

AGGREGATION AND PROGRAMMATIC DEVELOPMENT
APPROACH GUIDANCE FOR

IMPROVED FOREST MANAGEMENT

VERSION 1.0

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ABOUT ACRSM

ACR is a leading global carbon crediting program operating in regulated and voluntary carbon markets. Founded in 1996 as the first private voluntary greenhouse gas (GHG) registry in the world, ACR creates confidence in the integrity of carbon markets to catalyze transformational climate results. ACR ensures carbon credit quality through the development of environmentally rigorous, science-based standards and methodologies as well as oversight of carbon offset project verification, registration, and credit issuance and retirement reporting through its transparent registry system. ACR is governed by Environmental Resources Trust LLC, a wholly-owned nonprofit subsidiary of Winrock International.

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Acronyms

AFOLU	Agriculture, forestry and other land use
ERT	Emission reduction ton
GHG	Greenhouse gas
IFM	Improved forest management
MRV	Monitoring, reporting and verification
NPV	Net present value
PDA	Programmatic development approach
VVB	Validation and Verification Body

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1 Introduction

1.1 Purpose

The purpose of the *ACR Aggregation and Programmatic Development Approach Guidance* for Improved Forest Management (hereafter “Aggregation and PDA Guidance”) is to facilitate project monitoring, reporting and Verification (MRV) of Aggregated and PDA carbon offset projects implementing the ACR Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands (IFM methodology).

ACR is one of the United States’ leading carbon offset registries, operating since 1996 in the voluntary market, and since 2012 as an Offset Project Registry for the California cap-and-trade market. In 2020, ACR was approved by the International Civil Aviation Organization (ICAO) to supply units to the Carbon Offsetting Scheme for International Aviation (CORSIA). The *ACR Standard* governs the registration of projects under ACR-approved methodologies.

Aggregation and PDA allows numerous landowners to consolidate their individual landholdings into a single project to achieve scale and reduce costs associated with carbon project MRV. Along with these efficiencies, Aggregation and PDA introduces complexities associated with developing and expanding a network of distinct landowners into a single project. For administrative purposes, each participant and their associated ownership and boundaries must be tracked to ensure continued eligibility and participation over the Minimum Project Term. For quantification purposes, enrollment of Sites with varying productivity and stocking may require unique inventory and modeling techniques. The Aggregation and PDA Guidance aims to address these complexities and prescribe standardized, operational techniques for Aggregation and PDA projects.

ACR shares the mission of its parent non-profit organization, Winrock International, to “empower the disadvantaged, increase economic opportunity, and sustain natural resources.” We aspire to help Project Proponents and associated landowners overcome technical and market barriers and capitalize on the opportunity of carbon finance. By specifying ACR requirements for Aggregation and PDA, we hope to facilitate broader market participation and associated greenhouse gas benefits.

1.2 Scope

The Aggregation and PDA Guidance applies to projects meeting applicability conditions of the relevant *ACR Standard* and the ACR IFM methodology.

1.3 Relationship to ACR Standards and Methodologies

This document effectively sits between the *ACR Standard*, which governs all projects registered on ACR, and the ACR IFM methodology. An IFM project generating ACR offset credits (Emission Reduction Tons or ERTs) by implementing Aggregation or PDA must meet all requirements of the *ACR Standard*, using this document to interpret those requirements for IFM Aggregation and PDA, and quantify ERTs according to the ACR IFM methodology.

Project Proponents and other interested parties should refer to www.acrcarbon.org for the latest version of the *ACR Standard*, sector standards, methodologies, tools and templates.

1.4 Citation

The appropriate citation for this document is: ACR (2021). The ACR Aggregation and Programmatic Development Approach Guidance for Improved Forest Management, version 1.0. Winrock International, North Little Rock, Arkansas.

2 Applicability

2.1 Sectoral Scope

The ACR Aggregation and PDA Guidance is applicable to the ACR IFM project type. IFM projects implementing an Aggregated or PDA project must follow established procedures and requirements of the relevant *ACR Standard* and IFM methodology, as well as requirements set out within this document. Where requirements differ amongst the *ACR Standard* and the IFM Aggregation and PDA Guidance, Project Proponents shall adhere to the requirements of the Aggregation and PDA Guidance.

2.2 Aggregation and PDA General Requirements

ACR has established procedures for enrolling multiple facilities, fields, or parcels (hereafter referred to collectively as “Sites”) within a single Aggregated or PDA project. Such procedures capitalize upon efficiencies of scale to reduce project development, registration and MRV costs, while preserving the accounting principles of the *ACR Standard* and its approved methodologies.

2.2.1 AGGREGATION

2.2.1.1 General Requirements

A Project Proponent proposing an Aggregated Project shall submit a GHG Project Plan encompassing all participating project Sites, and applying project boundaries, baseline definition, additionality demonstration, and all other requirements at the level of the Aggregate. No new Sites can be added after the initial Validation of an Aggregated Project. An Aggregated Project shall:

- Be under the management of a single Project Proponent and registered under a single ACR account.
- Adhere to a single overarching project Start Date, corresponding to the earliest Implementation Date among all participating Sites.
- Assess general and Site-specific risk factors. A weighted risk rating shall be evaluated across all participating Sites and applied at the Aggregate level;

- Adhere to the Crediting Period requirements of the chosen methodology, with each Site reporting and verifying GHG emissions reductions for the duration of the Crediting Period
- Upon any request for a renewed Crediting Period, draft an updated GHG Project Plan and re-validate all renewing Sites as a single Cohort

2.2.1.2 Site-Level Requirements for Aggregation

Each Site participating in an Aggregation project must:

- Meet all project eligibility criteria as determined by the relevant *ACR Standard* and IFM methodology.
- Be enrolled by the Project Proponent at the project Start Date.
- Be available for a site visit during Validation and any subsequent Verification (unless otherwise specified in the relevant methodology).
 - ◆ A Validation and Verification Body (VVB) may use equal probabilities among Sites to select a sub-sample for Validation and Verification site visits, or a risk- or sensitivity-based analysis to identify those Sites with the strongest influence over carbon reduction estimates. Not all Sites must undergo a site visit at each required interval and VVBs may use their own discretion to determine if sub-sampling is appropriate. At minimum, all Sites are subject to desk-based review at Validation and Verification.
- Be validated within 3 years of project Start Date.
 - ◆ Sites may begin generating credits at their Implementation Date but are not eligible for ERT issuance until they are successfully validated.
- Be described in a single Project Design Document, which shall be included as an addendum to the GHG Project Plan. The Project Design Document shall outline the unique attributes of each Site enrolled at project listing and include the following:
 - ◆ A clearly defined geographic boundary uniquely identifying each Site, including maps and spatial files as required by the chosen methodology;
 - ◆ A description of the Project Activities carried out on each Site;
 - ◆ Name/contact details of the landowner and/or operator of each Site;
 - ◆ The Site-specific Implementation Date;
 - ◆ Information on how the Site fulfills the eligibility criteria of the *ACR Standard* and chosen methodology, is within the project boundaries, and demonstration of additionality as specified in the GHG Project Plan;
 - ◆ Calculations of baseline emissions and *ex ante* net emission reductions or removal enhancements (ERTs); and
 - ◆ Confirmation of the Site's relevant Implementation Date and Enrollment Date.

- Provide the information required in the monitoring report during each Verification. This information may be consolidated into a single summary report to facilitate review across all participating Sites.

2.2.2 PROGRAMMATIC DEVELOPMENT APPROACH

2.2.2.1 General Requirements

The PDA provides the efficiencies of Aggregation, with flexibility for additional Sites to enroll in the project for up to 5 years from project Start Date. The PDA is intended for projects where the participation of all Sites is impractical or impossible at the time of initial Validation. While the PDA affords greater flexibility for new project participants and Sites to enter over time, it requires more complex project management and Verification considerations than Aggregation, in which all landowners and Sites are included in the project's initial Validation. A PDA project shall:

- Be under the management of a single Project Proponent and listed under a single ACR account.
- Adhere to a single overarching project Start Date, corresponding to the earliest Implementation Date among Sites included in the first Cohort Validation.
 - ◆ All Sites participating in the PDA project must have a Site-specific Implementation Date that is the same or after the established project Start Date.
- Validate its initial Cohort within 3 years of project Start Date and validate subsequent Cohorts in conjunction with the project's next full verification.
 - ◆ Sites may begin generating credits at their Implementation Date but are not eligible for ERT issuance until they are successfully validated.
- Assess general and Site-specific risk factors. A weighted risk rating shall be evaluated across all participating Sites and applied at the PDA level;
- Consolidate all Sites enrolling within the project at the same time into distinct Cohorts.
 - ◆ All sites within a given Cohort must be on the same Validation and Verification schedule.
- Apply Crediting Period requirements at the PDA level, where each Cohort may report and verify GHG emissions reductions for the duration of the existing Crediting Period.
 - ◆ Upon request for a renewed Crediting Period at any Site, an updated GHG Project Plan must be submitted and the project re-validated for all Sites enrolling in a subsequent Crediting Period.
 - ◆ At Crediting Period renewal, all renewing Sites shall be consolidated into a single Cohort and validated according to the then-current version of the relevant methodology.
- Utilize only one version of a given methodology.

- ◆ Projects validated against a previous version of a given methodology may 1) enroll new Cohorts using the version of the methodology for which they were initially validated (for up to 5 years from project Start Date) or 2) update to the newly approved version of the methodology.
 - ◆ If the project utilizes option 2, an updated GHG Project Plan must be submitted and all Cohorts re-validated prior to any new Sites enrolling.
 - ◆ If a given methodology is no longer approved for use by ACR, no new Sites may be added to the PDA project but existing sites may continue report and verify for the duration of their previously validated Crediting Period.
- Specify PDA boundaries (geographic, temporal, and GHG assessment boundary), baseline scenario(s), and MRV schedules within the GHG Project Plan.
- Describe in the GHG Project Plan a management system that includes the following:
 - ◆ A clear definition of the roles and responsibilities of personnel involved in MRV and recruitment of new Sites;
 - ◆ A description of eligibility criteria for recruiting new Sites to the PDA;
 - ◆ Procedures to avoid double counting, such that no Site has been or will be registered on ACR as part of another project; and
 - ◆ A Site-level QA/QC process for record and documentation control, made available to the VVB at the time of Validation.

2.2.2.2 Site-level Requirements for PDA

Each Site participating in a PDA project must:

- Meet all project eligibility criteria as determined by the *ACR Standard* and chosen methodology.
- Be enrolled by the Project Proponent within 5 years of the project Start Date and Site Implementation Date.
- Be available for a site visit during the Validation and any subsequent Verification (unless otherwise specified in the relevant methodology).
 - ◆ VVBs may use equal probabilities among Sites to select a sub-sample for Validation and Verification site visits, or a risk- or sensitivity-based analysis to identify those Sites with the strongest influence over a project or Cohort's carbon reduction estimates.
 - ◆ Not all Sites must undergo a site visit at each required interval and VVBs may use sub-sampling is appropriate. At minimum, all Sites are subject to desk-based review at Validation and Verification.
- Be described in a single, consolidated PDA Project Design Document, which shall be included as an addendum to the GHG Project Plan. The PDA Project Design Document shall outline the unique attributes of the Site(s) enrolled at project listing, and be updated as new Sites/Cohorts are added, to include the following:

- ◆ A clearly defined geographic boundary uniquely identifying each Site, including maps and spatial files as required by the chosen methodology;
 - ◆ A description of the Project Activities carried out on each Site;
 - ◆ Name/contact details of the landowner and/or operator of each Site;
 - ◆ The Site-specific Implementation Date and confirmation that the Implementation Date is not, or will not be, prior to the project's Start Date;
 - ◆ Information on how the Site fulfills the eligibility criteria of the *ACR Standard* and chosen methodology, is within the project boundaries, and demonstration of additionality as specified in the GHG Project Plan;
 - ◆ Calculations of baseline emissions and estimated net emission reductions or removal enhancements; and
 - ◆ Confirmation and evidence of each Site's relevant Enrollment Date
- Provide the information required in the monitoring report during each Verification. This information may be consolidated into a single summary report to facilitate review across all participating Sites.

2.3 Carbon Stock Inventory and Monitoring of Sequestration Based AFOLU Projects

Aggregated or PDA project must meet the same accuracy and precision targets as non-grouped projects to avoid a confidence deduction. According to the *ACR Standard*, this requires a 90% statistical confidence interval of sampling of no more than $\pm 10\%$ of the mean.

For Aggregated or PDA projects, the $\pm 10\%$ at 90% confidence precision target is applied at the level of the project overall. ACR advises Project Proponents to design projects within a single geographic region and similar forest types. These efforts, combined with careful stratification, will help make desired statistical confidence achievable with reduced per acre sampling intensity and inventory costs.

ACR does not require a minimum number of inventory plots per participating landholding (unless otherwise specified in the relevant methodology) as long as the acceptable statistical confidence threshold is achieved for the project overall. ACR also does not require individual landowner carbon inventories, so long as the Project Proponent has a stratified inventory meeting ACR requirements for the project overall. Arrangements with individual project participants regarding inventories, entry and exit, crediting, buffer contributions, and other factors are left to the discretion of the Project

Proponent. MRV requirements are applied at the level of the overall project, whether it is an Aggregated or PDA project.

3 Quantification Principles

ACR Aggregation and PDA allows the consolidation of independent Sites and their associated Cohorts, such that they may use a single, project-level quantification approach. Shared inventories and modeling efforts leverage scale and reduce costs associated with installing field-based inventory sample plots and MRV.

Consolidation of Sites and Cohorts into a Project-level inventory inherently allows the possibility for a given Site or Cohort to be un-sampled within the inventory, or by the third-party verifier during Validation and Verification (similar to non-aggregated forest carbon projects, which need not sample every parcel contained in a traditional carbon inventory). For example, an inventory design or VVB field sampling plan might assign all acres the same chance of selection, yet ultimately not select any locations within a given Site or Cohort for inspection due to chance (this is especially relevant to Sites or Cohorts representing a relatively small proportion of Aggregated or PDA project stocks).

3.1 Aggregation

Aggregated projects consist of multiple Sites and associated landowners consolidated into a single project area. Aggregated project areas are not required to be contiguous and by definition contain at least two distinct landowners. Inventory sampling frames must encompass all Sites within the project boundary and sample plot locations must be established using sound statistical theory involving systematic or random allocation. Stratification may be employed as needed to achieve statistical confidence. For IFM projects, baseline modeling must consider legal and management constraints, as well as appropriate net present value (NPV) discount rates at the Site level, according to acreage of each ownership class enrolled. All Site data in an Aggregated project must be consolidated into a single, Aggregate-level inventory and baseline.

3.2 Programmatic Development Approach

PDA projects consist of multiple Sites and associated Cohorts enrolling in the project within 5 years of the project Start Date. Cohorts are not required to be contiguous and may consist of one or more distinct Sites sharing the same quantification approach and MRV schedule. For IFM projects, PDA baseline modeling must consider the relevant legal and management constraints of each Site, as well as appropriate NPV discount rates, according to ownership class.

Inventory and baseline quantification may be employed at either the “Cohort” or “PDA” level. For both approaches, sample plots must be established using sound statistical theory, involving either systematic or random sample allocation across the entirety of the sampling frame. Stratification may be performed to achieve desired statistical confidence. PDA projects consisting of multiple Cohort-level inventories and baselines must weight carbon stocks and statistical confidence according to the proportional stocking of each respective Cohort and report the respective values at a PDA-level.

Project Proponents may calculate sub-PDA-level inventory and confidence statistics (i.e., at the Cohort- or Site- level) for internal accounting and Verification purposes. However, only PDA-level accounting is required by ACR for MRV purposes.

PDA inventories and baseline modeling can be implemented at the Cohort or PDA level (further described below). Regardless of approach chosen, it must be consistently applied in the project and baseline scenario.

3.2.1 COHORT-LEVEL INVENTORY AND BASELINES

Cohort-level inventories and baselines afford flexibility and direct accounting procedures should a given Site or Cohort within a PDA project discontinue project participation. Under the Cohort-level inventory, each Cohort implements its own stand-alone inventory for project and baseline stock quantification. Once a Cohort-specific baseline model is established, baseline remodeling is only required 1) should a Site within the distinct Cohort discontinue participation or 2) upon crediting period renewal. Developing a Cohort-level inventory inherently requires sufficient sample plots to achieve desired inventory confidence at the Cohort-level. Error propagation is employed to consolidate Cohort-level inventory confidence to the PDA level for reporting and accounting purposes.

3.2.2 PDA-LEVEL INVENTORY AND BASELINES

PDA projects have a second option to devise and directly implement a PDA-level carbon inventory and baseline. Under the PDA-level inventory and baseline, stocks and statistical confidence are calculated utilizing a single, PDA-level inventory for the entire project area. The approach results in a single, dynamic PDA inventory and baseline in which the entirety of the Project Area essentially functions as a single Cohort. The approach takes advantage of scale to minimize inventory uncertainty and reduce fieldwork. For example, when a new Site enters into a PDA-level inventory, the sampling frame is simply expanded to incorporate the entrance of the Site(s) and additional sample plots are allocated as needed and weighted to achieve desired confidence. Because the project consists of a single PDA-level inventory and baseline model, this approach requires baseline re-modeling and re-Validation at each instance of Site entrance or exit from the project.

3.3 Establishing and Updating Aggregated and PDA Inventories and Baselines

This section prescribes terminology and high-level methods for establishing and adjusting inventory estimates and baseline models when Sites and/or Cohorts enter, exit or consolidate within an Aggregated or PDA project. The methods described below are relevant to both Cohort- and PDA-level inventory approaches.

3.3.1 INVENTORY ESTABLISHMENT

Inventory Establishment refers to the consolidation of one or more Sites and/or Cohort-level inventories into a single, PDA-level carbon inventory for carbon estimation and baseline modeling. Inventory Establishment is relevant to an initial crediting period and subsequent crediting period renewal, and is always subject to Validation. The same approaches used to consolidate multiple, non-contiguous parcels owned by the same forest owner within a traditional carbon project can be used to consolidate multiple Sites or Cohorts within a PDA inventory (i.e., define a finite sampling frame and allocate sample plots using a statistically-valid allocation technique). Inventory Establishment uses procedures and technologies approved under the current version of *ACR Standard* and relevant methodology to integrate all Sites or Cohorts included in the initial Validation into a respective PDA-level inventory.

The following steps are typically performed in Inventory Establishment:

1. Assign participating Sites to strata and/or Cohort based upon variables useful for estimating changes in carbon stocks.
2. Allocate sample plots to Cohort- or PDA-level inventory sampling frame(s) using statistically valid sample design (such as simple random, stratified random or systematic grid allocation).
3. Measure plots using standardized inventory techniques.
4. Calculate initial inventory stocks according to the relevant sampling frame(s). Sampling frames may be defined by Sites, strata, Cohorts and/or the entire PDA.
5. Utilize initial inventory stocks to model a baseline scenario per procedures described in the relevant methodology. Baseline modeling must be performed at the scale of the inventory data being incorporated. For example, an inventory relevant to a single Cohort is used to develop a Cohort-specific baseline model. Likewise, an inventory relevant to the entire PDA is used to develop a PDA-level baseline.

6. Sum estimated carbon inventory and baseline stocks across all relevant scales (i.e., Sites/strata/Cohorts) to be expressed as the PDA scale. Change in PDA-level carbon stocks is calculated for Reporting Period t.
7. Calculate standard error across relevant inventory scale(s) and utilize error propagation or weighted means (as appropriate) to arrive at PDA-level 90% confidence intervals for Reporting Period t.
8. Add statistically valid sample plots as needed to meet relevant sample frame confidence targets. PDA-level standard errors and associated confidence intervals must be weighted to derive PDA-level uncertainty deduction.
9. Calculate inventory and baseline stock change at the PDA-level for ERT calculation. Apply confidence deductions per *ACR Standard* and methodology specific requirements.

3.3.2 INVENTORY EXPANSION

Inventory Expansion refers to the integration of additional Sites and associated Cohort acreages, carbon stocks and baseline model estimates into an existing forest carbon inventory and baseline. Inventory Expansion is only relevant to PDA projects.

General procedures associated with Inventory Expansion include:

1. Incorporating acreage from newly enrolling Sites into a statistically valid and relevant sampling frame. Relevant sampling frames may be defined at Site, strata, Cohort- and/or PDA-levels, and are ultimately consolidated to the PDA-level for MRV.
2. Assigning and measuring systematic or randomly allocated sample plots within the newly enrolled site(s), in conjunction with desired statistical confidence. When establishing a new Cohort-level inventory, sample plots must be allocated in a statistically valid sample design based on desired confidence. When expanding an existing PDA-level inventory, Sites and their associated acreages are added to an existing forest inventory sample frame and additional plots are allocated as needed to achieve desired statistical confidence. The new Cohort or PDA level inventory data is then used to model/re-model a corresponding baseline scenario according to the specifications of the relevant ACR protocol. Generally, developing a new Cohort-level inventory will require installing a greater number of sample plots than simply expanding an existing PDA-level inventory. However, development of a stand-alone Cohort-level inventory and baseline has the distinct advantage (compared to PDA-level baseline) of only requiring baseline re-modeling in the event a Site within a given Cohort exits the program.

3.3.3 INVENTORY CONTRACTION

“Inventory Contraction” refers to techniques for removing acreage from an Aggregated or PDA-level inventory and its associated baseline.

Inventory Contraction procedures may be necessary in instances when:

- One or multiple landowners (Sites) terminates their participation in the PDA project prior to the completion of their 40-year Project Term, or
- A Cohort completes its project term and associated Sites do not renew participation for an additional Crediting Period.

The same procedures used to contract non-Aggregated forest inventories may be applied to Cohort- or PDA-level inventories:

1. Identify and exclude non-participating Sites (and/or Cohorts) and associated acreages from the respective sampling frame(s).
2. Remove sample plots on excluded acres from the associated Cohort- or PDA-level inventory.
3. Re-calculate associated carbon inventory stocks and confidence intervals.
4. Install and measure additional inventory sample plots as needed within the newly established sampling frame to achieve desired statistical confidence.
5. Re-model Cohort- or PDA-level baselines (depending on approach) utilizing the most recent inventory data to achieve an updated baseline model. Any changes to a 20-year baseline scenario must be re-validated and implemented on a forward-moving (rather than historic) basis for crediting.

3.4 ERT Calculation and Accounting

Regardless of inventory and baseline modeling approach utilized (Cohort- or PDA-level), gross emissions reduction tons must be calculated and determined at the PDA-project level. Adjustments for confidence deductions, leakage and risk buffer contributions are then applied to the PDA-level gross ERT's to determine net ERT issuance for the relevant Reporting Period.

3.5 Sampling Error and Confidence Deduction

Sampling error and associated confidence deductions for Aggregated or PDA project types follow methods and processes as described within the relevant *ACR Standard* and methodology. Sampling errors are weighted by relevant carbon pool and confidence deductions quantified and applied at the Aggregated or PDA-level.

3.6 Leakage

Leakage deductions must be weighted according to Site-specific management practices and harvesting levels, according to the relevant ACR AFOLU methodology. However, a single leakage deduction must be quantified and applied as a deduction from gross ERT issuance.

3.7 Risk Assessment and Permanence

The Project Proponent shall assess general and project-specific risk factors for an Aggregated or PDA project using the most current ACR Tool for Risk Analysis and Buffer Determination. The risk rating is applied at the overall Aggregate/PDA-level, but must be calculated by evaluating risk according to a Site-level weighted average.

Reversals are determined based on changes in PDA-level carbon stocks (as opposed to Site- or Cohort-level). Carbon stock losses due to Site termination must be Verified and compensated according to the current ACR risk mitigation agreement and quantification and compensation of ERTs due to landowner drop out and/or site Termination is the sole responsibility and liability of the Project Proponent. Project Proponents of Aggregated or PDA projects may either 1) immediately compensate for Reversals by submitting an equivalent number of credits or 2) assign a negative carryover to be compensated in a subsequent issuance(s). Future credits may not be issued to the project until a negative carryover is fully compensated.

3.8 Design Considerations for Aggregates and PDA Cohorts

Project Proponents may increase MRV efficiencies by strategically considering Site characteristics in the design of an Aggregated or PDA project. To maximize potential efficiencies, it may be

advantageous to group Sites so their associated characteristics are as homogeneous as possible. Below are some examples of Site characteristics which may minimize variance at the strata, Aggregate, Cohort and/or PDA-levels.

- Grouping based on homogenous project practices or technologies, to the extent there are multiple options within the chosen methodology.
- Use of a single quantification approach for the baseline and project conditions (models, equations, measurements, default factors) as outlined in the methodology. These methods shall be documented in the GHG Project Plan. Any subsequent changes to quantification methods following the initial Validation of the GHG Project Plan must be applied across all Sites in the Cohort to maintain any achieved efficiencies, tracked, and made available for review at succeeding third-party Verification events to ensure the quality and conservativeness of carbon accounting principles originally Validated for the project are maintained.
- Grouping sites encompassing relatively similar forest characteristics, productivity, carbon stock levels or soil types.
- Grouping sites within a pre-defined geographic region (e.g., all fall within a maximum of three adjacent ecosystem provinces¹).
- Grouping sites that share a similar baseline scenario, in which there are the same legal and management constraints.

¹ https://www.fs.fed.us/land/ecosysmgmt/colorimagemap/ecoreg1_provinces.html

4 Validation and Verification Guidelines

ACR MRV requirements are applied at the level of the overall project, whether it is a single landowner or a group of landowners performing an Aggregated or PDA project. Aggregated projects require that all landowners, Sites and project boundaries be identified in the GHG Project Plan at the time of Validation and share a single project Start Date, Crediting Period, and MRV schedule. PDA projects must also identify all landowners, Sites and project boundaries within the GHG Project Plan and associated Project Design Document (to be updated at the entrance of each new Cohort).

Specific Validation and Verification procedures relevant to Aggregated and PDA projects are detailed below. Validation/Verification bodies (VVB's) must also refer to the most recent version of the *ACR Standard* and VVB Guidelines.

4.1 Validation

Validation of Aggregated and PDA projects requires evaluating a project's overall (Aggregated or PDA-level) GHG Project Plan, as well as subsequent Cohort-specific PDA Project Design Documents, against applicable requirements of the *ACR Standard* and relevant methodology. For PDA projects, each Site or Cohort must undergo Validation by an ACR-approved VVB before ERTs can be issued against its associated project activities and baseline. This may occur in conjunction with full Verification for the larger project or as a standalone Validation activity. In addition to a desk review of newly enrolling Sites, Validation must include a site visit (unless otherwise specified in the relevant methodology) with scope determined by the VVB's sampling plan.

Project documents and procedures subject to Validation typically include the following:

- Project planning information and documentation in accordance with the applicable methodology, including the project description, baseline, eligibility criteria, monitoring, reporting, and QA/QC procedures
- Quantification methods
- Projected emission reductions and removals (ERTs)
- Leakage and risk assessment
- Reported GHG baseline (qualitative analysis, as well as quantitative baseline calculation methods)

When validating project baselines VVB's should check that technically sound baseline scenarios, meeting requirements of the relevant methodology, have been established and subsequently applied. The VVB must ensure that the selected baseline scenario is one for which verifiable data are available. Validation documentation should address the baseline scenario selection rationale, guidance followed for baseline emissions estimation, consistency across baseline and project scenario quantification methods, as well as an evaluation of each component of additionality.

4.2 Verification

The Verification process is intended to assess the degree to which a project has correctly quantified net GHG reductions or removals, per the relevant methodology and validated GHG Project Plan. A successful Verification provides reasonable assurance that the GHG assertion is without material misstatement.

At each Verification, all project Sites are subject to desk-based review at minimum. Methodologies specifying a field Verification component should include such measurements as the VVB requires to provide a reasonable level of assurance that the GHG assertion is without material discrepancy, as defined by ACR. Evaluating an initial sample of the data may help in detecting the level of review and/or sampling required to verify the GHG assertion at the ACR materiality threshold. The VVB may initially select a random or risk-based subset of plots for field Verification and adjust the sampling effort as appropriate based on discrepancies or issues discovered in the initial selection.

At a programmatic level, ACR does not require the VVB to conduct a site visit to every Site or Cohort or to conduct a minimum number of plot re-measurements (Project Proponents and VVB's should refer to the relevant methodology and the ACR Validation and Verification Standard for more specific Verification resampling requirements), provided the GHG assertion for the overall project can be verified at a reasonable level of assurance and the Verification Statement worded accordingly. Unless specifically excluded in the relevant methodology, achieving reasonable assurance requires the VVB resample a random or risk-based sample of field plots (minimum 5% of total plots) and conduct a t-test at 90% confidence interval ensuring statistical agreement between Project Proponent and VVB measured carbon stocks.

Objectives of Verification are to evaluate the following:

- Reported GHG baseline, project emissions and emission reductions and removal enhancements (ERTs), leakage assessment, and impermanence risk assessment and mitigation (if applicable)
- Significant changes to the project procedures or criteria since the last Verification
- Significant changes in the project's baseline emissions and emission reductions and removal enhancements (ERTs) since the last Verification.

Validation and Verification may be conducted simultaneously. Therefore, it is acceptable to combine the Validation Report and Verification Reports into a single document.

Definitions

AFOLU	A broad category of ACR-eligible project activities that reduce GHG emissions and/or enhance GHG removals through changes in agriculture, forestry, and land-use practices.
Aggregate	The grouping of multiple project instances, fields, producers, or facilities into a single project registered on ACR. An Aggregate must be coordinated by a single Project Proponent (public or private entity) serving as the aggregator. The GHG Project Plan will define the overall project boundary and baseline conditions encompassing all project instances, fields, producers, or facilities. An Aggregate will have a single Start Date and Crediting Period.
Cohort	A new group of Project Participants, meeting all eligibility, project boundary, baseline, and additionality criteria of an already established Programmatic Development Approach (PDA).
Crediting Period	The finite length of time for which a GHG Project Plan is valid, and during which a project can generate offsets against its baseline scenario. The baseline must be re-evaluated when renewing the Crediting Period and any time the relevant sampling frame is increased or decreased. ACR sector standards and methodologies specify Crediting Period duration for particular project types.
GHG Project Plan	A document that describes the Project Activity, satisfies eligibility requirements, identifies sources and sinks of GHG emissions, establishes project boundaries, describes the baseline scenario, defines how GHG quantification will be done and what methodologies, assumptions, and data will be used, and provides details on the project's MRV procedures. ACR requires every project to submit GHG Project Plan using an ACR-approved methodology.
Implementation Date	The date corresponding to the start of project activities (as defined within the relevant methodology) on a given Site. Eligible Implementation Dates for AFOLU-based carbon projects are defined in Table 4 of the <i>ACR Standard</i> .
Intentional Reversal	The decrease of average carbon stocks within a project area below levels associated with previously issued ERTs as a result of intentional, willful activity (e.g., harvesting, forest conversion) on the part of the Project Proponent or landowner(s). When carbon stocks decline in this way (i.e., negative stocks,

relative to previous reporting), it is assumed that the carbon is released back into the atmosphere. Willful withdrawal of a parcel or parcels from a PDA or Aggregated project such that MRV will no longer be conducted for the minimum project term must be compensated per the provisions in the Project Proponent's Risk Mitigation Agreement with ACR, but is only considered an intentional reversal when project stocks decrease below previously issued levels.

Inventory Contraction	The removal of acreage from a PDA-level inventory and its associated baseline.
Inventory Establishment	The consolidation of one or more Sites and/or Cohort-level inventories into a single, PDA-level carbon inventory for carbon estimation and baseline modeling.
Inventory Expansion	The integration of additional Sites and associated Cohort acreages, carbon stocks and baseline model estimates into an existing PDA-level forest carbon inventory.
Minimum Project Term	The minimum period for which a Project Proponent commits to project continuance, monitoring, and Verification.
PDA	A project type in which successive Cohorts of Sites are added incrementally to a project for up to 5 years from the project Start Date. A PDA must be coordinated by a single Project Proponent (public or private entity) that must use an approved baseline and monitoring methodology that defines the appropriate boundary, avoids double counting, accounts for leakage, and ensures that the emission reductions are real, measurable, verifiable, and additional to any that would occur in the absence of the project.
Project Design Document	A document summarizing eligibility criteria, geographic boundaries, land ownership and baseline and project activities for each Site enrolled within an Aggregated or PDA project. This document must be provided as an addendum to the GHG Project Plan for Aggregated or PDA projects. The Project Design Document is updated upon the entrance of each new Cohort for PDA projects.
Project Proponent	An individual or entity that undertakes, develops, and/or owns a project. This may include the project investor, designer, and/or landowner on which project activities are conducted. The Project Proponent and landowner/facility owner may be different entities.

Reporting Period	The period of time covering a GHG assertion that is submitted for a single Verification and subsequent request for ERT issuance.
Reversal	An intentional or unintentional event that results in the emissions into the atmosphere of stored or sequestered CO ₂ e for which carbon offsets (ERTs) were issued.
Site	A physical location at which GHG emissions are generated and/or GHG emissions reductions are achieved. Project Sites may consist of forest, fields, parcels of land, or industrial facilities located within the project boundary.
Start Date	The date on which the Project Proponent first initiated project activities (as defined within the relevant methodology), coinciding with the start of the Minimum Project Term. For PDA projects, the project Start Date corresponds to the earliest Implementation Date among Sites enrolled within the initial Cohort.
Validation	The systematic, independent and documented process for the evaluation of a GHG Project Plan against applicable requirements of the <i>ACR Standard</i> , sector standard and approved methodology.
Verification	The systematic, independent, and documented assessment by a qualified and impartial third party of the GHG assertion for a specific Reporting Period. The Verification process is intended to assess the degree to which a project complies with ACR-approved methodologies, tools, eligibility criteria, requirements, and specifications, and has correctly quantified net GHG reductions or removals. Verification must be conducted by an independent third-party VVB.

Appendix A: Example Project Timelines

FOR AGGREGATED AND PDA PROJECTS OPERATING UNDER ACR

Figure 1: Aggregated Project Timeline

Generalized project timeline for an ACR Aggregated project. In this example, multiple Sites enter the project as an Aggregated project at year 0. All Sites renew their participation for a second Crediting Period in year 20. Full verification events (those including site visits) occur coincident with validation and ACR’s 5 year minimum full-verification schedule (but may occur more frequently as needed). Desk-based, less-intensive verification events may occur in interim years, with no minimum Reporting Period (RP) duration.

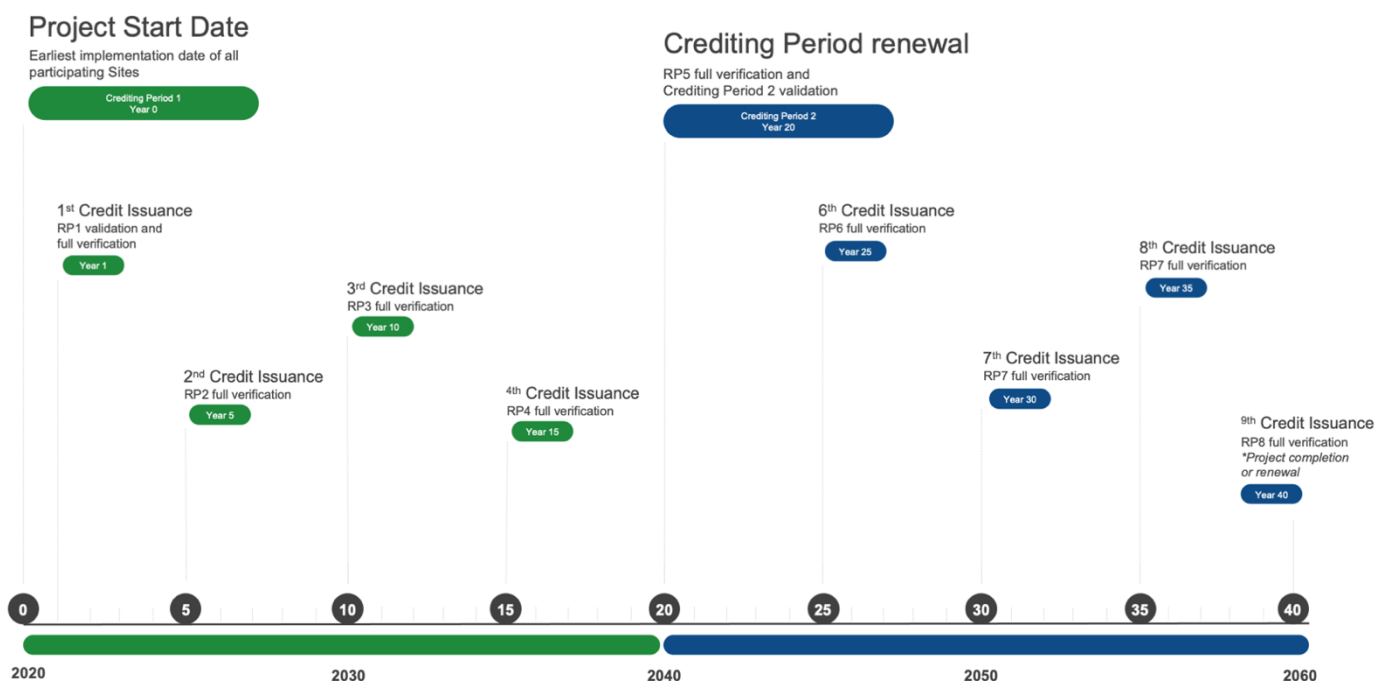


Figure 2: PDA Project Timeline

Generalized project timeline for an ACR Programmatic Development Approach project. In this example, Cohort A enters the project in year 0, Cohort B enters the project in year 3 and Cohort C enters the project in year 5. All Cohorts are Validated prior to credit issuance and when renewing their participation for a second Crediting Period in year 20. Full-verification events (those including site visits) occur coincident with validation, ACR’s 5 year minimum full-verification schedule (may occur more frequently as needed) or rotation of Verification Bodies. Desk-based, less-intensive verification events may occur in interim years as needed, with no minimum Reporting Period (RP) duration requirements.

