



# 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 posted for public comment September 2021.

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.	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.	1.2
Applicability Conditions	Updated to allow approved long-term forest management plans and programs to fulfill the sustainable management requirement.	1.2
Pools and Sources	Removed requirement that standing dead wood be included in unmanaged forests. Standing dead wood is now fully optional.	1.3
Pools and Sources	Added belowground standing dead wood pool.	1.3
Methodology Summary	Removed language pertinent to baseline development and added the removed language to section 4.1.	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
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).	4.1
Identification of Baseline	Added clarifying language regarding discount rate assignment as a method and among multiple ownership types.	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
Identification of Baseline	Added requirement for voluntary best management practices to be included as baseline constraints.	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.	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.	4.1
Identification of Baseline	Added a requirement that the baseline scenario be plausible given fundamental institutional barriers.	4.1
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	Clarified that the baseline scenario must be modeled over a 100-year period.	4.2.1
Stocking Level Projections in the Baseline	Specified that standing dead wood must use the same biomass estimation technique as live trees.	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
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	4.2.2.1

	geographically specific method employed by USDA FIA and the California ARB offset program.	
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.	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.	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
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.	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
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
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
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