Errata and Clarifications

METHODOLOGY FOR THE QUANTIFICATION, MONITORING, REPORTING AND VERIFICATION OF GREENHOUSE GAS EMISSION REDUCTIONS AND REMOVALS FROM IMPROVED FOREST MANAGEMENT (IFM) ON NON-FEDERAL U.S. FORESTLANDS

VERSION 1.2

2024-01-01

This Errata and Clarifications document is supplemental to the ACR Methodology *Improved Forest Management (IFM) on Non-Federal U.S. Forestlands, Version 1.2* ("the Methodology") and applies to all projects registered under the Methodology. Each erratum and clarification contained herein is effective as of its posting date listed below. This document may be updated as supplemental information or clarifications are needed. Project Developers and Verification Bodies shall adhere to the errata and clarifications when implementing projects and conducting verification activities.

1.1 Erratum (In bold)

Section Reference / Effective date	Change
A1. Scope and Definitions / January 1, 2024	Definition of "CO_2e". Carbon Dioxide equivalent. The amount of CO2 that would have the same global warming potential (GWP) as other greenhouse gases over a 100-year lifetime using SAR-100 GWP values from the IPCC's fourth assessment report. *To* CO_2e. Carbon Dioxide equivalent. **A metric to compare GHGs based on their global warming potential (GWP) relative to CO_2 over the same timeframe. Refer to GWP values specified in the then-current version of the ACR Standard.**

A.2 Applicability Conditions / October 2017	▪ Public non-federal ownerships currently subject to commercial timber harvesting in the with-project scenario must: ○ be certified by FSC, SFI, or ATFS or become certified within one year of the project Start Date; or ○ have its forest management plan sanctioned by a unit of elected government officials within a state, or a state agency, or a federal agency ○ Please note that any such forest management plans must be updated at minimum every 10 years *To* ▪ **Public non-federal ownerships currently subject to commercial timber harvesting in the with-project scenario must:** ○ **be certified by FSC, SFI, or ATFS or become certified within one year of the project Start Date; or** ○ **have its forest management plan sanctioned by senior government officials within a state, or a state agency, or a federal agency** ○ **Please note that any such forest management plans must be updated at a minimum every 10 years**
C3. Baseline Net Reductions and Removals / January 1, 2024	Equation 4: • GWP_{CH4}. 100-year global warming potential (in CO_2 per CH_4) for CH4 (IPCC SAR-100 value of 21 per the Fourth Assessment Report)[18] *To* • GWP_{CH4}. **Global warming potential of CH_4 as specified in the then-current version of the ACR Standard**
D5. Estimation of Project Emission Reductions or Enhanced Removals / January 1, 2024	Equation 13: • GWP_{CH4}. 100-year global warming potential (in CO_2e per CH_4) for CH_4 (IPCC SAR-100 value of 21 per the Fourth Assessment Report)[34] *To* • GWP_{CH4}. **Global warming potential of CH_4 as specified in the then-current version of the ACR Standard**

1.2 Clarifications (In bold)

Section Reference / Effective date	Clarifications
3.1.1 Tree Carbon Stock Calculation / October 2017	***Added:*** **To ensure accuracy and conservative estimation of the mean aboveground live biomass per unit area within the Project Area, Projects that have not started verification at the time this erratum is published must account for missing cull in both the ex ante and ex post baseline and project scenarios. Missing cull deductions should be determined using cull attribute data collected during field measurement of sample plots. Missing cull deductions may be conservatively estimated based on ecologically relevant and regionally specific data only if cull attribute data were not collected in field inventories conducted prior to this erratum. If standing dead biomass is included as a pool, biomass estimates must reflect decay class.**
G. Calculation of ERTs / October, 2022	▪ This section describes the process of determining additional annual net greenhouse gas emission reductions and Emission Reduction Tons (ERTs) issued for a time period for which a valid verification report has been filed with ACR. Annual net greenhouse gas emission reductions ($C_{ACR,t}$) are calculated using equation 20 by adjusting the difference between the project and baseline carbon stock changes for leakage and uncertainty then multiplying by a non-permanence $C_{ACR,t} = (\Delta C_{P,t} - \Delta C_{BSL,t}) \cdot (1-LK) \cdot (1-UNC_t) \cdot (1-BUF)$ (20) where: $C_{ACR,t}$ Annual net greenhouse gas emission reductions (in metric tons CO_2e) at time *t*. $\Delta C_{P,t}$ Change in the project carbon stock and GHG emissions (in metric tons CO_2e) for year *t*. (Section D5) $\Delta C_{BSL,t}$ Change in the baseline carbon stock and GHG emissions (in metric tons CO_2e) for year *t*. (Section C3) *LK* Leakage discount (Section D7)

	UNC_t Total Project Uncertainty, (in %) for year t (Section F3). *UNCt* will be set to zero if the project meets ACR's precision requirements of within ±10% of the mean with 90% confidence. If the project does not meet this precision target, *UNCt* should be the half-width of the confidence interval of calculated net GHG emission reductions. *BUF* The non-permanence buffer deduction as calculated in Section B5. *BUF* will be set to zero if an ACR approved insurance product is used. *To* ▪ This section describes the process of determining greenhouse gas emissions reductions and Emission Reduction Tons (ERTs) issued for a **Reporting P**eriod for which a valid verification report has been filed with ACR. **Total** greenhouse gas emission reductions ($C_{ACR,t}$) are calculated using equation 20 by adjusting the difference between the project and baseline carbon stock changes for leakage and uncertainty. $ERT_{RP,t} = C_{ACR,t} = (\Delta C_{P,t} - \Delta C_{BSL,t}) \cdot (1 - LK) \cdot (1 - UNC_t)$ (20) where: $ERT_{RP,t}$ **Total emission Reduction Tons in Reporting Period *t*.** $C_{ACR,t}$ **Total g**reenhouse gas emission reductions (in metric tons CO_2e) at time *t*. $\Delta C_{P,t}$ Change in the project carbon stock and GHG emissions (in metric tons CO_2e) for year *t*. (Section D5) $\Delta C_{BSL,t}$ Change in the baseline carbon stock and GHG emissions (in metric tons CO_2e) for year *t*. (Section C3) LK Leakage discount (Section D7) UNC_t Total Project Uncertainty, (in %) for year *t* (Section F3). *UNCt* will be set to zero if the project meets ACR's precision requirement of within ±10% of the mean with 90% confidence. If the project does not meet this precision target, *UNCt* should be the half-width of the confidence interval of calculated net GHG emission reductions.

	ERT's by vintage shall then be determined by prorating Reporting Period calendar days within vintage year *t* (21), applying the non-permanence buffer deduction (Equation 22) and subtracting ERT's by vintage year from the non-permanence buffer deduction (Equation 23). Buffer pool ERTs will be deposited by vintage, if this is the risk management option the Project Proponent has chosen. $ERT_{VIN,t} = ERT_{RP,t} \cdot (CAL_t / RP_{CALt})$ **(21)** **where:** $ERT_{VIN,t}$ ***Total* Emission Reduction Tons issued in vintage year t** $ERT_{RP,t}$ **Total Emission Reduction Tons issued in RP *t*** CAL_t **Reporting Period calendar days within vintage year *t*** RP_{CALt} **Total calendar days within Reporting Period *t*** $BUF_{VIN,t} = ERT_{VIN,t} \cdot BUF$ **(22)** **where:** $BUF_{VIN,t}$ **Buffer tons deducted in vintage year *t*** $ERT_{VIN,t}$ **Emission Reduction Tons issued in vintage year *t*** **BUF** **The non-permanence buffer deduction percentage as calculated in Section B6. BUF will be set to zero if an ACR approved insurance product is used.** $ERT_{NETVIN,t} = ERT_{VIN,t} - BUF_{VIN,t}$ **(23)** **where:** $ERT_{VIN,t}$ **Emission Reduction Tons issued in vintage year *t*** $BUF_{VIN,t}$ **Buffer tons deducted in vintage year *t***
G. Calculation of ERTs / October, 2022	***Added:***

	The Project Proponent may elect to calculate and generate removals ($REM_{RP,t}$) for a given reporting period with a positive ERT issuance. Removals are calculated by adjusting the with-project carbon stock change for leakage and uncertainty. Since removals may never exceed ERTs, the calculation of removals must account for baseline emissions when they negatively contribute to total ERTs. If calculated and generated, removals must be allocated to vintage years following the procedure outlined in Equations 21, 22, and 23. **if [$\Delta C_{BSL,t} \leq 0$] then $REM_{RP,t} = \Delta C_{P,t} \cdot (1 - LK) \cdot (1 - UNCt)$** **(24)** or **if [$\Delta C_{BSL,t} > 0$] then $REM_{RP,t} = (\Delta C_{P,t} - \Delta C_{BSL,t}) \cdot (1 - LK) \cdot (1 - UNC_t)$** where: ***$REM_{RP,t}$*** **Total removals in reporting period *t*** **$\Delta C_{P,t}$** **Change in the project carbon stock and GHG emissions (in metric tons CO2e) for year *t*. (Section D5)** **$\Delta C_{BSL,t}$** **Change in the baseline carbon stock and GHG emissions (in metric tons CO2e) for year *t*. (Section C3)** ***LK*** **Leakage discount (Section D7)** ***UNC_t*** **Total Project Uncertainty, (in %) for year *t* (Section F3). *UNC_t* will be set to zero if the project meets ACR's precision requirement of within ±10% of the mean with 90% confidence. If the project does not meet this precision target, *UNC_t* should be the half-width of the confidence interval of calculated net GHG emission reductions.**
G. Calculation of ERTs / October, 2022	▪ If the project stock change ($C_{ACR,t}$) is less than zero in time t in equation 20, no ERTs will be issued with a vintage year of t. These negative emissions reductions will not be treated as a reversal if this occurs before the end of the first Crediting Period. Any negative project stock change ($C_{ACR,t}$) values from time t will carry over to the following year through a balance of negative emission reduction tons ($C_{NEG,t}$) which is calculated using equation 21, and issuance will only be made once a positive ERT_t balance is achieved (as illustrated in Addendum 1). Once the value becomes positive the $C_{NEG,t}$ value is reset to 0.

$C_{NEG,t} = C_{NEG,t-x} + C_{ACR,t}$ (21)

where:

$C_{NEG,t}$	Negative balance of annual net greenhouse gas emission reductions (in metric tons CO_2e) at time *t*.
$C_{NEG,t-x}$	Negative balance of annual net greenhouse gas emission reductions (in metric tons CO_2e) at the last valid verification report x years ago (time *t-x*).
$C_{ACR,t}$	Annual net greenhouse gas emission reductions (in metric tons CO_2e) at time *t*.

If the value of $C_{NEG,t}$ is less than zero in any year prior to the end of the Crediting Period, ERT values are calculated using equation 22, otherwise equation 23 is used.

$ERT_t = 0$ (22)

$ERT_t = C_{NEG,t-x} + C_{ACR,t}$ (23)

where:

ERT_t	Emission Reduction Tons issued with vintage year t.
$C_{NEG,t-x}$	Negative balance of annual net greenhouse gas emission reductions (in metric tons CO_2e) at the last valid verification report x years ago (time *t-x*).
$C_{ACR,t}$	Annual net greenhouse gas emission reductions (in metric tons CO_2e) at time *t*.

The tradable balance of the project ACR account is determined using equation 24.

$TB_t = ERT_t + IERT_t - OERT_t - RERT_t$ (24)

where:

TB_t	Tradable balance of Emission Reduction Tons for vintage year t.
ERT_t	Emission Reduction Tons issued with vintage year t.
$IERT_t$	Emission Reduction Tons transferred into ACR account with vintage year t.
$OERT_t$	Emission Reduction Tons transferred out of ACR account with vintage year t.

	$RERT_t$ Emission Reduction Tons retired in ACR account for vintage year t. The total account tradable balance at time *t* is calculated using equation 25. $TB_{TOT,t} = \sum_{t=1}^{t} TB_t$ (25) The total account tradable balance ($TB_{TOT,20}$) must be ≥ 0 following final verification at the end of the 20-year Crediting Period. This means that in the event that the project is carrying a negative balance in $C_{NEG,20}$, at the end of the 20-year Crediting Period it is treated as a reversal with negative ERT_{20}'s issued and the project must either transfer in ($IERT_{20}$) or retire ($RERT_{20}$) enough ERTs to compensate for the reversal. *To* **Negative project stock change ($C_{ACR,t}$) before the first offset credit issuance is a negative balance of greenhouse gas emissions. After the first offset issuance, negative project stock change is a Reversal. AFOLU reversals must be reported and compensated following requirements detailed in the *Reversal Risk Mitigation Agreement* and the *ACR Buffer Pool Terms and Conditions*. Sequestration projects will terminate automatically if a Reversal causes project stocks to decrease below baseline levels prior to the end of the Minimum Project Term.**