

CLIMATE FORWARD

FORECAST METHODOLOGY APPROVAL MANUAL

Version 1.0 | November 2018



CLIMATE
ACTION
RESERVE

Table of Contents

1	Introduction	1
2	Program Principles and Criteria	2
3	Forecast Methodology Approval Process	4
3.1	Methodology Approval Process Fees	5
3.2	Reserve Review	5
3.2.1	Evaluation Criteria	6
4	Technical Expert Forecast Methodology Review	8
4.1	Technical Expert Qualifications	8
4.2	Conflict of Interest	8
4.3	Expectations of Technical Expert Review	8
4.3.1	Definition of Mitigation Project	8
4.3.2	Mitigation Project Start Date	8
4.3.3	Crediting Period	9
4.3.4	Baseline Scenario	9
4.3.5	Performance Standard Test	9
4.3.6	Legal Requirement Test	9
4.3.7	GHG Assessment Boundary	9
4.3.8	Environmental and Social Safeguards	9
4.3.9	Quantification Methodology	10
4.3.10	Permanence	10
4.3.11	Project Resilience Measures	10
4.3.12	Project Implementation Report and Project Documentation	10
4.3.13	Implementation Confirmation Activities	10
4.4	Technical Expert Report	10

1 Introduction

The Climate Action Reserve's Climate Forward program provides a practical solution to companies and organizations seeking cost-effective mitigation of anticipated operational and/or project-related GHG emissions through investments in GHG reduction activities that are practical, scientifically-sound, transparent, and aligned with forward looking mitigation requirements such as the California Environmental Quality Act (CEQA). The program will drive forward looking investment into actions expected to result in GHG reductions.

The GHG Mitigation Registry Program (Program) enables companies and organizations to invest proactively in projects that will reduce greenhouse gas emissions forecasted to occur from business-as-usual operations. The Program provides a transparent and trusted resource for users to reduce their carbon footprints in a responsible, consistent, and accountable manner. By following standardized and conservative quantification methodologies approved by the Climate Action Reserve, project proponents can be issued high quality credits to reflect the mitigation measure implemented. This program incentivizes companies and organizations to invest in mitigation projects now, in exchange for credits based on anticipated future reductions.

This manual describes the framework, criteria and process that forecast methodologies must meet in order to be recognized by the Reserve as an approved forecast methodology.¹ The forecast methodology approval process is the process by which proposed forecast methodologies are approved for use under the Reserve's GHG Mitigation Registry program. Forecast methodologies are submitted for Reserve review and reviewed by the Reserve and by external technical experts, if necessary. The Reserve will work with the forecast methodology's submitting entity to revise the forecast methodology to meet the principles of the program (see Section 2). Once a forecast methodology has been approved by the Reserve, mitigation projects may be submitted and issued FMUs using that approved methodology.

¹ This manual does not describe the process for submittal, confirmation, and registration of specific projects utilizing an approved forecast methodology. To learn more about the project registration process, please see the Climate Forward Program Manual.

2 Program Principles and Criteria

This section describes the general criteria and requirements against which the mitigation projects and forecast methodologies will be assessed. This includes criteria to assess eligibility, additionality, and the accuracy and conservativeness of the quantification approach.

There is strong international consensus around a core standard set of overarching principles to guide decisions about the accounting, quantification, and reporting of project-based GHG reductions or removals. These consensus principles are listed and defined in both the International Organization for Standardization (ISO) 14064-2: 2006 and The World Resources Institute/World Business Council for Sustainable Development (WRI/WBCSD) Greenhouse Gas Protocol for Project Accounting. Definitions of these principles differ slightly between the two standards; for this program, the Reserve interprets the principles as follows:

- **Relevance:** Data, methods, criteria, assumptions, and accounting boundaries should be chosen based on their “intended use.” For this program, this means forecast methodologies are designed around practical, conservative approaches that adhere to core accounting principles and support environmental integrity.
- **Completeness:** All relevant GHG emissions and removals should be accounted for and all relevant information should be considered. Forecast methodologies shall use all relevant information to comprehensively identify the GHG sources, sinks, and reservoirs affected by mitigation projects and account for all significant changes in GHG emissions or removals that may result from a mitigation project.
- **Consistency:** Data, methods, criteria, and assumptions should allow meaningful and valid comparisons of the GHG reductions achieved by different mitigation projects, forecast methodologies, and different activity types.
- **Transparency:** Sufficient information should be disclosed to allow reviewers and stakeholders to make decisions about the credibility and reliability of GHG reduction claims with reasonable confidence. Access to sufficient and appropriate GHG-related information is critical for assuring that a mitigation project’s GHG reduction claims are credible.
- **Accuracy:** Uncertainties and bias should be reduced as far as is practical. Greater accuracy in estimating GHG emissions and reductions will help ensure credibility of GHG reduction claims. Where accuracy is sacrificed, data and assumptions used to estimate GHG reductions should be conservative. Sampled data used to establish forecast methodology parameters or project inputs must achieve a minimum statistical confidence of +/- 5% at 1 Standard Error.
- **Conservativeness:** Conservative assumptions, values, and procedures should be used to ensure that GHG reductions are not over-estimated. Because the GHG reductions under this program will be estimated and credited at the point of activity implementation, approved forecast methodologies must employ conservative estimation methods. Where project benefits are based on projections of project activities, the projections of project benefits must be justified through scientific literature or defensible direct analysis.

Forecast methodologies must establish an empirical approach to demonstrating conservative forecasting or apply a methodology specified discount to the total projected quantity of GHG emission reductions. This is required to account for potential performance uncertainties as well as the likelihood of project non-performance and project abandonment. Each proposed forecast methodology must provide summary statistics around each default value or quantitative assumption that affects the overall estimation of credits.

3 Forecast Methodology Approval Process

Forecast methodologies contain the eligibility rules, quantification methods, and confirmation requirements that ensure the consistency and rigor of GHG reduction/removal accounting for a specific mitigation project. When the Reserve has not already approved a forecast methodology applicable to a mitigation project a developer wants to undertake, the developer will need to propose a forecast methodology. The Reserve will only issue FMUs for forecasted GHG reductions or removals quantified and confirmed under an approved forecast methodology.



Figure 3.1. Overview of the Forecast Methodology Approval Process

3.1 Methodology Approval Process Fees

Methodology Approval Fees	
Screening fee for new methodologies and modifications to Reserve-approved methodologies ²	\$7,500
Peer review fee for new methodologies and methodology revisions ³	Variable

3.2 Reserve Review

Once a forecast methodology has been submitted to the Reserve and the appropriate fees have been paid, the Reserve will conduct a review of the forecast methodology for adherence to forecast methodology requirements detailed in Section 3 of the Climate Forward Program Manual. Specifically, the Reserve will assess each of the following items:

1. Definition of the mitigation project
2. Start date
3. Demonstration of additionality
 - a. Meeting the Legal Requirement Test
 - b. Description and discussion of the performance standard test(s)
4. Description of market expansion focus
5. Discussion of environmental and social safeguards (if applicable)
6. Demonstration of ex ante suitability
7. Crediting period and rationale
8. Bundling and aggregation of Projects
9. GHG Assessment Boundary
10. Leakage accounting
11. Description and justification of chosen baseline scenario
12. Estimation of GHG reductions, including assumptions to ensure conservativeness
13. Ex Ante Risk Pool Contribution
14. Ensuring permanence (if applicable)
15. Project implementation and confirmation
16. Voluntary ongoing monitoring incentive
17. Confirmation activities

The Reserve will provide findings to the forecast methodology developer. The developer must respond to all findings, which may require amendment of the forecast methodology.

In recognition that the Reserve will not have sufficient experience or expertise regarding all of the types of forecast methodologies that could be submitted, the Reserve may engage with one (or more) third party technical experts to assist in assessing forecast methodologies for their adherence to program requirements.

² The methodology screening fee includes two rounds of internal review by the Reserve. The methodology screening fee may be increased for additional reviews, if necessary.

³ The cost for peer review is based on the cost of external third-party experts to participate in the evaluation of the methodology. These costs will be based on the complexity of the methodology and resulting time and expertise required for peer review.

3.2.1 Evaluation Criteria

The Reserve uses an internal evaluation process to evaluate submitted methodologies. The Reserve takes into consideration a number of issues when assessing a submitted methodology for use in the Climate Forward Program.

- How amenable is the methodology type to standardized additionality and baseline determinations? For some types of methodologies, it is difficult to credibly and accurately determine additionality and estimate baseline emissions on a standardized basis. In general, the Reserve encourages methodologies that can be widely applied and discourages methodologies for project types difficult to apply elsewhere. Alternatively, the Reserve may consider methodologies that incorporate project-specific methods or variables into standardized protocols as appropriate, or limit the scope of methodologies to address only activities and conditions for which standardized approaches are feasible.
- What are the total potential GHG reductions that could result from this type of methodology? As it takes significant effort and resources to produce a standardized forecast methodology, there should be a large and geographically diverse pool of potential reduction opportunities. Individual projects could vary in size, but the market potential for the methodology should be significant.
- Are there potential positive or negative environmental or social impacts from this type of methodology or the operations, facilities or sectors with which this type of methodology may be associated? Negative effects should be avoided. All else being equal, the Reserve will prioritize methodologies that can create significant co-benefits for the ecosystems and communities where projects take place. Where necessary, the Reserve will also consider developing additional criteria for ensuring environmental and social safeguards.
- Are there existing methodologies or protocols that could serve as a starting point? If so, have they been reviewed and/or approved by any regulatory (or other relevant) agencies? Standardized protocols are more easily developed where sound scientific methods already exist to determine baselines and quantify emission reductions. Methodologies that have been vetted by regulatory (or other relevant) agencies may be better suited for approval as mitigation measures.
- Are there high quality datasets to evaluate “business as usual” activities for the sector in which the methodology activity occurs? Are there high quality datasets to evaluate estimated GHG emission reductions/removal enhancements, abandonment rates, and project/equipment efficiency decay rates? Setting performance thresholds and other standardized tests for additionality requires defensible data on the current state of the sector. Additionally, crediting on an ex ante basis requires defensible data regarding projected performance for any given methodology.
- Does the methodology type create direct or indirect emission reductions? All else equal, the Reserve will focus on methodology types that result in direct reductions. Direct emission reductions are generally easier to quantify because the sites where they occur can be directly monitored. When emission reductions occur at sites or sources owned by the project proponent, there is also less risk that an entity other than the project proponent will claim ownership of the project activity. Thus, these types of

methodologies are less likely to be at risk for double counting, uncertainty in indirect emission factors, or ownership issues.

- What is the likelihood that the GHG reductions or enhancements resulting from the project type will be permanent? Permanence under an ex-ante crediting framework is a critical issue. All else equal, the Reserve will prioritize methodologies that demonstrate a greater likelihood of GHG reductions/enhancements being permanent.
- Does the methodology have characteristics that make it unsuitable for traditional offset programs? This Program is intended to expand the scope of GHG mitigation projects that are feasible beyond the opportunities offered by the existing carbon market. All else equal, the Reserve will prioritize methodologies that demonstrate a need for new incentives and programs beyond the existing carbon market.
- Does the methodology type require ongoing management decisions for success (e.g., reduced nitrogen application on cropland)? If so, are the barriers to those ongoing operating decisions low or high? Priority will be given to methodologies that can be expected to continue through the entire crediting period without additional incentive or intervention.

4 Technical Expert Forecast Methodology Review

4.1 Technical Expert Qualifications

The Reserve may seek additional technical expertise for the evaluation of some methodologies. To serve as a technical expert, the candidate must submit a comprehensive curriculum vitae demonstrating that they possess at least five years combined of relevant work and academic experience in the following:

- Developing or verifying projects and/or validating methodologies for the forecast methodology sector
- Developing methodologies/protocols for the forecast methodology sector
- Evaluating additionality, baselines, secondary effects (environmental and social impacts), leakage, permanence, GHG assessment boundaries, GHG emissions quantification, modeling, project operation risks, and monitoring for forecast methodology sector
- Demonstrating a working command of current standards and best practices as they relate to carbon projects developed within the forecast methodology sector

The Reserve retains full and exclusive rights to determine whether an individual meets the aforementioned requirements to serve as a technical expert.

4.2 Conflict of Interest

When conducting technical expert forecast methodology review for the Reserve, individuals must work in a credible, independent, nondiscriminatory and transparent manner. A conflict of interest (COI) is defined as any situation that compromises an individual's ability to perform a wholly independent review of the forecast methodology. In order to ensure the credibility of the GHG Mitigation Program, it is crucial that the forecast methodology review process be completely independent. Conflict of interest is a difficult and dynamic issue and is therefore assessed by Reserve staff on a case-by-case basis. The technical expert must submit a *Technical Expert Conflict of Interest Review Form* for Reserve review and approval.

4.3 Expectations of Technical Expert Review

Once the Reserve has determined that a technical expert is required for the review of a given proposed forecast methodology and selected an appropriate expert, the technical expert must fulfill each of the following requirements:

4.3.1 Definition of Mitigation Project

The technical expert shall review the description provided in the proposed forecast methodology of the type of activity (or activities) that constitute a proposed mitigation project. The technical expert shall assess whether the definition is sufficiently specific regarding eligibility criteria (such as location, pre-existing conditions, etc.) and any exclusionary conditions that would preclude a mitigation project from being eligible.

4.3.2 Mitigation Project Start Date

The technical expert shall review the definition provided in the proposed forecast methodology for appropriate actions that constitute a mitigation project's start date. The expert shall assess

whether the action(s) delineating a specific mitigation project being implemented are appropriate to begin quantifying GHG emission reductions associated with the mitigation project from that point on.

4.3.3 Crediting Period

The technical expert shall review the proposed crediting period. The crediting period is the period of time during which the mitigation project's GHG emission reductions are quantified and eligible to be confirmed and issued FMUs. This crediting period must be supported with analysis and data, which the technical expert shall review to assess whether the proposed crediting period is appropriate.

4.3.4 Baseline Scenario

The technical expert shall review the proposed forecast methodology's description of the baseline scenario for appropriateness and accuracy. The technical expert shall assess whether the baseline scenario accurately describes the current standard practice in the applicable geographic region for the applicable sector.

4.3.5 Performance Standard Test

The technical expert shall review the proposed forecast methodology's description of the performance standard test, as well as the forecast methodology's background and justification on the development of the specified performance standard test. The technical expert shall assess whether the performance standard test in the forecast methodology satisfies the requirements described in the GHG Mitigation Registry Program Manual. Specifically, the technical expert shall assess whether the performance standard test accurately and comprehensively screens out activities that would have been implemented irrespective of the incentive provided by the GHG Mitigation Registry program.

4.3.6 Legal Requirement Test

Forecast methodologies must describe the legal environment affecting the proposed forecast methodology sector. The technical expert shall review this description to assess (to the best of their knowledge) that the evaluation of federal, state, jurisdictional, local regulations or other legally binding mandates is comprehensive and accurate, and that these legally binding mandates do not require the proposed activity.

4.3.7 GHG Assessment Boundary

The technical expert shall review the GHG assessment boundary for comprehensiveness and accuracy. The technical expert shall assess whether all material GHG emission sources, sinks, and reservoirs (SSRs) have been included, and whether the explanation of excluded SSRs is reasonable.

4.3.8 Environmental and Social Safeguards

Forecast methodologies under this program must not cause material adverse environmental, social, or economic impacts. In their review, the technical expert shall assess whether the narrative provided in the forecast methodology provides a comprehensive description of the potential adverse environmental, social, or economic impacts. The technical expert shall also assess whether the actions required to avoid those identified impacts by mitigation projects being implemented in accordance with the forecast methodology are sufficient.

4.3.9 Quantification Methodology

The technical expert shall review the proposed quantification methodologies for both baseline and project GHG emissions. The expert shall assess the appropriateness of the forecast methodology's calculation models, default factors (if any), and data sources being used. The technical expert shall review and confirm the appropriateness of project performance efficiency and project abandonment rate assumptions.

4.3.10 Permanence

Some types of mitigation projects cause GHG emission reductions by removing CO₂ from the atmosphere and storing it in a reservoir (i.e., carbon sequestration). In these cases, the forecast methodology must describe the risk for reversal associated with the Mitigation project type, and address risk mitigation efforts through a discount on quantified GHG emission reductions. The technical expert shall review this description of risk and determine whether the risks are comprehensively and accurately described, and whether the approach for mitigating those risks is appropriate.

4.3.11 Project Resilience Measures

Forecast methodologies are required to identify risk factors that negatively affect project performance or cause project abandonment, and describe Project Resilience Measures that, when implemented, mitigate those risks. The technical expert must review the identified project risk factors for comprehensiveness and appropriate risk characterization. The technical expert shall also assess whether proposed Project Resilience Measures sufficiently and comprehensively address the identified risks to the project.

4.3.12 Project Implementation Report and Project Documentation

Forecast methodologies must describe the information and data required for projects to submit as part of the Project Implementation Report as well as any other documentation and data required for project confirmation. The technical expert is required to assess whether the Project Implementation Report and other project documentation and data required for reporting is appropriate.

4.3.13 Implementation Confirmation Activities

Proposed forecast methodologies must describe the criteria and activities that should be undertaken by an accredited Confirmation Body to confirm that mitigation projects have been implemented as described by the forecast methodology. The technical expert shall review the description provided in the forecast methodology of the types of data and documentation the Confirmation Body shall review, as well as what criteria and activities the Confirmation Body shall confirm while on site. The technical expert shall assess whether these criteria, data, and activities are sufficient to confirm that the mitigation project has been implemented in accordance with the requirements of the forecast methodology and the Confirmation Manual.

4.4 Technical Expert Report

Technical experts shall document their assessment of the proposed forecast methodology in a written report. This report shall address each of the sections listed above and the technical expert's opinion on whether the forecast methodology presents an approach to estimating emission reductions from the mitigation projects that is in line with this program's principles and reflects the latest scientific understanding and sector-based best practices.