Inflation.[1]

3.6.2 The closure plan shall be updated:

1) Upon identification of CO_2 loss by the monitoring program.

2) Upon project crediting period renewal.

Storage Site Closure Conditions

3.6.3 The following conditions shall be met prior to storage site closure, and shall be documented in the CCS monitoring program results for the post-injection reporting periods prior to closure:

1) ~~There is c~~Containment is confirmed at the storage site(s).

~~2)~~ All closure conditions in the closure plan are met. ~~There is no significant risk that injected CO2 will have a significant adverse impact on the environment or human health.~~

~~3) The behavior of the CO2 has trended towards increased conformance with the reservoir model and geologic evaluations, per Section 3.4.5. Specifically:~~

~~4) The extent of the CO2 plume conforms to expectations, and~~

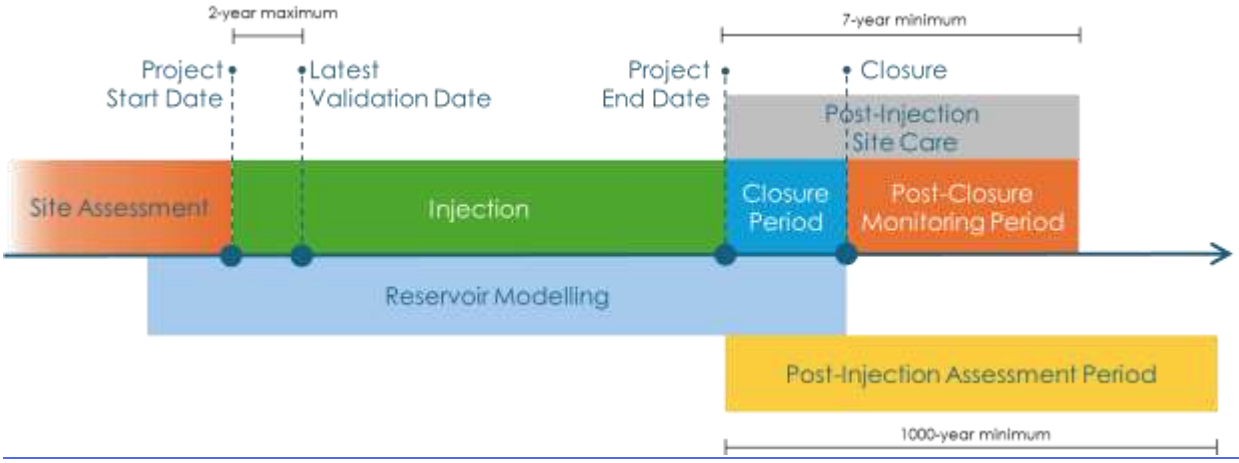
~~5)~~2) ~~The pressure differential between pre-injection and post-injection pressures in the injection zone(s) conforms to expectations,~~

~~6)~~3) The future CO_2 plume ~~migration~~ extent and pressure front evolution through the PIAP is ~~understood~~predicted using the reservoir model and geologic evaluations, and the risk of CO_2 loss does not increase.

[1] Latest as of writing is: Ha, J., Kose, M.A., & Ohnsorge, F. (2021). *One-Stop Source: A Global Database of Inflation*. Policy Research Working Paper 9737. World Bank. Dataset available at: https://www.worldbank.org/en/research/brief/inflation-database

APPENDIX 1: GCS PROJECT TIMELINES

An overview of the milestones, phases, and timelines associated with a GCS project is set out in the figure below.



APPENDIX 2: DOCUMENT HISTORY

Version	Date	Comment
v4.0	21 Dec 2022	Initial version released under VCS Version 4.
v4.0	17 Jan 2023	Minor formatting errors were corrected.
Draft	19 Sept 2024	Draft for public consultation

VERRA

Standards for a Sustainable Future

Verified Carbon Standard

Jurisdictional & Nested REDD+

Climate, Community & Biodiversity Standards

Sustainable Development Verified Impact Standard

Plastic Waste Reduction Standard

Verified Carbon Standard
A VERRA STANDARD

Geologic Carbon Storage Non-Permanence Risk Tool

19 September 2024

Draft for public consultation

ABOUT VERRA

Verra sets the world's leading standards for climate action and sustainable development. We build standards for activities as diverse as reducing deforestation, to improving agricultural practices, to addressing plastic waste, and to achieving gender equality. We manage programs to certify that these activities achieve measurable high-integrity outcomes. And we work with governments, businesses, and civil society to advance the use of these standards, including through the development of markets. Everything we do is in service of increasingly ambitious climate and sustainable development goals – and an accelerated transition to a sustainable future.

Verra's certification programs include the Verified Carbon Standard (VCS) Program and its Jurisdictional and Nested REDD+ (JNR) framework, the Climate, Community & Biodiversity Standards (CCBS) Program, the Sustainable Development Verified Impact Standard (SD VISta) Program, and the Plastic Waste Reduction Program.

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CONTENTS

1 INTRODUCTION AND SCOPE

This tool provides the procedures for conducting the non-permanence risk and buffer determination required for Geologic Carbon Storage (GCS) projects. The tool sets out the requirements for project proponents, implementing partners, and validation/verification bodies to assess non-permanence risk and determine the appropriate risk rating.

The first version of the tool was developed in 2022 by Verra in collaboration with the CCS+ Initiative, through a working group composed of leading experts. Tool development involved an extensive peer-review process.

Risks in GCS projects are managed through two approaches. Regulatory approaches include setting minimum criteria for project and proponent eligibility and setting project operational and closure requirements. These requirements are provided in the *VCS Standard* and in the *GCS Requirements*. In the *Geologic Carbon Storage Non-Permanence Risk Tool*, risk mitigation is accomplished by assessing the risk of an eligible project and contributing proportionally to the GCS pooled buffer account to ensure that all issued Verified Carbon Units (VCUs) remain valid despite the potential for reversals. Risk ratings are based on an assessment of individual risk factors for each project, which is summed to determine the total risk rating, as set out in Section 2.

This document and the GCS pooled buffer account are subject to periodic reconciliation and revision based on a review of existing GCS verification reports and an assessment of project performance, as set out in the *VCS Program Guide*.

In addition to the requirements set out in this document, GCS projects shall comply with all applicable VCS Program rules and requirements.

The material in this document has been inspired by and adapted from the United States Environmental Protection Agency (EPA) *Underground Injection Control Program Class VI Requirements (40 CFR § 146.86) – Injection Well Construction Requirements,* EPA Office of Water (2013) *Underground Injection Control (UIC) Program Class VI Well Site Characterization Guidance*, the European Parliament and the Council of the European Union (2009) *Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC*, the California Air Resources Board (2018) *Carbon Capture and Sequestration Protocol under the Low Carbon Fuel Standard* and the *ISO 27914 – Carbon dioxide capture, transportation and geological storage – Geological storage* (including all referenced requirements) with amendments made where necessary to fit the context of the VCS Program.

1.1 Scope

1.1.1 This document sets out the procedures for conducting the non-permanence risk analysis for GCS projects. The non-permanence risk rating ("risk rating") is used to determine the number

of buffer credits that a GCS project shall deposit into the GCS pooled buffer account. The procedure for depositing buffer credits is set out in the VCS Program document *Registration and Issuance Process.*

1.1.2 In the context of buffer credits for GCS projects, the principal concern for permanence is CO_2 loss from the storage zone(s) to the atmosphere. Given the VCS principles to do no harm and to recognize community and biodiversity impacts, risk mitigation in GCS projects is also concerned with unanticipated CO_2 loss from the storage reservoir to adjacent formations impacting underground sources of drinking water (USDW) and/or other subsurface resources.

1.1.3 This document applies to projects that sequester CO_2 with the intent of permanence on geologic timescales (e.g. thousands of years). Acknowledging that assessment across these timescales is not feasible, the VCS assesses the durability of sequestered CO_2 through the injection period and post-injection assessment period. CO_2 reductions and removals from projects that meet the eligibility conditions and operating requirements and contribute to the GCS pooled buffer account according to the risk rating prescribed in this document are considered permanent for the *VCS Standard*.

1.1.4 Section 2 of this document applies to carbon capture and storage (CCS) projects as defined in the *VCS Standard*. The requirements in this document do not apply to CO_2 storage in enhanced oil recovery (EOR) schemes, geologic mineralization, materials (cement, steel, etc.), fuels, or biogenic carbon sinks. Additional sections may be included in this document in subsequent revisions to assess the risk of other such GCS activities.

2 CARBON CAPTURE AND STORAGE RISK ANALYSIS AND BUFFER DETERMINATION

2.1 Risk Analysis

2.1.1 The project shall be evaluated against each category in Section 2.2. and the project proponent shall follow the calculation formulas in each table to determine the risk rating for each category.

2.1.2 Project proponents shall document and substantiate the risk analysis covering each risk factor applicable to the project.

2.1.3 The validation/verification body shall evaluate the risk analysis undertaken by the project proponent and assess all data, rationales, assumptions, justifications, and documentation provided by the project proponent to support the non-permanence risk rating.

2.1.4 The overall risk rating shall be determined by summing each of the risk category scores, following the procedure in Section 0.

2.2 Risk Categories

2.2.1 Regulatory Framework Risk (RFR) shall be assessed using Table 1, noting the following:

1) RFR refers to the rules of the jurisdiction(s) in which the project is located. Examples include rules for ~~that pertain to~~ well licensing, well classification ~~(including a classification for high-pressure or acid gas injection wells)~~, casing and cementing requirements, downhole abandonment requirements, and accessibility/reliability of records of pre-existing wells in the area of review. The rules may include legislation, regulations, standards, directives, and the practices of the relevant regulator, including enforcement and guidance documents.

2) Priority refers to an explicit regulatory or legislative system that manages conflicts between competing pore space resource~~s~~ use in a way that protects the storage integrity and permanent storage of CO_2 in a CCS project ~~relative to competing geological resources~~ now and in the future. Examples of competing pore space resource use include oil and gas production activities, other waste disposal activities, gas storage, geothermal energy, or mineral brine production activities.

3) Transfer of liability refers to the transfer of liability for the CCS storage site(s) from the operator of the facility to the regulating jurisdiction after~~:~~ ~~I~~t~~t~~he site(s) have been closed to

the regulator's satisfaction~~, and The regulator is satisfied that the CO_2 has been demonstrated, with a high degree of confidence, to behave in a stable and predictable manner~~.

4) The transfer of liability includes liability for any required remedial operations (remedial liability) ~~as well as~~but not liability to reconcile any loss of carbon credits resulting from the leakage of injected CO_2 to the atmosphere (climate liability). Where the transfer of liability to the jurisdiction is not specified by law or regulation, or not possible, liability remains with the project proponent.

Table 1: Regulatory Framework Risk (RFR)

Risk Element	Description or Criteria	Score
a)	The jurisdiction has ~~in place~~ a regulatory framework that affords priority to a CO_2 storage project in the event of any competing pore space resource use~~, such as oil and gas production activities, other waste disposal activities, gas storage, geothermal energy, mineral brine exploration, and development, or other resource activities~~.	0
	The jurisdiction does not have ~~in place~~ a regulatory framework that affords priority to a CO_2 storage project ~~in the event of any competing pore space resource use, such as oil and gas production activities, other waste disposal activities, gas storage, geothermal energy, mineral brine exploration, and development or other resource activities~~.	0.125
b)	A legislative or regulatory rule provides for the transfer of ~~both climate and~~ remedial liability is in place.	0
	~~A legislative or regulatory rule providing for the transfer of remedial liability or climate liability (but not both) is in place.~~	~~0.0625~~
	There is no ~~legislative or regulatory rule providing for the~~ transfer of remedial liability.	~~0.125~~0.0625
Total Regulatory Framework Risk (RFR) = a + b		

2.2.2 Political Risk (PR) shall be assessed using Table 2, noting the following:

1) A governance score (of between −2.5 and 2.5) for the jurisdiction in which the storage facility is located shall be calculated from the mean of governance scores across the six

indicators of the World Bank Institute's Worldwide Governance Indicators (WGI)[1], averaged over the most recent five years of available data.

2) Governance scores shall be translated into risk scores as set out in Table 2.

3) If a country does not have at least five years of data for any WGI's, it is not eligible for CCS projects under the VCS program.

Table 2: Political Risk (PR)

Risk Element	Description or Criteria	Score
a)	Governance score of 0.82 or higher	0
	Governance score of 0.19 to less than 0.82	0.25
	Governance score of −0.32 to less than 0.19	0.5
	Governance score of −0.79 to less than −0.32	2
	Governance score of less than −0.79	4
Total Political Risk (PR) = a		

2.2.3 Land and Resource Tenure Risk (LRTR) shall be assessed using Table 3, noting the following:

1) Land and resource tenure refers to the exclusive right to use the storage reservoirs and pore space for the injection of CO_2, as well as the surface rights to install injection facilities, pipelines, access roads, monitoring wells, or other sensory equipment for GCS projects.

2) Reservoir and pore space rights for the injection of CO_2 and surface rights may be owned by the government, communities, or private entities.

~~2)~~3) Access rights mean access to injection facilities, monitoring wells, and other sensory equipment and can be secured through ownership, leases, rights of way, or government-issued right of entry orders

[1] World Bank, Yearly, Worldwide Governance Indicators, http://info.worldbank.org/governance/wgi

Table 3: Land and Resource Tenure Risk (LRTR)

Risk Element	Description or Criteria	Score
a)	All pore space within the area of review is government-owned.	0
	At least some of the pore space within the area of review is community- or privately owned.	0.125
b)	Access ~~to injection facilities, monitoring wells, and other sensory equipment is secured through ownership, leases, rights of way, or government issued right of entry orders~~rights are secured for the duration of the project and the post-injection site care (PISC) period.	0
	Access ~~to injection facilities, monitoring wells, and other sensors are secured through ownership, leases, rights of way, or government issued right of entry orders~~rights are secured for a portion of the project and PISC period but is subject to expiry and/or conditional renewals during the injection or PISC periods.	0.25
Total Land and Resource Tenure Risk (LRTR) = a + b		

2.2.4 Closure Financial Risk (CFR) shall be assessed using Table 4, noting the following:

1) The CFR is based on the funds in place for post-injection site care (PISC) costs (closure and post-closure monitoring as per the GCS closure plan) at the time of evaluation (when the *GCS Non-Permanence Risk Tool i*s used at validation and each verification), and on the likelihood that funding will be in place at the end of injection.

2) There are different types of funding:

   a) Secured project funding refers to dedicated, unencumbered funding such as trust funds, endowments, bonds, irrevocable letters of credit, cash on deposit with the regulator or government, and private insurance. Secured project funding shall be dedicated to PISC costs for the project and cannot be accessed for other purposes or projects by the project proponent or secured as collateral by other creditors of the project proponent. This includes any secured project funding collected or prescribed by the jurisdictional regulator that the project can access for PISC activities. It does not include regulator- or government-managed funds intended for servicing costs incurred by the jurisdiction after the transfer of liability has occurred.

   b) Unsecured funding refers to cash-in-place, corporate guarantee, self-insurance, and contractual agreements over which the project proponent has control and that can be used to service PISC costs. Unsecured funding also includes callable financial resources that are readily available to the project. The availability of such resources may be indicated through revocable letters of credit, revolving credit lines, corporate

guarantees, or other financial backing, as evidenced by signed agreements that demonstrate the project's ability to access funding as needed.

3) PISC costs include monitoring program costs (from the end of injection to site closure), site closure costs, well-plugging costs, remediation costs, any corrective action costs, and post-closure monitoring costs.

4) The percentage of PISC costs covered shall be calculated by adding up all funding and revenue available according to the categories of funding described in Section 2.2.4(2) and dividing this by the PISC cost as identified in the GCS closure plan.

5) Evidence shall be provided that ~~agreement~~ counterparties to funding agreements are in good financial standing ~~to demonstrate~~and ~~the ability to~~can meet the financial obligations. ~~Project proponents~~For example, they may demonstrate funding through~~, for example,~~ financial statements, bank records, surety bonds, or private insurance agreements.

6) Project proponents with mixed funding models (including secured funding, unsecured funding, and insufficient funding) shall complete Table 4 by inputting the proportion of funding in each of the categories and shall add up the total according to the equation given. Where a jurisdiction requires a project proponent to post or otherwise maintain financial security for PISC costs to obtain regulatory approval, the project proponent may use the amounts of such financial security to meet the requirements of Table 4.

Table 4: Closure Financial Risk (CFR)

Risk Element	Description or Criteria
a)	The percentage of PISC costs covered by secured funding (expressed as a decimal)
b)	The percentage of PISC costs covered by unsecured funding (expressed as a decimal)
c)	The percentage of PISC costs not funded (expressed as a decimal)
Total Closure Financial Risk (CFR) = a + (1.5 × b) + (5 × c)	

2.2.5 Design Risk (DR) shall be assessed using Table 5, noting the following:

~~1) Appendix 1 provides design guidelines for injection wells. These are adapted from the US EPA *Underground Injection Control Program Class VI Requirements (40 CFR § 146.86) – Injection Well Construction.*~~

~~Confining layers and storage reservoirs are of sufficient size and integrity to contain the injected carbon dioxide without initiating or propagating fractures or leakage from the storage site.~~

~~2)~~1) Access to relevant well data means data as applicable for site characterization and monitoring as part of the monitoring program, such as drilling logs, seismic data, and core samples from wells that penetrate the primary or any secondary seals of the storage reservoir within the area of review.

Table 5: Design Risk (DR)

Risk Element	Description or Criteria	Score
a)	All injection wells for the project meet the design guidelines in Appendix 1.	0
	Some or all injection wells for the project do not meet the design guidelines in Appendix 1.	2
~~b)~~	~~The storage reservoir has more than two confining layers above the sequestration zone.~~	~~0~~
	~~The storage reservoir does not have more than two confining layers above the sequestration zone.~~	~~1~~
b~~c~~)	The project proponent has access to all relevant well data ~~(e.g., drilling logs, seismic data, core samples) from all wells that penetrate the primary or any secondary seals of the storage reservoir within the area of review for site characterization and monitoring as part of the monitoring program~~.	0
	~~There are wells other than the injection and monitoring wells of the project that penetrate the primary or any secondary seals of the storage reservoir within the area of review, to which t~~The project proponent does not have access ~~for review or inclusion of~~to relevant well data ~~(e.g., drilling logs, seismic data, core samples) for site characterization and monitoring as part of the monitoring program~~.	1~~.5~~
Total Design Risk (DR) = a + b ~~+ c~~		

2.3 Overall Non-Permanence Risk Rating and Buffer Determination

2.3.1 The overall non-permanence risk rating shall be determined using Table 6.

Table 6: Overall Risk Rating

Risk Category		Total Risk Score
RFR	Regulatory Framework Risk	
PR	Political Risk	
LRTR	Land and Resource Tenure Risk	
CFR	Closure Financial Risk	
DR	Design Risk	
Overall risk rating = RFR + PR + LRTR + CFR + DR		

2.3.2 The minimum risk rating shall be 1, as per calculations in Tables 1–6. As outlined in the GCS Requirements, the maximum acceptable non-permanence risk rating for a CCS project is 7 at validation and each verification.

2.3.3 To determine the number of buffer credits that shall be deposited in the GCS pooled buffer account, the overall risk rating shall be converted to a percentage (e.g., an overall risk rating of 3 converts to 3 percent). This percentage shall be multiplied by the tonnes of injected CO_2 (stated in the verification report), as set out in the VCS Program document *Registration and Issuance Process*.

2.3.4 Buffer credits shall be deposited in the GCS pooled buffer account per the procedures set out in the VCS Program document *Registration and Issuance Process*. The rules and requirements for the release and cancellation of buffer credits from the GCS pooled buffer account are set out in the same document.

2.3.5 In cases where a project has multiple storage zones and/or storage sites, the risk analysis shall be carried out for each respective storage site and/or storage zone and the highest risk rating obtained shall be applied across the entirety of the project.

APPENDIX 1: INJECTION WELL GUIDELINES

These guidelines are adapted from the US EPA *Underground Injection Control Program Class VI Requirements (40 CFR § 146.86) Injection Well Construction Requirements* and help to characterize the design risk of a GCS project (Table 5).

A) General. The CO_2 injection wells are constructed and completed to:

1) Prevent the movement of fluids into or between USDWs or into other zones;
2) Permit the use of appropriate testing devices and workover tools; and
3) Permit continuous monitoring of the annulus space between the injection tubing and the long string casing.

B) Casing and cementing of CO_2 injection wells.

1) Casing and cement or other materials used in the construction of each CO_2 injection well have sufficient structural strength and are designed for the life of the GCS project.
2) All the well materials are compatible with fluids with which the materials may be expected to come into contact and meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the regulator of the jurisdiction in which the GCS project is located.
3) The casing and cementing programs are designed to prevent the movement of fluids into or between USDWs.
4) Surface casing extends through the base of the lowermost USDW and is cemented to the surface with single or multiple strings of casing and cement.
5) At least one long string casing, using a sufficient number of centralizers, extends to the injection zone and must be cemented by circulating cement to the surface in one or more stages.
6) Cement and cement additives are compatible with the CO_2 stream and formation fluids and are of sufficient quality and quantity to maintain integrity over the design life of the GCS project. The integrity and location of the cement shall be verified using technology capable of radially evaluating cement quality and identifying the location of channels to ensure that USDWs are not endangered.

C) Tubing and packer

1) Tubing and packer materials used in the construction of each CO_2 injection well are compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the regulator of the jurisdiction in which the GCS project is located.
2) All storage site operators shall inject fluids through tubing with a packer set at a depth opposite a cemented interval.

APPENDIX 2: DOCUMENT HISTORY

Version	Date	Comment
v4.0	21 Dec 2022	Initial version released under VCS Version 4.
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