



ACR IMPROVED FOREST MANAGEMENT  
METHODOLOGIES

TOOL FOR DYNAMIC EVALUATION OF  
BASELINES

VERSION 1.0

July 2024

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ACR<sup>SM</sup>

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## ABOUT ACR<sup>SM</sup>

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 GHG 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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# Acknowledgements

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# Acronyms

ERR	Emission reductions and/or removals
GHG	Greenhouse gas
IFM	Improved Forest Management

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# 1 Introduction

## 1.1 Summary

This document, the *ACR IFM Methodologies Tool for Dynamic Evaluation of Baselines*, is a supplemental tool for greenhouse gas (GHG) projects that adhere to an ACR improved forest management (IFM) methodology. This tool establishes a framework for dynamically evaluating the baseline throughout a Crediting Period and on an *ex-post* basis. It also provides the necessary steps to adjust quantification of baseline carbon stock changes, and hence emission reductions and removals (ERRs), where relevant.

## 1.2 Applicability

This tool is applicable to the ACR IFM Methodologies' versions which specifically refer to it by name for the purpose of dynamically evaluating baselines.

As of the publication of this version, this tool is applicable for use only by projects adhering to the ACR *Methodology for Improved Forest Management on Non-Federal U.S. Forestlands* version 2.1.

Projects using this tool must apply it at each verification throughout the Crediting Period.

## 2 Baseline Dynamic Evaluation

### 2.1 Process

After validation and during the Crediting Period, the ACR IFM baseline scenario is subject to dynamic evaluation according to this tool. Dynamic evaluation of a previously validated baseline involves two processes, the Observed Conditions Assessment and Periodic Modeling Assessment.

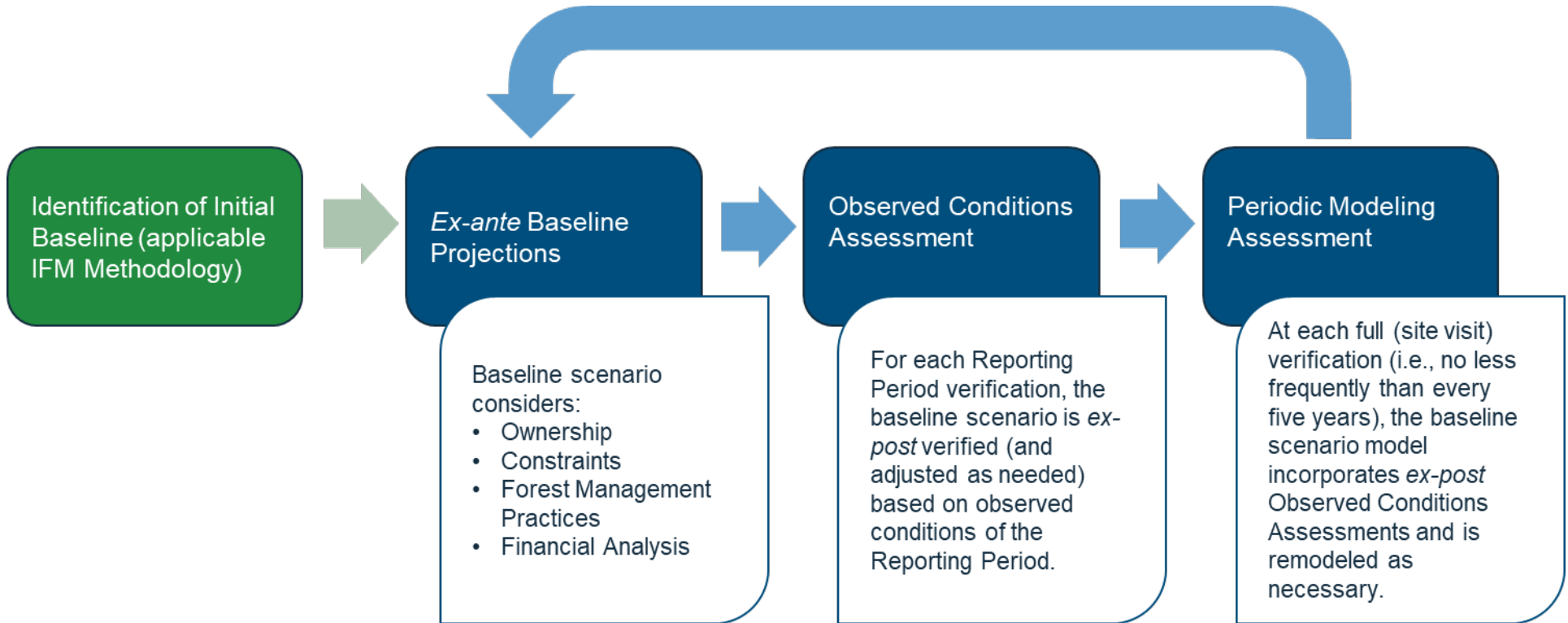
For each Reporting Period verification (both full and desk-based), an Observed Conditions Assessment (Section 2.1.1) is performed, which involves an *ex-post* comparison of the baseline scenario during the Reporting Period to recently observed conditions, resulting in crediting adjustments as necessary.

For each Reporting Period subject to a full verification, including a site visit to the project site (i.e., no less frequently than every five years of reporting), a Periodic Modeling Assessment (Section 2.1.2) is also performed which involves a re-assessment of the long-term modeled baseline scenario and incorporates any adjustments made by previous Observed Conditions Assessments on a forward-moving basis (as applicable). Periodic Modeling Assessments may also be performed at desk-based verifications at the Project Proponent's discretion.

Both the Observed Conditions Assessment and Periodic Modeling Assessment occur at each full verification. Both assessments would also occur if the Project Proponent chooses to perform the Periodic Modeling Assessment at a desk-based verification.

The dynamic evaluation process may result in increases, decreases, or no change in baseline carbon stocks compared to previous baseline *ex-ante* projections. In any case, clear evidence justifying any changes in accordance with the Baseline Dynamic Evaluation Framework (Table 1) must be provided.

Figure 1: Baseline Dynamic Evaluation Process





## 2.1.1 OBSERVED CONDITIONS ASSESSMENT

Coincident with each verification (both full and desk-based) and on an *ex-post* basis, projects perform an Observed Conditions Assessment by applying the Baseline Dynamic Evaluation Framework (Table 1). If this evaluation determines that recently observed conditions do not align with the previously established baseline scenario, the project adjusts its baseline quantification using a calculation of impact as specified in Table 1. This ensures that the baseline scenario is relevant and reflective of conditions over the Reporting Period prior to each carbon credit issuance.

Baseline quantification adjustments in the Observed Conditions Assessment must consider specific limitations to baseline management activities and their impact on baseline carbon stocks. Notably, quantification adjustments are made in consideration of proportion and type of baseline stocks eligible for harvest, but this step does not require a baseline remodel. Spatially and temporally explicit baselines need only consider the exact stands scheduled for harvest during the Reporting Period.

During an Observed Conditions Assessment, projects applying the *ACR IFM Methodologies Tool for Comparable Properties Analysis*<sup>1</sup> must ensure that baseline Harvest Intensities for the Reporting Period are less than those observed on the selected comparable property, performing a Reporting Period Harvest Intensity check (Table 8 in the Comparable Properties Analysis Calculator’s Harvest Intensity Calculations worksheet). However, a complete comparable properties analysis is not required.

## 2.1.2 PERIODIC MODELING ASSESSMENT

Coincident with each full verification projects perform a Periodic Modeling Assessment by applying the Baseline Dynamic Evaluation Framework (Table 1). The Framework re-evaluates baseline stock estimates since validation or the last Periodic Modeling Assessment, whichever is more recent, as well as *ex-ante* projections for the remainder of the 100-year modeling period. This process ensures that the long-term baseline scenario model and *ex-ante* projections reflect conditions observed within, at longest, the previous five years.

The Periodic Modeling Assessment considers potential changes in legal, physical, market, forest management, and financial environments. Table 1 provides tests and associated recourse in this regard.

In instances where the Periodic Modeling Assessment requires new *ex-ante* projections, the baseline must be remodeled from the start date of the Reporting Period currently undergoing verification. Any

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<sup>1</sup> Available under the Program Resources section of the ACR website.  
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changed conditions discovered during the Observed Conditions Assessment of that Reporting Period may be incorporated into the baseline remodel.

For projects that have reached their long-term baseline average (i.e.,  $t=T$ ) and for which a new long-term baseline average is calculated during a Periodic Modeling Assessment, the new long-term average goes into effect in the Reporting Period currently undergoing verification and takes into account Reporting Periods since validation or the last Periodic Modeling Assessment, whichever is more recent, resulting in either a debit (to be deducted from) or credit to the forthcoming issuance. Projects that have not yet reached their long-term baseline average ( $t=T$ ) follow the carbon stock trajectory to the new long-term baseline average.

If generating new *ex-ante* projections following a Reporting Period(s) (since validation or the last Periodic Modeling Assessment, whichever is more recent) that has been adjusted due to an Observed Conditions Assessment, the new projections must incorporate *ex-post* Observed Conditions Assessments and their respective adjustments to not underestimate baseline stocking at the start of the remodel (i.e., at the start date of the Reporting Period currently undergoing verification). Baseline stocking at the start of the remodel may be conservatively overestimated to facilitate alignment of previous adjustments with growth model outputs.

Projects applying the *ACR IFM Methodologies Tool for Comparable Properties Analysis*<sup>2</sup> must perform a comparable properties analysis to determine new baseline Harvest Intensities based on harvest treatments observed on a selected comparable property. The project must then perform a Remainder of Crediting Period Harvest Intensity check (Table 9 in the Comparable Properties Analysis Calculator's Harvest Intensity Calculations worksheet).

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<sup>2</sup> Available under the Program Resources section of the ACR website.  
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## 2.2 Framework

Projects will apply the following framework:

**Table 1: Baseline Dynamic Evaluation Framework**

CATEGORY	TEST AND CONSIDERATIONS	RECOURSE OF OBSERVED CONDITIONS ASSESSMENT (IF TEST FAILS):	RECOURSE OF PERIODIC MODELING ASSESSMENT (IF TEST FAILS):
Legality	<p>Are legal requirements and the regulatory framework of the project unchanged such that the baseline scenario is legally permissible?</p> <p>This test must consider laws, regulations, statutes, legal rulings, easements, deed restrictions, donor funding restrictions, contracts limiting forest management, best management practices, and other regulatory frameworks relevant to legally performing baseline forest management.</p> <p>Self-imposed legal constraints that explicitly reinforce the project action need not be considered (Methodology Section 4.1.2.1).</p>	<p>The project adjusts its accounting and crediting by eliminating any baseline harvests that are not legally allowable. Specific unlawful harvest activities must be identified, and their impact on carbon stocks must be determined and accounted for.</p> <p>Appropriate consideration for newly discovered legal constraints must be demonstrated using the Professional Forester Attestation form,<sup>3</sup> updating Section II: Legality.</p> <p>The project calculates and reports adjusted values for affected carbon stocks (e.g.,</p>	<p>The baseline scenario is remodeled to comply with new legal constraints no later than their effective date.</p> <p>Appropriate consideration for any newly discovered legal constraints must be demonstrated using the Professional Forester Attestation form, updating Section II: Legality (if not already provided for an Observed Conditions Assessment).</p> <p>A revised baseline model is developed for the remainder of the 100-year modeling period.</p>

<sup>3</sup> Found on the Reference Documents section of the website for the ACR Methodology *Improved Forest Management on Non-Federal U.S. Forestlands*.

CATEGORY	TEST AND CONSIDERATIONS	RECOURSE OF OBSERVED CONDITIONS ASSESSMENT (IF TEST FAILS):	RECOURSE OF PERIODIC MODELING ASSESSMENT (IF TEST FAILS):
		<p>baseline live tree, harvested wood products) for the end of the Reporting Period.</p> <p>The adjusted values are then used in the quantification of ERRs for the Reporting Period (Methodology Equation 24).</p>	<p>Updated <i>ex-ante</i> projections are provided for the remainder of the Crediting Period.</p>
Operability and Access	<p>Were physical conditions operational and accessible to perform the baseline management activities?</p> <p>This test must consider topographical constraints, road accessibility, infrastructure degradation or improvements, land ownership, tenure or access, and other conditions relevant to physically accessing timber and performing baseline management activities. Harvested areas must be operable for logging methods that are common practice for the region and accessible for timber extraction, such that gaining the access required is financially feasible and common practice for the region.</p> <p>Road accessibility and infrastructure degradation within the project area due to reduced harvesting</p>	<p>The project adjusts its accounting and crediting by eliminating any baseline harvests that are deemed inaccessible or inoperable. Specific inoperable or inaccessible harvest activities must be identified, and their impact on carbon stocks must be determined and accounted for.</p> <p>Appropriate consideration for newly discovered operability and access constraints must be demonstrated using the Professional Forester Attestation form,<sup>4</sup> updating Section III: Operability and Access.</p> <p>The project calculates and reports adjusted values for affected carbon stocks (e.g.,</p>	<p>The baseline scenario is remodeled to account for new operability and access constraints.</p> <p>Appropriate consideration for newly discovered operability and access constraints must be demonstrated using the Professional Forester Attestation form, updating Section III: Operability and Access (if not already provided for an Observed Conditions Assessment).</p> <p>A revised baseline model is developed for the remainder of the 100-year modeling period.</p>

<sup>4</sup> Found on the Reference Documents section of the website for the ACR Methodology *Improved Forest Management on Non-Federal U.S. Forestlands*.

CATEGORY	TEST AND CONSIDERATIONS	RECOURSE OF OBSERVED CONDITIONS ASSESSMENT (IF TEST FAILS):	RECOURSE OF PERIODIC MODELING ASSESSMENT (IF TEST FAILS):
	<p>associated with the GHG Project need not be considered. Verifiable evidence may include qualitative testimony concerning the infrastructure degradation attributed to changes in harvesting activity within the GHG Project from Professional Forester(s), or independent reports.</p>	<p>baseline live tree, harvested wood products) for the end of the Reporting Period.                      The adjusted values are then used in the quantification of ERRs for the Reporting Period (Methodology Equation 24).</p>	<p>Updated <i>ex-ante</i> projections are provided for the remainder of the Crediting Period.</p>
<p>Regional Timber Market Capacity</p>	<p>Could regional mills, ports, rail yards, and other timber markets within financially feasible hauling distances accept the baseline scenario’s timber output?</p> <p>This test must consider closures of operational mills, ports, rail yards, and other markets for timber and reductions in total processing capacity, relative to baseline timber output. Increases in capacity are also considered.</p> <p>If verifiable evidence can be provided to show that specific timber market capacity reductions are caused by reductions in timber inputs due to carbon projects, then, for the purpose of the baseline scenario, those facilities can be assumed to operate at their capacity as of the project Start Date.</p>	<p>The project adjusts its accounting and crediting by eliminating baseline harvests until baseline timber output during the Reporting Period no longer exceeds regional timber market capacity. Specific harvest activities exceeding regional timber market capacity must be identified, and their impact on carbon stocks must be determined and accounted for.</p> <p>Appropriate consideration for newly discovered regional timber market capacity constraints must be demonstrated using the Professional Forester Attestation form,<sup>5</sup> updating Section IV: Regional Timber Market Capacity.</p>	<p>The baseline scenario is remodeled to not exceed regional timber market capacity.</p> <p>Appropriate consideration for newly discovered regional timber market capacity constraints must be demonstrated using the Professional Forester Attestation form, updating Section IV: Regional Timber Market Capacity (if not already provided for an Observed Conditions Assessment).</p> <p>A revised baseline model is developed for the remainder of the 100-year modeling period.</p>

<sup>5</sup> Found on the Reference Documents section of the website for the ACR Methodology *Improved Forest Management on Non-Federal U.S. Forestlands*.

CATEGORY	TEST AND CONSIDERATIONS	RECOURSE OF OBSERVED CONDITIONS ASSESSMENT (IF TEST FAILS):	RECOURSE OF PERIODIC MODELING ASSESSMENT (IF TEST FAILS):
	<p>Verifiable evidence may include quantified reductions in timber delivery attributed to changes in harvesting activity on GHG projects, attestations or documented statements from Professional Foresters, and independent reports.</p>	<p>The project calculates and reports adjusted values for affected carbon stocks (e.g., baseline live tree, harvested wood products) for the end of the Reporting Period.</p> <p>The adjusted values are then used in the quantification of ERRs for the Reporting Period (Methodology Equation 24).</p>	<p>Updated <i>ex-ante</i> projections are provided for the remainder of the Crediting Period.</p>
<p>Forest Management Practices</p>	<p>Have forest management practices significantly changed?</p> <p>Projects using Option 1 (<i>ACR IFM Methodologies Tool for Comparable Properties Analysis</i>;<sup>6</sup> Methodology Section 4.1.3.2) to substantiate Harvest Intensities: During an Observed Conditions Assessment, projects are subject to a Reporting Period Harvest Intensity check. However, a complete comparable properties analysis is not required. During a Periodic Modeling Assessment, projects must perform a comparable properties analysis to determine new baseline Harvest Intensities based on observed harvests on a selected comparable property and then must</p>	<p>Projects using Option 1 (Methodology Section 4.1.3.2) to substantiate Harvest Intensities: The project adjusts its accounting and crediting by eliminating baseline harvests until baseline Harvest Intensities during the Reporting Period no longer exceed comparable property Harvest Intensities. Specific harvest activities must be identified, and their impact on carbon stocks must be determined and accounted for.</p> <p>The project calculates and reports adjusted values for affected carbon stocks (e.g., baseline live tree, harvested wood products) for the end of the Reporting Period.</p>	<p>Projects using Option 1 to substantiate Harvest Intensities: The baseline scenario is remodeled so Harvest Intensities for the remainder of the Crediting Period do not exceed the new comparable property Harvest Intensities.</p> <p>A revised baseline model is developed for the remainder of the 100-year modeling period.</p> <p>Updated <i>ex-ante</i> projections are provided for the remainder of the Crediting Period.</p>

<sup>6</sup> Available under the Program Resources section of the ACR website.

CATEGORY	TEST AND CONSIDERATIONS	RECOURSE OF OBSERVED CONDITIONS ASSESSMENT (IF TEST FAILS):	RECOURSE OF PERIODIC MODELING ASSESSMENT (IF TEST FAILS):
	<p>perform a Remainder of Crediting Period Harvest Intensity check.</p> <p>Projects using Options 2 and 3 (Methodology Section 4.1.3.2) to substantiate Harvest Intensities are not subject to this dynamic evaluation.</p> <p>Silvicultural prescriptions may be updated<sup>7</sup> during Periodic Modeling Assessments with the provision of the Professional Forester Attestation form,<sup>8</sup> updating Section V: Silviculture.</p>	<p>The adjusted values are then used in the quantification of ERRs for the Reporting Period (Methodology Equation 24).</p>	
Financial Feasibility	<p>Do management revenues minus costs result in a net positive return, such that the baseline scenario is still financially feasible?</p> <p>This test must consider either 1) regional timber market conditions, road building and maintenance costs, fuel prices for machinery necessary for timber extraction, and other conditions relevant to performing the baseline scenario while achieving a net financial gain; or 2)</p>	<p>The project adjusts its accounting and crediting by eliminating any baseline harvests that are deemed financially infeasible. Specific financially infeasible harvest activities must be identified, and their impact on carbon stocks must be determined and accounted for.</p> <p>Appropriate consideration for newly discovered financial feasibility constraints must be demonstrated using the Professional</p>	<p>The baseline scenario is remodeled to omit any management activities that are deemed financially infeasible during the Reporting Period.</p> <p>Appropriate consideration for newly discovered financial feasibility constraints must be demonstrated using the Professional Forester</p>

<sup>7</sup> For an overview of changes to silvicultural practices, see: Achim et al. (2022). The changing culture of Silviculture. *Forestry: An international Journal of Forest Research*, Volume 95(2):143-152. <https://doi.org/10.1093/forestry/cpab047>

<sup>8</sup> Found on the Reference Documents section of the website for the ACR Methodology *Improved Forest Management on Non-Federal U.S. Forestlands*.

CATEGORY	TEST AND CONSIDERATIONS	RECOURSE OF OBSERVED CONDITIONS ASSESSMENT (IF TEST FAILS):	RECOURSE OF PERIODIC MODELING ASSESSMENT (IF TEST FAILS):
	<p>changes in stumpage prices affecting financial feasibility of the baseline scenario. Changes greater than 25% in net financial gains or, if using stumpage prices, the average stumpage price (weighted by species) constitute a significant change and failed test.</p> <p>Baseline management activities that are not immediately profitable but are implemented to establish more profitable future stand conditions (e.g., pre-commercial thinning), as substantiated per Methodology Section 4.1.3.1, are not considered in this test.</p>	<p>Forester Attestation form,<sup>9</sup> updating Section VI: Financial Feasibility.</p> <p>The project calculates and reports adjusted values for affected carbon stocks (e.g., baseline live tree, harvested wood products) for the end of the Reporting Period.</p> <p>The adjusted values are then used in the quantification of ERRs for the Reporting Period (Methodology Equation 24).</p>	<p>Attestation form, updating Section VI: Financial Feasibility (if not already provided for an Observed Conditions Assessment).</p> <p>A revised baseline model is developed for the remainder of the 100-year modeling period.</p> <p>Updated <i>ex-ante</i> projections are provided for the remainder of the Crediting Period.</p>

<sup>9</sup> Found on the Reference Documents section of the website for the ACR Methodology *Improved Forest Management on Non-Federal U.S. Forestlands*.



## 3 Reporting and Verification

### 3.1 Reporting

Each Monitoring Report will include, as a publicly reported addendum, a detailed summary of the dynamic evaluation applied to that Reporting Period, including all tests and their results. Any baseline forest management activities identified as unsupported and the reasoning for such a determination must be clearly reported. Any adjustments or remodeling that occurs as recourse must be fully described, including its impact to the volume of credits requested for the current Reporting Period and, if applicable, the projected *ex-ante* estimates of crediting through the end of the Crediting Period.

### 3.2 Verification

Verification of an Observed Conditions Assessment should only consider the baseline scenario during the current Reporting Period. Verification of the Periodic Modeling Assessment considers the baseline scenario as of the start of the current Reporting Period and *ex-ante* projections thereafter.

Verification activities for Observed Conditions Assessments will consider:

- Results of the Baseline Dynamic Evaluation Framework;
- Supporting evidence justifying changes to the baseline scenario;
- Implications of associated recourse in the Baseline Dynamic Evaluation Framework (Table 1) upon potential baseline harvesting activities and associated baseline carbon stocking; and
- Changes to baseline carbon quantification and ERR calculations through materiality assessment.

Verification activities for Periodic Modeling Assessments will consider:

- All verification activities relevant to the Observed Conditions Assessment;
- Methods to conservatively and accurately incorporate previous Observed Conditions Assessments and associated adjustments into baseline stocking at the start date of the Reporting Period currently undergoing verification (i.e., the start of the remodel);
- Changes to model inputs and parameterization; and
- Confirmation of model outputs.

# Definitions

<i>Ex-ante</i>	Prior to the occurrence and verification of a project emission mitigation activity.
<i>Ex-post</i>	After the event, a measure of past performance.
<b>Harvest Intensity</b>	The spatial extent of and amount of biomass removed by harvest treatments per unit time.
<b>Observed Conditions Assessment</b>	Comparison of the baseline scenario during a given Reporting Period to recently observed conditions ( <i>ex-post</i> ), resulting in crediting adjustments as necessary. This is performed at each verification (both full and desk-based) prior to generating carbon credits. See Section 2.1.1 for more details.
<b>Periodic Modeling Assessment</b>	Periodic re-assessment of the long-term modeled baseline scenario, ensuring the continued validity of <i>ex-ante</i> projections and incorporating any adjustments made by recent Observed Conditions Assessments on a forward-moving basis (as applicable). This occurs at each full verification that includes a site visit to the project site (i.e., no less frequently than every five years). It may also be performed at desk-based verifications at the Project Proponent's discretion. See Section 2.1.2 for more details.
<b>Professional Forester</b>	An individual engaged in the profession of forestry. If a project is in a jurisdiction that has professional forester licensing laws, the individual must be credentialed in that jurisdiction. <sup>10</sup> Otherwise, the individual must be certified by the Society of American Foresters <sup>11</sup> or Association of Consulting Foresters <sup>12</sup> with multiple years of professional experience in the state or region.

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<sup>10</sup> For projects located in multiple jurisdictions with professional forester licensing laws, the individual must be credentialed in at least one of the jurisdictions.

<sup>11</sup> [https://www.eforester.org/Main/Certification\\_Education/Certified\\_Forester/Main/Certification/Certification\\_Home.aspx?hkey=53f11286-5500-4c13-a371-251dd0df0d7a](https://www.eforester.org/Main/Certification_Education/Certified_Forester/Main/Certification/Certification_Home.aspx?hkey=53f11286-5500-4c13-a371-251dd0df0d7a)

<sup>12</sup> <https://www.acf-foresters.org/>