Proposal for Modifications to American Carbon Registry methodology "Improved Forest Management Methodology for Quantifying Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands, Version 2.0"

The following is a summary of significant changes to the methodology "Improved Forest Management Methodology for Quantifying Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands" from v1.3 published April 2018 to v2.0 published July 2022.

Topic	Revision	Section
Definitions	Added definitions for the following terms: Commercial Harvesting, Market Leakage, Professional Forester, Project Proponent, Reporting Period, Reversal, Start Date, and Working Forest. Public comment: Added definition of "Removal" and deleted definition of "Working forest".	Acronyms and Definitions
Applicability Conditions	Clarified that land owned in-fee by the U.S. federal government is eligible when full control of timber and carbon rights is held by a non-federal entity for the entirety of the ACR minimum project term. Public Comment: Clarified footnote 1 that when lands are transferred to be transferred and owned in-fee by the U.S. federal government, the NPV discount rate of the entity controlling timber and carbon rights must be employed for baseline setting.	1.2
Applicability Conditions	Updated to allow approved long-term forest management plans and programs to fulfill the sustainable management requirement.	1.2
Sustainable Management Requirements	Public Comment: Separated Applicability Conditions by creating new section for Sustainable Management Requirements (new section 1.3).	1.3
Sustainable Management Requirements	Public Comment: Changed applicability of using long-term forest management plan or program to only relevant for landowners <5,000 acres. Also clarified requirement that	1.3

	FMP's must incorporate guidance for sustainable forest management as prescribed by FSC, SFI, or ATFS. Peer Review: Lowered threshold for using FMP to demonstrate sustainable forest management from 5,000 acres to 2,500 acres. Also, rather than ACR assessment of FMP's demonstrating sustainable forest management, FMP's must be prepared/signed by a professional forester.	
Sustainable Management Requirements	Peer Review: Added new section (1.3.1) clarifying that FMP option for ownerships <2,500 acres must identify how their plan is compatible with Montreal Process Criteria and Indicators	1.3.1
Sustainable Management Requirements	Clarified sustainable management requirements for tribal lands. Federally recognized lands must demonstrate a current BIA management plan. Non-federally recognized tribes may utilize options in 1.3, or in absence of such, demonstrate practices informed by traditional knowledge.	1.3
Pools and Sources	Removed requirement that standing dead wood be included in unmanaged forests. Standing dead wood is optional.	1.3
Pools and Sources	Added belowground standing dead wood pool.	1.3
Pools and Sources	Peer Review: Clarified that CH4 pool is excluded for burning of biomass. Also deleted accounting references to this pool throughout the document.	1.4
Methodology Summary	Removed language pertinent to baseline development and added the removed language to section 4.1. Public Comment: Deleted remainder of section for redundancy.	1.4
Project Temporal Boundary	Added events that may denote project start date (from ACR Standard), including new events: land acquisition or easement enrollment date, and date of corporate or board resolution.	2.3
Project Temporal Boundary	Added validation time frame (from ACR Standard).	2.3
Additionality	Peer Review: Specified that regulatory surplus must be confirmed at each verification.	2.4
Additionality	Public Comment: Clarified the regulatory surplus test involves evaluating any deed restrictions. Also, where lands were purchased with donor funds, includes confirmation that funding stipulations do not prohibit timber harvesting. All legally binding conditions of easements in place >1 year prior to project start date must also be considered.	2.4
Additionality	Public Comment: Clarified Common Practice requirement of demonstrating project activity exceeds management of "similar" landowners.	2.4

	Clarified project activity must exceed common practice management of similar forests in the region. Includes describing how silviculture and harvest regime compares to regional common practices and demonstration that that practices similar to baseline have occurred at one or more comparable sites (e.g., similar forest type, ecological condition, species/product mixture). Peer Review: Specified common practice test requires: 1) describing the predominant forest management practices occurring on comparable sites of the region that have not been enrolled in a carbon offset project (e.g., similar forest type, ecological condition, species/product mixture), 2) providing a descriptive comparison of the expected carbon sequestration impacts of predominant forest management practices identified in step 1 in relation to project scenario management, and 3) demonstrating that carbon stocks under project scenario management will exceed those of the baseline scenario by the end of the crediting period.	
Additionality	Public Comment: Clarified results of financial analysis (implementation barrier test) must be reported in GHG Plan, demonstrating baseline is more profitable. Also clarified the project scenario's NPV does not need to account for sale of carbon credits.	2.4
Additionality	Public Comment: Clarified technological or implementation barriers in ACR Standard may also be relevant to implementation barriers test.	2.4
Stratification	Consolidated baseline and project stratification sections into single section.	3
Identification of Baseline	Clarified that Table 1 discount rate assignment is based on timber ownership rather than land ownership (section 4.1 and throughout document). Public Comment: Clarified NPV discount rate is based on current ownership.	4.1
Identification of Baseline	Added clarifying language regarding discount rate assignment as a method and among multiple ownership types. Public Comment: Reduced discount rate for Non-Governmental Organizations from 4% to 3%.	4.1
Identification of Baseline	Clarified that discount rate associated with previous owner may be used when the start date occurs within 1 year of land acquisition.	4.1

	Public Comment: Expanded NPV discount rate lookback from 1 year to 5 years.	
Identification of Baseline	Public Comment: Clarified that baseline silvicultural prescriptions must perpetuate existing timber producing species while utilizing available growing space and must be relevant to forest type(s), ecological condition(s), and/or species/product mixture of the project area. Prescriptions must be substantiated according to section 4.1.1.	4.1
Identification of Baseline	Public Comment: Clarified that all legal restrictions (including legally binding terms of land acquisition or donor funding) must be considered in baseline modeling.	4.1
Identification of Baseline	Added requirement for voluntary best management practices to be included as baseline constraints.	4.1
Identification of Baseline	Public Comment: Added requirement to include roading and harvesting costs, and that timber harvested in baseline be accessible and operable.	4.1
Identification of Baseline	Added requirements for NGOs to demonstrate applicability of NPV maximizing baseline and to include long-term management objectives as baseline constraints. Public Comment: Removed these requirements in favor of 3% NGO discount rate and increased reporting (section 4.1.1)	4.1
Identification of Baseline	Added a requirement for the baseline scenario harvesting to not exceed regional mill capacity. Provided pathway for demonstrating feasibility of mill expansion over time. Public Comment: Removed pathway for demonstrating increased mill expansion over time. Clarified that mills must be within hauling distances that allow the baseline to be economical.	4.1
Identification of Baseline	Added a requirement that the baseline scenario be plausible given fundamental institutional barriers. Public Comment: Removed “plausible” language. Added requirement that feasibility of baseline harvest regime be demonstrated with mill reports, professional forester, published literature, or other verifiable evidence.	4.1
Identification of Baseline	Public Comment: Removed references to “working forest”, “fundamental institutional barriers”, and justification of the baseline management regime specific to NGO’s.	4.1
Identification of Baseline	Peer Review: Clarified in footnote that federally recognized tribes are classified under the “tribal” ownership type and non-federally recognized types are either “private industrial” or “private non-industrial”.	4.1
Identification of Baseline	Peer Review: Clarified that if new legal constraints are enacted during a crediting period that legally prohibit the modeled silvicultural practices or harvest removals, the baseline must be evaluated and re-modeled as necessary	4.1

	on a forward-moving basis, respecting these legally binding constraints for the remainder of the crediting period.	
Identification of Baseline	Peer Review: Clarified that conservation easements enacted less than 1 year before or 3 years after project start date are considered to have occurred in conjunction with the carbon project and are not a required in baseline re-evaluation.	4.1
Identification of Baseline	Public Comment: Added new section 4.1.1 on Baseline Reporting.	4.1.1
Baseline Net Reductions and Removals	Replaced Equation 4's reference to the IPCC's Fourth Assessment Report with reference to the assessment report version specified in the applicable ACR Standard.	4.2
Baseline Net Reductions and Removals	Changed Equation 5 to consider the stocks in years 0 through 20, divided by 21, and removed the twenty-year average baseline HWP value to credit the difference between the initial on-site stocks and the long-term baseline average on-site stocks.	4.2
Baseline Net Reductions and Removals	Added Equations 6 and 7 for determining when t = T.	4.2
Baseline Net Reductions and Removals	Removed the twenty-year average baseline HWP and GHG values from Equation 8. These values are now directly accounted for in Equation 24.	4.2
Baseline Net Reductions and Removals	Added Equation 9 for calculating the baseline carbon stock change in year T. Similarly, clarified that Equation 10 is only used after year T.	4.2
Stocking Level Projections in the Baseline	Peer Review: Clarified that only FVS is an approved growth model. Others must be approved by ACR on case-by-case basis.	4.2.1
Stocking Level Projections in the Baseline	Clarified that the baseline scenario must be modeled over a 100-year period. Peer Review: Removed this language.	4.2.1
Stocking Level Projections in the Baseline	Specified that standing dead wood must use the same biomass estimation technique as live trees. Public Comment: Clarified that with-project dead wood must remain static between measurement events, and model predictions of dead wood may only be used in baseline and ex-ante projections.	4.2.1
Tree Carbon Stock Calculation	Changed name of Sampling Plan to inventory SOP document. Added specific required elements.	4.2.2
Tree Carbon Stock Calculation	Clarified that defects affecting carbon (not just merchantability) should be recorded as cull data.	4.2.2

Tree Carbon Stock Calculation	Public Comment: Added footnote with possibility of ACR approval of alternate sampling techniques subject to review and approval by ACR.	4.2.2
Biomass Estimation	Added three discrete options for estimating biomass: the Jenkins et al. (2003) method, the volume-based biomass algorithms of FVS Fire and Fuels Extension, and the geographically specific method employed by USDA FIA and the California ARB offset program.	4.2.2.1
Standing Dead Wood	Replaced former decay classification system with the standardized decay classification system of the USDA FIA program for all projects.	4.2.3.1
Standing Dead Wood	Required that decay and structural loss are assessed on dead trees of all projects. Provided steps for applying decay and structural loss based on biomass estimate technique employed. Public Comment: Clarify density reduction factors can be based on Harmon et al. 2011 or specific values in Appendix B.	4.2.3.1
Monitoring Requirements for Baseline Renewal	Clarified that validated baselines are fixed for the entire crediting period.	4.3
Monitoring Requirements for Baseline Renewal	Clarified that easements put in place within one year of the project start date are not considered constraints for baseline renewal. Peer Review: Expanded window for easements to be considered to have occurred in conjunction with the carbon project to 3 years after project start date for increased flexibility.	4.3
Estimation of Baseline Uncertainty; Estimation of With-Project Uncertainty	Updated Equations 13 and 21 to calculate the weighted average error of each pool.	4.4; 5.7
Monitoring Project Implementation	Removed requirement for the reporting deviations from forest management plan as written. Clarified that harvest records must be provided for verification.	5.1
Monitoring of Carbon Stocks in Selected Pools	Public Comment: Clarified reduction in project stocks due to harvest/disturbance must be confirmed and accounted within 6 months of discovery, even if stock change doesn't result in reversal. Stock loss is subject to VB review at next verification event.	5.2
Estimation of Project Emissions Reductions or Enhanced Removals	Clarified that reductions in carbon stocks due to harvests or disturbances must be accounted in Equations 14 and 15.	5.4
Estimation of Project Emissions Reductions or Enhanced Removals	Replaced Equation 16's reference to the IPCC's Fourth Assessment Report with reference to the assessment report version specified in the applicable ACR Standard.	5.4

Estimation of Project Emissions Reductions or Enhanced Removals	Removed project HWP and GHG values from Equation 17. These values are now directly accounted for in Equation 24.	5.4
Monitoring of Activity-Shifting Leakage	Clarified that the demonstration is not applicable if the participating entity enrolls all their forested landholdings (owned and managed) within the carbon project.	5.5
Monitoring of Activity-Shifting Leakage	Added method for demonstration: adherence to an approved long-term management plan or program. Peer Review: Clarified applicability requirements for FMP option.	5.5
Monitoring of Activity-Shifting Leakage	Added method for demonstration: verifiable evidence of no harvesting in a given reporting period for all lands owned or managed by participating entities.	5.5
Monitoring of Activity-Shifting Leakage	Public Comment: Pulled sustainable harvest requirements into this section. Clarified they must be entity-wide to qualify.	5.5
Estimation of Emissions due to Market Leakage	Changed maximum default market leakage discount factor to 30% in association with a modified baseline accounting framework, allowing for a more direct comparison of leakage deduction to literature-base.	5.6
Estimation of Emissions due to Market Leakage	Public Comment: Added option for aggregated/PDA's of small private landowners (<5,000 acres) to take a 20% market leakage deduction.	5.6
Estimation of Emissions due to Market Leakage	Public Comment: Clarify that where directly accounting for market leakage, methods and summary results must be provided in the GHG Plan or Monitoring Report.	5.6
Methods for Quality Assurance	Public Comment: New requirement that an inventory SOP must be developed.	7.1
Validation and Verification	Added description of existing requirements for validation and verification, including timing and intervals.	7.3
Validation and Verification	Added requirements for resampling during site visits.	7.3
Validation and Verification	Peer Review: Separated section 7.3 into two sections (7.3 – Validation, and 7.4 – Verification). Provided greater specificity in scope and required documentation for each, and added Equation 21 to determine the minimum number of resampling plots.	7.3 & 7.4
Calculation of Total Project Uncertainty and Uncertainty Deduction	Updated Equation 22 to calculate the weighted average error of each scenario and to use the absolute values of each scenario's carbon stock change.	7.4
Calculation of Total Project Uncertainty and Uncertainty Deduction	Added Equation 23 to make the uncertainty deduction equal to the error exceeding ACR's statistical precision threshold.	7.4
Calculations of ERTs	Clarified language to consistently use the terms "total", "net", and "reporting period".	8
Calculations of ERTs	Revised Equation 24 in association with Equation 8 and Equation 17 updates.	8
Calculations of ERTs	Added Equations 25 and 26 to calculate buffer and net ERTs.	8

Calculations of ERTs	Added Equations 27, 28, and 29 to calculate total ERTs, net ERTs, and buffer pool contributions by vintage.	8
Calculation of ERTs	Clarified language regarding project termination due to reversals.	8
Calculation of ERTs	Public Comment: Added equation 31 to calculate “removals” versus “emissions reductions”.	8
Negative Project Stock Change, Reversals, and Termination	Peer Review: Added new section 8.1 to differentiate existing language from ERT calculation instructions.	8.1