Errata and Clarifications

METHODOLOGY FOR THE QUANTIFICATION, MONITORING, REPORTING AND VERIFICATION OF GREENHOUSE GAS EMISSIONS REDUCTIONS AND REMOVALS FROM IMPROVED FOREST MANAGEMENT ON SMALL NON-INDUSTRIAL PRIVATE FORESTLANDS

VERSION 1.0

2024 09 23

This Errata and Clarifications document is supplemental to the ACR Methodology *Improved Forest Management on Small Non-Industrial Private Forestlands, Version 1.0* ("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. Erratum: Section 6.5 Regional Inventory Adjustment (2024-09-23)

Projects using the Regional Inventory approach are subject to assessment and adjustment of project-level carbon stock estimates based on regional inventory calibration with field data. The approach shall be applied using one of the following methods:

- *Field-based "sample to correct"*: Utilize field plot sampling to assess and adjust Regional Inventory carbon estimates based on field measurements. This approach utilizes a ratio estimator to calibrate Regional Inventory carbon estimates at the plot level.

  Step 1 Collect field-based carbon estimates on a sub-set of sites within the project area (i.e., observed conditions). Field-based carbon estimates may be randomly or systematically allocated. It is suggested to use efficient and cost-effective plot selection (e.g., list sampling, variable probability) and sampling

methods (e.g., variable radius, BigBAF), as described in Hsu et al. (2020)[1] and Chen et al. (2020)[2].

Step 2 Compare observed conditions to Regional Inventory carbon estimates. Develop a regression and a ratio estimator to calibrate Regional Inventory carbon estimates against observed conditions. Regression models must have an R^2 of 0.7 or greater.

Step 3 Apply ratio estimator at the plot level to adjust Regional Inventory carbon estimates.

- *Regional Inventory Adjustment:* Compare Regional Inventory carbon stock estimates against publicly reported carbon stock estimates, derived from verified and registered IFM projects under California ARB and ACR (i.e., "Approved Carbon Proxies"). Use the comparison to assess Regional Inventory carbon estimates and calibrate ERT issuance using a regional inventory discount factor.

  Step 1 Access relevant project registries to gather Approved Carbon Proxy documentation and generate carbon estimates for all Approved Carbon Proxies using the Regional Inventory approach. Approved Carbon Proxies must include:

  - All verified and registered California ARB IFM projects located within the Project Region. Project documentation for aboveground live carbon stocks (IFM-1) and a spatially explicit boundary file must be derived from the applicable Registry for each project.
  - Verified and Registered ACR projects (optional). If used, the Project Proponent (and project developer, if applicable) must include data from all projects they have registered with ACR in the Project Region to date, derived from the ACR Registry.

  Step 2 For each Approved Carbon Proxy, calculate the area-weighted average project initial carbon stocks, average baseline stocks, and 20-year project stocks across the full project area at project start.

  Step 3 Calculate the percentage difference between the Approved Carbon Proxies' verified and registered IFM-1 carbon estimates (as reported in the Approved

[1] Hsu, Y. H., Chen, Y., Yang, T. R., Kershaw, J. A., & Ducey, M. J. (2020). Sample strategies for bias correction of regional LiDAR-assisted forest inventory estimates on small woodlots. Annals of forest science, 77, 1-12.
[2] Chen, Y., Kershaw, J. A., Hsu, Y. H., & Yang, T. R. (2020). Carbon estimation using sampling to correct LiDAR-assisted enhanced forest inventory estimates. The Forestry Chronicle, 96(1), 9-19.

Carbon Proxy documentation) and the Regional Inventory carbon stock estimates for these same Approved Carbon Proxy project areas.

Step 4 Multiply the percentage difference from step 3 by the Regional Inventory mean initial carbon stock estimate. This results in a set of initial project stock estimates that reflect the observed percent differences of Approved Carbon Proxies in the Project Region.

Step 5 Use the set of initial stock estimates calculated in the prior step to calculate a set of potential ERT issuances associated with each calculated initial stock estimate.

Step 6 Use the Approved Carbon Proxy analysis above to calculate the regional inventory discount factor based on the ERT distribution (ERT_{rb}) and the 90% lower confidence bound of this ERT distribution using the discount factor formula defined by Neeff[3] at the 10% risk level.

Step 7 Calculate the percentage mean shift based on the project's initial ERTs minus the mean ERTs calculated using the Approved Carbon Proxy analysis above, divided by the initial ERTs times 100. Add this percentage mean shift to the regional inventory discount factor.

Step 8 If the regional inventory discount factor is less than the ACR-provided literature-based discount factor, as determined by literature review, use this literature - based discount factor. Otherwise, apply the regional inventory discount factor from step 7.

**Please Note: For project developers who wish to utilize the regional inventory adjustment approach, a template calculation worksheet will be provided separately.*

2. Erratum: Definition of CO_2e (2024-01-01)

The Acronyms and Definitions section defines CO_2e with references to specific GWP values. To reflect ongoing efforts by ACR to utilize the best available science, the definition used when applying the Methodology should be consistent with the definition found in the then-current *ACR Standard*.

By this Erratum, the definition of CO_2e is removed.

[3] Neeff, T. (2021). What is the risk of overestimating emission reductions from forests–and what can be done about it?. Climatic Change, 166(1), 26.

3. Clarification: Methane GWP for baseline GHGs (2024-01-01)

Equation 4 demonstrates the calculation of GHG emissions in the baseline scenario using specific GWP values. To reflect ongoing efforts by ACR to utilize the best available science, the GWP values employed should be consistent with those found in the then-current *ACR Standard*.

By this Clarification, the definition of $\mathbf{GWP_{CH_4}}$ in Equation 4 should be as follows: "Global warming potential of CH_4 specified in the then-current *ACR Standard.*"

4. Clarification: Methane GWP for with-project GHGs (2024-01-01)

Equation 16 demonstrates the calculation of GHG emissions in the with-project scenario using specific GWP values. To reflect ongoing efforts by ACR to utilize the best available science, the GWP values employed should be consistent with those found in the then-current *ACR Standard*.

By this Clarification, the definition of $\mathbf{GWP_{CH_4}}$ in Equation 16 should be as follows: "Global warming potential of CH_4 specified in the then-current *ACR Standard.*"