

CLIMATE FORWARD ▶



Improved Cook Stove Project Forecast Methodology

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A program of the



CLIMATE
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Abbreviations and Acronyms

CEQA	California Environmental Quality Act
CO ₂	Carbon dioxide
CH ₄	Methane
EF	Emission factor
FMU	Forecasted Mitigation Unit
GHG	Greenhouse gas
t	Metric ton (or tonne)
N ₂ O	Nitrous oxide
Reserve	Climate Action Reserve
SSR	Source, sink, or reservoir

1 Introduction

The Climate Action Reserve (Reserve) is an environmental nonprofit organization that promotes and fosters the reduction of greenhouse gas (GHG) emissions through credible market-based policies and solutions. Based in Los Angeles, the Reserve is the foremost carbon offset registry in North America with internationally recognized expertise in project-level GHG accounting. The Reserve establishes regulatory-quality standards for the development and quantification of GHG emission reduction projects; issues GHG emission reduction credits for use in compliance and voluntary carbon programs; and tracks the transaction of credits over time in transparent, publicly-accessible systems. Adherence to the Reserve's standards ensures that emission reductions associated with projects are real, permanent, and additional, thereby instilling confidence in the environmental benefit, credibility, and efficiency of carbon markets.

Climate Forward, a greenhouse gas mitigation program of the Climate Action Reserve, provides a practical solution to companies and organizations seeking cost-effective mitigation of anticipated (i.e., future) operational and/or project-related GHG emissions. Climate Forward facilitates investments in GHG reduction¹ activities that are practical, scientifically-sound, transparent, and aligned with forward-looking mitigation needs such as the California Environmental Quality Act (CEQA). Climate Forward will drive forward-looking investment into actions expected to result in GHG reductions, with a goal of expanding the scope and scale of feasible emission reduction project types.

Climate Forward is designed to provide companies, organizations, developers, and other entities with a conservative, robust, and methodologically rigorous option to mitigate an estimate of expected GHG emissions, on a voluntary or compliance basis, using Forecasted Mitigation Units (FMUs) generated from mitigation projects under this program. Climate Forward fundamentally differs from existing carbon credit programs through its focus on projecting and crediting estimated emission reductions on an *ex ante* basis. Under Climate Forward, estimated GHG reductions from the mitigation project are recognized as FMUs, which are each equal to one metric ton of carbon dioxide equivalent (CO₂e) expected to be reduced or sequestered. FMUs can be retired for multiple purposes, including for CEQA mitigation or for other voluntary mitigation purposes.

The Improved Cook Stove Project Forecast Methodology provides guidance to forecast and report GHG emission reductions associated with energy efficiency improvements realized by replacing baseline cooking stove devices with eligible project devices. The methodology provides eligibility rules, methods to forecast and calculate reductions, performance-monitoring instructions, and procedures for reporting project information to Climate Forward. Project proponents that initiate improved cook stove projects use this document to register forecasted GHG reductions with Climate Forward. Additionally, a Project Implementation Report will receive independent confirmation by a Reserve-approved confirmation body selected by the project proponent. Guidance for confirmation bodies to confirm reductions is provided in the Climate Forward Confirmation Manual and Section 8 of this methodology.

¹ Throughout this document, the term "reduction" is intended to address both GHG emission reductions that are the result of activities designed to reduce or avoid emissions, and GHG removals, which are those activities aimed at removing atmospheric CO₂ at rates that exceed "business as usual" sequestration.

This methodology is designed to ensure the complete, consistent, transparent, accurate, and conservative *ex ante* quantification and confirmation of GHG emission reductions associated with an improved cook stove project.²

² See the WRI/WBCSD GHG Protocol for Project Accounting (Part I, Chapter 4) for a description of GHG reduction project accounting principles.

2 The GHG Reduction Project

2.1 Project Definition

For the purpose of this methodology, the GHG reduction project is defined as the introduction of eligible efficient cook stoves (project devices) utilizing non-renewable woody biomass for replacement of less-efficient, traditional baseline biomass-fired cook stoves. The baseline scenario is the continued use of biomass-fired cook stoves that are less efficient than the project devices, using predominantly woody biomass. The project scenario is the use of an eligible project device, using predominantly woody biomass. Eligible project devices and locations, along with default parameters and emission factors which are required for the quantification of emission reductions under this methodology, are listed in a separate Improved Cook Stove Project Forecast Methodology Parameters document.³ A project will involve the installation of a batch of multiple eligible project devices. The entire batch shall constitute one “project.” It is also possible to submit multiple batches within a single project, but all such batches should be implemented prior to submittal of the project to Climate Forward. The project proponent must provide a detailed description of both the baseline scenario and project scenario in their Project Implementation Report, for every project.

Eligible countries, default values for baseline woody biomass consumption, and values for all other parameters used in this methodology are listed in the Improved Cook Stove Project Forecast Methodology Parameters document. The project proponent may propose additions or changes to the list of eligible countries, as well as changes to all other parameters, by demonstrating the reasonableness of such changes to the Reserve. Examples of evidence that may satisfy this requirement include independent baseline studies conducted within 10 years of the project start date, literature reviews, independent expert testimony, or values utilized in cook stove projects actively issuing carbon credits under the Clean Development Mechanism (CDM) in the relevant region or country. The values for all parameters must be approved by the Reserve before a project can be listed. The project proponent must provide the Reserve robust evidence demonstrating to the Reserve’s satisfaction that proposed parameter values are reasonable and conservative. The Reserve must approve the use of parameter values before they are employed in the calculation of emission reductions. Confirmation bodies must confirm the correct parameter values (as published in the most recent version of the Improved Cook Stove Project Forecast Methodology Parameters document) have been used, however the Confirmation body will not need to review materials provided in support of the use of such parameters (i.e., reference documents). Users should consult with the Reserve to ensure they are using the most up to date version of the parameters document.

2.2 The Project Proponent

The “project proponent” is an entity that has an active account on the Climate Forward registry, submits a project for listing and registration with Climate Forward, and is ultimately responsible for all project reporting and confirmation. In all cases, the project proponent must attest to the Reserve that they have exclusive claim to the GHG reductions resulting from the project. At the time a project is confirmed, the project proponent must attest that no other entities are reporting or claiming (e.g., for voluntary reporting or regulatory compliance purposes) the GHG reductions

³ The most current version of the Improved Cook Stove Project Forecast Methodology Parameters file may be downloaded from <https://climateforward.org/program/methodologies/improved-cook-stoves/>.

caused by the project (see Section 3.6).⁴ The Reserve will not issue credits for GHG reductions that are reported or claimed by entities other than the project proponent (e.g., implementation agents, householders receiving project devices, or others not designated as the project proponent).

⁴ A standard form for this attestation is available on the Climate Forward website at <https://climateforward.org/program/program-and-project-forms/>.

3 Eligibility Rules

Projects must fully satisfy the following eligibility rules in order to register with Climate Forward. The criteria only apply to projects that meet the definition of a GHG reduction project (Section 2.1).

The value for all parameters used in this methodology, as well as key eligibility information, can be found in the Improved Cook Stove Project Forecast Methodology Parameters document.⁵ Users should consult with the Reserve to ensure they are using the most up to date version of this document.

Eligibility Rule I:	Location	→	Eligible locations are identified in the accompanying parameters document
Eligibility Rule II:	Start Date and Crediting Period	→	Submitted for Listing no more than 12 months following batch installation. Crediting period defined by documented device lifetime.
Eligibility Rule III:	Additionality	→	Meet performance standard → Exceed regulatory requirements
Eligibility Rule IV:	Environmental and Social Safeguards	→	No negative environmental and social impacts
Eligibility Rule V:	Regulatory Compliance	→	Compliance with all applicable laws
Eligibility Rule VI:	Ownership and Double Counting	→	Must not receive credits from more than one program, where GHG boundaries overlap
Eligibility Rule VII:	Project Resilience Measures	→	Project must address risks of failure

3.1 Location

Only projects located in eligible countries or regions listed in the Improved Cook Stove Project Forecast Methodology Parameters⁶ document are eligible to register reductions with Climate Forward under this methodology. The project proponent may propose additions or changes to the list of eligible countries by demonstrating the reasonableness of such changes to the Reserve. Addition of a new, eligible country must be approved by the Reserve, and reflected in an update to the Improved Cook Stove Project Forecast Methodology Parameters document, before a project located in that country may be listed.

3.2 Project Start Date and Crediting Period

The project proponent will implement stove projects in batches. A batch is defined as the population of project devices of the same type, whether single or double pot, installed over a fixed period of time. Each batch is regarded as a new project. It is also possible to submit

⁵ The most current version of the Improved Cook Stove Project Forecast Methodology Parameters file may be downloaded from <https://climateforward.org/program/methodologies/improved-cook-stoves/>.

⁶ *ibid*

multiple batches within a single project, but all such batches should be implemented prior to submittal of the project to Climate Forward. A cook stove project start date is the date of installation of the first project device. However, devices will be distributed over a period of time, with different users beginning operation of their devices at different times. The period of time over which project devices are distributed and installed is the implementation period. Cook stove projects must be submitted to Climate Forward for listing no more than 12 months following the end of the implementation period.⁷

Emission reductions for each batch of stoves will be calculated as the sum of the forecasted maximum emission reductions realized by each stove over its expected lifespan. The lifespan of each project device is a fixed parameter that must be demonstrated to the satisfaction of the Reserve at the outset of the project, and will be fixed for the duration of the project. Thus, while the crediting period for the entire project will equal the number of years equivalent to the lifespan of that project device, since it is related to each project device, there is no common start and end date to the crediting period for the project as a whole. To be eligible for inclusion in a batch, each stove must be installed prior to the initiation of confirmation activities for that project.

3.3 Additionality

Climate Forward registers only projects that yield surplus GHG reductions that are additional to what would have occurred in the absence of the project.

Projects must satisfy the following tests to be considered additional:

1. The performance standard test
2. The legal requirement test

3.3.1 The Performance Standard Test

This methodology utilizes a common practice threshold for additionality. A project passes the performance standard threshold if the less efficient baseline biomass-fired cook stove is common practice for all forms of food preparation and water heating for the project region. The Improved Cook Stove Project Forecast Methodology Parameters document⁸ includes a list of countries and/or regions for which it has been demonstrated to the satisfaction of the Reserve that the performance standard has been met, as well as reference materials used to demonstrate additionality, and the specific parameters and emission factors for such regions.

3.3.2 The Legal Requirement Test

All projects are subject to a legal requirement test to ensure that the GHG reductions achieved by a project would not otherwise have occurred due to any law (including any rules, regulations, or other legally binding mandates) issued by any authority with jurisdiction over the project. A project passes the legal requirement test when there are no such legal requirements for the dissemination and implementation of improved cook stoves in the project area. The project proponent must also demonstrate that the project was not established or implemented, and was not at any time operated prior to the start date, in anticipation of, or to avoid or satisfy the anticipated requirements of any law.

⁷ Projects are considered submitted when the project proponent has fully completed and filed the appropriate Project Submittal form, available at <https://climateforward.org/program/program-and-project-forms/>.

⁸ The most current version of the Improved Cook Stove Project Forecast Methodology Parameters file may be downloaded from <https://climateforward.org/program/methodologies/improved-cook-stoves/>.

The legal requirement test is applied at the time of a project's start date. To satisfy the legal requirement test, project proponents must submit a signed Attestation of Legal Additionality form prior to the commencement of confirmation activities. In addition to the attestation, the Project Implementation Report must include procedures that the project proponent will follow to ascertain and demonstrate that the project passes the legal requirement test. All projects that pass this test at the project's start date are eligible to register reductions with Climate Forward for the duration of the crediting period, even if legal requirements change or new legal requirements are enacted during that period. The project proponent should include documentation to justify that the project passes the legal requirement test. The confirmation body must confirm the Attestation of Legal Additionality by reviewing evidence provided by the project proponent, and any other evidence they feel is necessary such as literature reviews, independent expert testimony, or letters from relevant government agency representatives, or other means.

3.4 Environmental and Social Safeguards

It is anticipated that the implementation of projects pursuant to this methodology will only result in positive environmental and social impacts. For each project that is implemented, the project proponent shall confirm that no negative environmental and social impacts are expected, and describe any measures taken to avoid any such potential negative impacts. Furthermore, the Reserve encourages the project proponent to include information in the Project Implementation Report regarding any non-GHG benefits of the project activities to the environment or society. This may include discussion of how the project aligns with the United Nations' Sustainable Development Goals,⁹ as well as additional quantification of any non-GHG benefits (such quantification is not specified by this methodology).

3.5 Regulatory Compliance

The project proponent must attest that no laws have been broken in carrying out project activities since the project start date, and provide an assessment of any aspects of the project which may present a risk of future regulatory violations. Where such risks are identified, the project proponent shall describe measures undertaken to reduce and/or mitigate these risks. The confirmation body shall endeavor to confirm that the project implementation did not result in any regulatory noncompliance, and also that the measures implemented to ensure no future violations occur, are appropriate in the circumstances of that particular project.

3.6 Ownership and Double Counting

The project proponent must attest that the project is not being submitted for emission reductions credit under any other carbon crediting program, world-wide. By signing the Attestation of Title, the project proponent attests that the FMUs have not and will not be registered with, reported in, held, transferred or retired via any emissions registry or inventory other than the Climate Forward registry, or registered with Climate Forward under a different project title or location. Evidence of transfer of rights of all emission reductions to the project proponent is required and must be confirmed by the confirmation body. The project proponent must provide a signed Attestation of Title document for each project, attesting to their ownership of all emission reductions generated by the project. This signed attestation, and any necessary supporting evidence, must be provided to the confirmation body. In addition to the Attestation of Title, confirmation bodies may wish to review relevant contracts, agreements, and/or supporting

⁹ Additional information regarding the Sustainable Development Goals may be found online at <https://sustainabledevelopment.un.org/>.

documentation between project proponents, end users, utilities, and other parties that may have a claim to the mitigation credits generated by the project.

Confirmation that there is no double counting shall be verified from the unique identity of the stoves and stove owners using a unique stove serial number and the location of the stove, including GPS coordinates of the stove household. That the project/program is not part of any other carbon crediting project or program shall be confirmed by reviewing public sources of data made available by carbon crediting programs.

3.7 Project Resilience Measures

The project proponent must demonstrate that sufficient measures are in place to ensure the continued implementation of the project. The project proponent must submit to the Reserve a proposal for how their specific project will ensure the continued implementation of that project, for the duration of the crediting period. At a minimum, these resiliency measures must include activities that:

- Ensure sufficient information is given to project participants, and the wider community, regarding:
 - how to properly use the project stove
 - best practices for maintaining operability of the project stove throughout the crediting period
 - how to access any service and support activities which will be undertaken
- Ensure sufficient provision is made for parts and servicing of project stoves for the duration of the crediting period

See Section 0 for guidance on confirmation requirements pertaining to Project Resilience Measures, including site visit requirements.

3.8 Market Expansion Objective

This methodology encourages actions leading to GHG reductions that are generally not feasible under existing GHG crediting or incentive programs. The project proponent should include language in the Project Implementation Report which provides rationale to support their decision to pursue the registration of FMUs for the project emission reductions, rather than CRTs (or any other form of *ex post* offset credit).

3.9 Demonstration of *Ex Ante* Suitability

This methodology is suitable for *ex ante* crediting, as it provides for the complete, consistent, transparent, accurate, and conservative estimation of emission reductions from the project activities, while providing sufficient safeguards to ensure the activities continue for the duration of the crediting period. Specific safeguards to ensure projected emission reductions are realized throughout the crediting period are included in Section 3.8, Project Resilience Measures, and guidance in Section 5.1, Estimating Performance Decline, and Section 5.2, Estimating Abandonment Rates.

4 The GHG Assessment Boundary

The GHG Assessment Boundary delineates the GHG sources, sinks, and reservoirs (SSRs) that must be assessed by project proponents in order to determine the net change in emissions caused by an improved cook stove project.¹⁰

Table 4.1 provides greater detail on each SSR and justification for the inclusion or exclusion of certain SSRs and gases from the GHG Assessment Boundary.

Table 4.1. Description of all Sources, Sinks, and Reservoirs

SSR	Source Description	Baseline/ Project	GHG	Included?	Justification/Explanation
1	Combustion of non-renewable biomass for cooking using biomass-fired cook stove	Baseline / Project	CO ₂	Yes	Major source of emissions
			CH ₄	No	Minor source of emissions and limited data available. Exclusion is conservative due to the increased efficiency of the project stove
			N ₂ O		
2	Procurement of non-renewable biomass fuel for cooking fuel	Baseline / Project	CO ₂	No	Emissions related to gathering of biomass fuel are expected to decrease due to the project, so excluding such emissions is conservative
			CH ₄		
			N ₂ O		
3	Production of efficient cook stoves	Project	CO ₂	No	Emissions related to the manufacture of efficient cook stoves are not significant in comparison to the emissions related to fuel combustion, so such emissions are excluded
			CH ₄		
			N ₂ O		
4	End of life management of efficient cook stoves	Project	CO ₂	No	Emissions related to end of life management of efficient cook stoves are not expected to be significant, so such emissions are excluded
			CH ₄		
			N ₂ O		

¹⁰ The definition and assessment of SSRs is consistent with ISO 14064-2 guidance.

5 Quantifying GHG Emission Reductions

GHG emission reductions from an improved cook stove project are quantified by calculating the change in efficiency achieved when moving from a baseline stove to a project device, the associated woody biomass savings, and finally the emission reductions achieved from such woody biomass savings. All GHG emissions from sources within the GHG Assessment Boundary (see Section 4) are accounted for in the quantification of emission reductions. GHG emission reductions must be quantified and confirmed in order for credits to be issued. The value for all parameters used in this methodology can be found in the Improved Cook Stove Project Forecast Methodology Parameters document.¹¹ Users should ensure they are using the most up-to-date version of that document.

Equation 5.1. Calculating GHG Emission Reductions

$$ER = \sum_{y=1}^{L_i} \sum_i \sum_j ER_{y,i,j}$$

Where,		Units
ER	= Total emission reductions	tCO ₂ e
L _i	= Effective lifespan of project device of type <i>i</i>	Years
<i>i</i>	= Indices for the situation where more than one type of project device is introduced to replace the pre-project devices	Number
<i>j</i>	= Indices for the situation where more than one batch of project devices is included in the given project	Number
ER _{y,i,j}	= Emission reductions by project device of type <i>i</i> and batch <i>j</i> during year <i>y</i>	tCO ₂ e

¹¹ The most current version of the Improved Cook Stove Project Forecast Methodology Parameters file may be downloaded from <https://climateforward.org/program/methodologies/improved-cook-stoves/>.

Equation 5.2. Calculating Emission Reductions by Project Batch¹²

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{NRB} \times NTG_{leakage}$$

Where,		Units
$ER_{y,i,j}$	= Emission reductions by project device of type i and batch j during year y	tCO ₂ e
$B_{y,savings,i,j}$	= Quantity of woody biomass that is saved per project device of type i and batch j during year y (defined in Equation 5.3)	t
$N_{y,i,j}$	= Number of project devices of type i and batch j operating during year y , as reported in project documentation	Number
μ_y	= Adjustment to account for any continued use of pre-project devices during the year y	Fraction
$f_{NRB,y}$	= Fraction of woody biomass that can be established as non-renewable biomass	Fraction
NCV_{NRB}	= Energy value of “air-dried” firewood replaced or substituted	TJ/t
EF_{NRB}	= Emission factor of the non-renewable woody biomass that is substituted or reduced (IPCC default for wood fuel)	tCO ₂ /TJ
$NTG_{leakage}$	= Net to gross adjustment factor to account for leakage	Fraction

Equation 5.3. Calculating Woody Biomass Saved per Project Device¹³

$$B_{y,savings,i,j} = B_{old,i,j} \times \left(1 - \frac{\eta_{old,i,j}}{\eta_{y,new,i,j}}\right)$$

Where,		Units
$B_{y,savings,i,j}$	= Quantity of woody biomass that is saved per project device of type i and batch j during year y	t
$B_{old,i,j}$	= Annual quantity of woody biomass that would have been used per device in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j (defined in Equation 5.4)	t
$\eta_{old,i,j}$	= Efficiency of the baseline devices (less efficient baseline biomass-fired cook stove) being replaced by project devices of type i and batch j	
$\eta_{y,new,i,j}$	= Default value to account for efficiency of the project device i in batch j for year y of the given stove. Note that declining efficiency values are specified for each subsequent year of operation of the given stove, to reflect the stove’s loss of efficiency	

The calculations in the equations above assume that there is only one cooking device per household. Considering that baseline surveys or other methods may estimate the total consumption per household, rather than per stove, an adjusted formula (see below) shall be used in case more than one project device is used in the household. For example, if two project devices are installed per household, half the baseline woody biomass consumption per household ($B_{old,HH}$) is used as the total annual quantity of woody biomass that would have been used in the absence of the project activity in each device ($B_{old,i,j}$).

¹² The value for all parameters used in this equation which are not project-specific can be found in the Improved Cook Stove Project Forecast Methodology Parameters document. The most current version may be downloaded from <https://climateforward.org/program/methodologies/improved-cook-stoves/>.

¹³ *Ibid.*

Equation 5.4. Calculating Woody Biomass Used per Household

$$B_{old,i,j} = \frac{B_{old,HH}}{N_{d,HH}}$$

Where,

		<u>Units</u>
$B_{old,i,j}$	= Annual quantity of woody biomass that would have been used per device in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j	t
$B_{old,HH}$	= Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices (tonnes/household/year) (default value)	t
$N_{d,HH}$	= Number of project devices per household	Number

5.1 Estimating Performance Decline

Project stove efficiency is expected to decrease during the crediting period, and the decline in efficiency must be estimated using Equation 5.5 below.

Equation 5.5. Efficiency of Project Devices

$$\eta_{y,new,i,j} = \eta_{new,i} - [(y - 1) \times TLR_{new,i,j}]$$

Where,

		<u>Units</u>
$\eta_{y,new,i,j}$	= Efficiency of project device of each type i and batch j implemented as part of the project activity during year y	Fraction
$\eta_{new,i}$	= Initial efficiency of project device of type i at the time of installation	Fraction
y	= Project year	
$TLR_{new,i,j}$	= Annual loss rate in thermal efficiency of project device of type i and batch j	Fraction

5.2 Estimating Abandonment Rates

It is foreseeable that some users of project stoves may choose to no longer use the stoves at some point during the crediting period. A conservative estimate of rates at which users abandon the use of project stoves must be calculated using Equation 5.6 below.

Equation 5.6. Number of Operating Project Devices

$$N_{y,i,j} = N_{new,i,j} \times [1 - (y - 1) \times SLR_{i,j}]$$

Where,

		<u>Units</u>
$N_{y,i,j}$	= Number of project devices of type i and batch j operating at time of project completion during year y	Number
$N_{new,i,j}$	= Number of installed project devices of type i and batch j	Number
$SLR_{i,j}$	= Annual loss rate of project devices of type i and batch j	Fraction

5.3 Leakage Accounting

Emission reductions within the project may result in increases of emissions outside of the project, in cases where baseline inefficient cook stoves are moved outside of the project area, in response to the project. A standard discount will be applied to emission reductions resulting from project implementation, in the form of a standard net to gross adjustment factor (NTG_{leakage}) to account for leakage, applied in Equation 5.2. The specific parameter value to be used for this discount will be determined prior to the submittal of the project, based on supporting literature provided to the Reserve by the project proponent.

6 Project Implementation and Monitoring

Climate Forward requires a Project Implementation Report to be established for all monitoring and reporting activities associated with the project.¹⁴ The Project Implementation Report will serve as the basis for the confirmation body to confirm that the monitoring and reporting requirements in this methodology have been met. The Project Implementation Report must cover all aspects of monitoring and reporting contained in this methodology and must specify how data for all relevant parameters will be collected and recorded.

At a minimum, the Project Implementation Report shall include the frequency of data acquisition, parameter values, a record keeping plan, and the role of individuals performing each specific monitoring activity. The Project Implementation Report must also include procedures that the project proponent has followed to ascertain and demonstrate that the project passes the legal requirement test and is in regulatory compliance.

Project proponents are responsible for ensuring that all monitoring and reporting requirements of this methodology have been met.

6.1 Quantification Parameters

Prescribed monitoring parameters necessary to calculate baseline and project emissions are provided in Table 6.1. The value for all parameters used in this methodology can be found in the Improved Cook Stove Project Forecast Methodology Parameters document.¹⁵ The value for all parameters must be approved by the Reserve before a project can be listed. Users should consult with the Reserve to ensure they are using the most up to date version of the parameters document.

Confirmation bodies must confirm the correct parameter values (as published in the most recent version of the Improved Cook Stove Project Forecast Methodology Parameters document) have been used, however the confirmation body will not need to review materials provided in support of the use of such parameters (i.e., reference documents).

Table 6.1. Project Monitoring Parameters

Equation	Parameter	Description	Data Unit	Scope	Calculated (c) Measured (m) Reference (r) Operating Records (o)	Comment
	<i>i</i>	Indices for the situation where more than one batch of project devices is introduced to replace the pre-project devices.	number	Project specific	o	

¹⁴ A template Project Implementation Report is available online at <https://climateforward.org/program/program-and-project-forms/>.

¹⁵ The most current version of the Improved Cook Stove Project Forecast Methodology Parameters file may be downloaded from <https://climateforward.org/program/methodologies/improved-cook-stoves/>.

Equation	Parameter	Description	Data Unit	Scope	Calculated (c) Measured (m) Reference (r) Operating Records (o)	Comment
	j	Indices for the situation where more than one type of project device is introduced to replace the pre-project devices.	number	Project specific	o	
	y	Year during which project activity was implemented.	year		o	
Equation 5.1	ER	Total emission reductions.	tCO ₂ e	Project specific	c	Calculated
Equation 5.1	L_i	Effective lifespan of project device of type i .	Years	Device specific	r	Recorded and fixed at the time of the project start date.
Equation 5.2 Equation 5.3	$B_{y,savings,i,j}$	Quantity of woody biomass that is saved per project device of type i , and batch j , during year y .	t	Project specific	c	Defined using Equation 5.3.
Equation 5.2 Equation 5.6	$N_{y,i,j}$	Number of project devices of type i and batch j operating at time of project completion during year y .	Number	Project specific	c	Calculated and fixed at the time of the project start date.
Equation 5.2	μ_y	Adjustment to account for any continued use of pre-project devices at time of project completion during the year y .	Fraction	Country specific	r	This value is fixed and recorded at the time of the project start date.
Equation 5.2	$f_{NRB,y}$	Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass.	Fraction	Country specific	r	This value is fixed and recorded at the time of the project start date.
Equation 5.2	NCV_{NRB}	Net calorific value of the non-renewable woody biomass.	TJ / Tonne	All countries	r	IPCC Tier 1 default. This value is fixed and recorded at the time of the project start date.
Equation 5.2	EF_{NRB}	Emission factor of the non-renewable woody biomass that is substituted or reduced by the project device.	tCO ₂ /TJ	All countries	r	This value is fixed and recorded at the time of the project start date.
Equation 5.2	$NTG_{leakage}$	Net to gross adjustment factor to account for leakages.	Fraction	Country or region specific	r	This value is fixed and recorded at the time of the project start date.
Equation 5.3 Equation 5.4	$B_{old,i,j}$	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j .	Tonne / household / year	Country or region specific	c	This value is fixed and recorded at the time of the project start date.

Equation	Parameter	Description	Data Unit	Scope	Calculated (c) Measured (m) Reference (r) Operating Records (o)	Comment
Equation 5.3	$\eta_{old,i,j}$	Efficiency of less efficient baseline biomass-fired cook stove (system being replaced).	Fraction	Device specific	r	This value is fixed and recorded at the time of the project start date.
Equation 5.3 Equation 5.5	$\eta_{y,new,i,j}$	Efficiency of the project device of each type <i>i</i> and batch <i>j</i> implemented as part of the project activity during year <i>y</i> .	Fraction	Device specific	c	Calculated and fixed at the time of the project start date.
Equation 5.4 Equation 5.5	$B_{old,HH}$	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices.	Tonnes / household / year	Country specific	r	This value represents all woody biomass used in the household regardless of the number of stoves being used. This value is fixed and recorded at the time of the project start date.
Equation 5.4	$N_{d,HH}$	Number of project devices distributed per household.	Number	Project specific	o	Recorded at the time of installation of the project devices.
Equation 5.5	$\eta_{new,i}$	Initial efficiency of the project device of each type <i>i</i> at the time of installation.	Fraction	Device specific	r	This value is fixed and recorded at the time of the project start date.
Equation 5.5	$TLR_{new,i,j}$	Annual loss rate in thermal efficiency of project device of type <i>i</i> and batch <i>j</i> .	Fraction	Device specific	r	This value is fixed and recorded at the time of the project start date.
Equation 5.6	$N_{new,i,j}$	Number of installed project devices of type <i>i</i> and batch <i>j</i> .	Number	Project specific	o	Recorded at the time of installation of the project devices.
Equation 5.6	$SLR_{i,j}$	Annual loss rate of project devices of type <i>i</i> and batch <i>j</i> .	Fraction	Country specific	r	This value is fixed and recorded at the time of the project start date.

6.2 Voluntary Ongoing Monitoring Incentive

Each Climate Forward methodology is designed to ensure that the quantification of emission reductions over the crediting period is conservative. It may be possible to have additional FMUs issued following *ex post* verification, using data collected by the project through ongoing monitoring of parameters relevant to the quantification methodology. For this methodology, *ex ante* risk related to performance decline and project abandonment rates during the full crediting period are accounted for in Section 5.1 and Section 5.2, respectively. In order to conduct a successful *ex post* project verification, and generate additional FMUs from the cook stove project, the project proponent shall conduct ongoing monitoring of all relevant project parameters. If data from each year of the crediting period are submitted in a Project Monitoring Report, and successfully verified by an approved third-party, the Reserve may approve the issuance of further FMUs representing some or all of the FMUs that may have been issued had

there been no performance decline or abandonment of project activities. A site visit is required during *ex post* verification.

7 Reporting and Record Keeping

This section provides requirements and guidance on reporting rules and procedures. A priority of Climate Forward is to facilitate consistent and transparent information disclosure among project proponents. Project proponents must submit an emission reduction report as part of the Project Implementation Report to Climate Forward.

7.1 Project Submittal and Confirmation Documentation

The documents listed below are required for project listing and confirmation with Climate Forward.

- Project Submission form
- Signed Attestation of Title form
- Signed Attestation of Legal Additionality form
- Signed Attestation of Regulatory Compliance form
- Project Implementation Report
- Confirmation Report
- Confirmation Statement

At a minimum, the above project documentation will be available to the public via the Climate Forward online registry. Further disclosure and other documentation may be made available on a voluntary basis through the Climate Forward registry.¹⁶

7.2 Record Keeping

For purposes of independent confirmation and historical documentation, project proponents are required to keep all information outlined in this methodology for a period equal to either the project crediting period or seven years after the information is generated, whichever is greater. This information will not be publicly available, but may be requested by the confirmation body or the Reserve. Records must be kept in both hard copy and digital format, where possible.

Examples of information the project proponent must retain includes:

- All data inputs for the calculation of the project emission reductions, including all required sampled data
- Copies of all permits, formal notices of regulatory violations, and any relevant administrative or legal consent orders dating back at least 3 years prior to the implementation of the first project device
- Executed Attestation of Title, Attestation of Regulatory Compliance, and Attestation of Legal Additionality forms
- Results of emission reduction calculations
- Confirmation records and results
- All evidence relating to Continued Implementation

Climate Forward also requires that the following project-related records be retained by the confirmation body for a period equal to either the project crediting period or seven years after the completion of confirmation activities, whichever is greater. It must be noted that some

¹⁶ Climate Forward documents and forms are available at <https://climateforward.org/program/program-and-project-forms/>.

records may be subject to fiscal or other legal requirements that are longer than Climate Forward's mandated period.

Confirmation bodies shall retain electronic copies, as applicable, of:

- The Project Implementation Report
- The project proponent's SSR and/or project activity data as well as evidence cited
- The confirmation plan
- The sampling plan
- The Confirmation Report
- The List of Findings
- The Confirmation Statement

Each confirmation body must have an easily accessible record-keeping system, preferably electronic, that provides readily available access to project information. Copies of the original activity and source data records shall be maintained within said record-keeping system. Records must be kept in both hard copy and digital format, where possible. The Reserve may at any time request access to the record-keeping system or any supporting documentation for oversight or auditing purposes.

7.3 Reporting and Confirmation Period

Project proponents must report forecasted GHG reductions from the project for the entire crediting period. A confirmation period is the period of time over which forecasted GHG reductions are confirmed. The confirmation period begins with the project start date and ends with the submission of the final Confirmation Report to Climate Forward. The end date of any confirmation period may not extend past the project crediting end date.

Confirmation activities cannot commence until the project is submitted by the project proponent and approved by the Reserve, and at least three months following the project start date. Confirmation must conclude, and a Confirmation Statement must be issued, no later than two years after the project start date. Successful confirmation fixes the start and end dates of the project crediting period for the duration of the mitigation project and any future confirmations.

7.4 Ex Post Verification

Ex post issuance may be possible for cook stove projects if data from each year of the crediting period are submitted in a Project Monitoring Report, and verified at the conclusion of the crediting period. A site visit is required during *ex post* verification. At this time, this methodology does not prescribe detailed *ex post* verification procedures, so guidance must be sought from the Reserve prior to the commencement of *ex post* verification.

8 Confirmation Guidance

This section provides confirmation bodies with guidance on confirming GHG emission reductions associated with the project activity. This confirmation guidance supplements the Climate Forward Confirmation Manual and describes confirmation activities specifically related to this methodology.

Confirmation bodies trained to confirm a given methodology type must be familiar with the following documents:

- Climate Forward Program Manual
- Climate Forward Confirmation Manual
- Improved Cook Stove Project Forecast Methodology (this document)
- Improved Cook Stove Project Forecast Methodology Parameters

The Climate Forward Program Manual, Climate Forward Confirmation Manual, and Climate Forward methodologies are designed to be compatible with each other and are posted on the Climate Forward website at <http://www.climateforward.org/>.

Only confirmation bodies trained and accredited by the Reserve are eligible to confirm project reports. Information about confirmation body accreditation and Climate Forward project confirmation training can be found on the Climate Forward website at <http://www.climateforward.org/program/confirmation/>.

8.1 Standard of Confirmation

While there is no requirement for *ex post* verification of this project under Climate Forward, there is a requirement for an accredited confirmation body to confirm the project has been implemented as described in the forecast methodology and that the estimated emission reductions or removals have been calculated accurately. The confirmation incorporates both a desktop documentation review and a site visit assessment of the mitigation project.

Beyond criteria for the confirmation of mitigation project implementation, the confirmation body also confirms any provisions specified in the forecast methodology that are to be undertaken to ensure the continued implementation of the mitigation project for the duration of its crediting period. The confirmation body assesses whether such measures have been appropriately implemented.

Confirmation activities for improved cook stove projects may commence immediately after the project proponent has completed all implementation activities, and at least three months have passed since the project start date.

8.2 Project Implementation Report

The Project Implementation Report serves as the basis for confirmation bodies to confirm that the monitoring and reporting requirements have been met. Confirmation bodies shall confirm that the Project Implementation Report covers all aspects of monitoring and reporting contained in this methodology and specifies how data for all relevant parameters were collected and recorded.

When assessing the Project Implementation Report, the confirmation body shall:

- (a) Assess the compliance of the Project Implementation Report with the requirements of the methodology, Climate Forward Program Manual, and Climate Forward Confirmation Manual;
- (b) Identify the list of parameters required by the methodology and confirm that the Project Implementation Report accounted for all necessary parameters;
- (c) Assess the means of implementation of the project data capture, including data management and quality assurance and quality control procedures, and determine whether these are sufficient to ensure the accuracy of forecasted GHG emission reductions to be achieved by the batch/project/program.

Where the project proponent has applied a sampling approach to determine data and parameters, the confirmation body shall assess the proposed sampling plan in accordance with sampling requirements in Section 4.3.3 of ISO 14064-3.

8.3 Core Confirmation Activities

The Climate Forward Confirmation Manual describes the core confirmation activities that shall be performed by confirmation bodies for all project confirmations.

Confirmation is a risk assessment and data sampling effort designed to ensure that the risk of reporting error is assessed and addressed through appropriate sampling, testing, and review. The core confirmation activities are:

1. Reviewing GHG management systems and estimation methodologies
2. Confirming emission reduction estimates
3. Undertaking site visits
4. Confirming implementation of Project Resilience Measures

8.3.1 Reviewing GHG Management Systems and Estimation Methodologies

The confirmation body reviews and assesses the appropriateness of the methodologies and management systems that the project proponent uses to gather data and calculate baseline and project emissions.

8.3.2 Confirming Emission Reduction Estimates

The confirmation body further investigates areas that have the greatest potential for material misstatements and then confirms whether or not material misstatements have occurred. This involves site visits to a representative sample of households where the project devices are installed, as well as locations where activities to ensure continued implementation of the project are being carried out, to confirm consistency with data provided to the confirmation body. In addition, the confirmation body recalculates a representative sample of the performance or emissions data for comparison with data reported by the project proponent in order to double-check the calculations of GHG emission reductions.

8.3.3 Undertaking Site Visits

In addition to undertaking a desk review, confirmation bodies shall conduct one or more site visits to support confirmation activities. The specific itinerary for a site visit, and the activities to

be confirmed will be determined by the confirmation body, following an assessment of project risk.

During field site visits, at a minimum the confirmation body will:

1. Randomly sample households and stoves from each project batch and visit those households to inspect the stoves and establish whether reported existence and use of project stove is as recorded in the Project Implementation Report.
2. Review and discuss with the project proponent, and any supporting local agents, evidence of continued implementation including those elements listed below.

To the extent practicable, the confirmation body must confirm project resilience measures are appropriately implemented, when conducting site-visit confirmation activities. This may include interviews with end-users of project stoves, and staff or agents involved with maintenance and servicing of stoves, as well as physically inspecting manufacturing or repair facilities.

8.3.4 Confirming Implementation of Project Resilience Measures

Guidance relating to the necessary safeguards to ensure project resiliency is set out in Section 3.4 and minimum resiliency measures are outlined in Section 3.7. The project proponent must secure agreement from the Reserve regarding the particular Project Resilience Measures that will be employed at each given project.

The confirmation body must confirm appropriate implementation of the Project Resilience Measures via conducting desktop confirmation activities. This may include reviewing training and/or marketing materials, product manuals distributed to end-users, or reviewing budgets for training and/or materials, among other activities.

8.4 Confirmation Items

Confirmation bodies are expected to use their professional judgment to confirm that methodology requirements have been met in instances where the methodology does not provide sufficiently prescriptive guidance. For more information on Climate Forward's confirmation process and professional judgment, please see the Climate Forward Confirmation Manual.

Note: The tables below shall not be viewed as a comprehensive list or plan for confirmation activities, but rather guidance on areas specific to improved cook stove projects that must be addressed during confirmation.

8.4.1 Project Eligibility and Credit Issuance

Table 8.1 lists the criteria for reasonable assurance with respect to eligibility and credit issuance for improved cook stove projects. These requirements determine if a project is eligible to register with Climate Forward and/or have credits issued. If any requirement is not met, the project may be determined ineligible.

Table 8.1. Eligibility Confirmation Items

Methodology Section	Eligibility Qualification Item	Apply Professional Judgment?
2.1	Confirm that the project meets the definition of an improved cook stove project	No

Methodology Section	Eligibility Qualification Item	Apply Professional Judgment?
3.2	Confirm that no emissions are being claimed beyond the lifespan of the project device	No
3.3.1	Confirm that the project meets the performance standard test	No
3.3.2	Confirm execution of the Attestation of Legal Additionality form to demonstrate eligibility under the legal requirement test	No
3.3.2	Confirm that the Project Implementation Report contains a mechanism for ascertaining and demonstrating that the project passes the legal requirement test	No
3.4, 3.7	Confirm that no negative environmental and social impacts are expected and confirm any measures taken to avoid any such potential negative impacts are reasonable	Yes
3.5	Confirm that the project activities comply with applicable laws by reviewing any instances of non-compliance provided by the project proponent and performing a risk-based assessment to confirm the statements made by the project proponent in the Attestation of Regulatory Compliance form	Yes
3.5	Confirm that the assessment of risk of future regulatory violations is appropriate, and any mitigation means identified are also appropriate	Yes
3.6	Confirm ownership of the reductions by reviewing Attestation of Title and associated documentation	No
3.7	Confirm that the Project Resilience Measures have been appropriately implemented	Yes
6	Confirm that the project has documented and implemented a Project Implementation Report	No
6	Confirm that monitoring meets the requirements of the methodology	No

8.4.2 Quantification

Table 8.2 lists the items that confirmation bodies shall include in their risk assessment and recalculation of the project's GHG emission reductions. These quantification items inform any determination as to whether there are material and/or immaterial misstatements in the project's GHG emission reduction calculations. If there are material misstatements, the calculations must be revised before FMUs are issued.

Table 8.2. Quantification Confirmation Items

Methodology Section	Quantification Item	Apply Professional Judgment?
5	Confirm that emission reductions are properly aggregated	No
5	Confirm that validity of all parameters utilized in estimating claimed emission reductions	No
5, 6	Confirm that the project proponent correctly applied all project parameters	No

The confirmation body will confirm the validity of all parameters utilized in estimating claimed emissions reductions, including but not limited to:

- Baseline fuel wood consumption values are appropriate
- Number of devices implemented in any batch
- Number of devices installed per household
- Fraction of woody biomass property calculated
- Defaults appropriately listed and applied
- Continued use of pre-project devices appropriately accounted for
- Efficiency of new device, and decline in efficiency properly demonstrated
- Conservativeness discounts appropriately applied

In assessing the appropriateness of parameter values, the confirmation body shall:

1. Confirm values published in the most recent version of the Improved Cook Stove Project Forecast Methodology Parameters document were used.
2. Determine whether all *ex post* data sources and assumptions are applied correctly and calculations are correct.

8.4.3 Risk Assessment

Confirmation bodies will review the following items in Table 8.3 to guide and prioritize their assessment of data used in determining eligibility and quantifying GHG emission reductions.

Table 8.3. Risk Assessment Confirmation Items

Methodology Section	Item that Informs Risk Assessment	Apply Professional Judgment?
6	Confirm that the Project Implementation Report is sufficiently rigorous to support the requirements of the methodology and proper operation of the project	Yes
6	Confirm that appropriate monitoring equipment is in place to meet the requirements of the methodology	No
6	Confirm that the individual or team responsible for managing and reporting project activities are qualified to perform this function	Yes
6	Confirm that appropriate training was provided to personnel assigned to project related activities	Yes
6	Confirm that all contractors are qualified for managing and reporting greenhouse gas emissions if relied upon by the project proponent. Confirm that there is internal oversight to assure the quality of the contractor's work	Yes
7.2	Confirm that all required records have been retained by the project proponent	No

8.4.4 Completing Confirmation

The Climate Forward Confirmation Manual provides detailed information and instructions for confirmation bodies to finalize the confirmation process. It describes completing a Confirmation Report, preparing a Confirmation Statement, submitting the necessary documents to Climate Forward, and notifying the Reserve of the project's confirmed status.

9 Glossary of Terms

Additionality	Project activities that are above and beyond “business as usual” operation, exceed the baseline characterization, and are not mandated by regulation.
Anthropogenic emissions	GHG emissions resultant from human activity that are considered to be an unnatural component of the Carbon Cycle (i.e., fossil fuel destruction, deforestation, etc.).
Batch	The implementation of the same activity at multiple sites over a finite period of time.
Biogenic CO ₂ emissions	CO ₂ emissions resulting from the destruction and/or aerobic decomposition of organic matter. Biogenic emissions are considered to be a natural part of the Carbon Cycle, as opposed to anthropogenic emissions.
Carbon dioxide (CO ₂)	The most common of the six primary greenhouse gases, consisting of a single carbon atom and two oxygen atoms.
CO ₂ equivalent (CO ₂ e)	The quantity of a given GHG multiplied by its total global warming potential. This is the standard unit for comparing the degree of warming which can be caused by different GHGs.
Confirmation	The process used to ensure that a given participant’s GHG emissions or emission reductions have met the minimum quality standard and complied with Climate Forward’s procedures and methodologies for calculating and reporting GHG emissions and emission reductions.
Confirmation body	An organization or company that has been ISO-accredited and approved by the Reserve to perform GHG confirmation activities for specific forecast methodologies.
Emission factor (EF)	A unique value for determining an amount of a GHG emitted for a given quantity of activity data (e.g., metric tons of carbon dioxide emitted per barrel of fossil fuel burned).
Fossil fuel	A fuel, such as coal, oil, and natural gas, produced by the decomposition of ancient (fossilized) plants and animals.
Greenhouse gas (GHG)	Carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), sulfur hexafluoride (SF ₆), hydrofluorocarbons (HFCs), or perfluorocarbons (PFCs).
GHG reservoir	A physical unit or component of the biosphere, geosphere, or hydrosphere with the capability to store or accumulate a GHG that has been removed from the atmosphere by a GHG sink or a GHG captured from a GHG source.
GHG sink	A physical unit or process that removes GHG from the atmosphere.
GHG source	A physical unit or process that releases GHG into the atmosphere.
Global Warming Potential (GWP)	The ratio of radiative forcing (degree of warming to the atmosphere) that would result from the emission of one unit of a given GHG compared to one unit of CO ₂ .

Indirect emissions	Reductions in GHG emissions that occur at a location other than where the reduction activity is implemented, and/or at sources not owned or controlled by project participants.
Metric ton (t, tonne)	A common international measurement for the quantity of GHG emissions, equivalent to about 2204.623 pounds or 1.1 short tons.
Methane (CH ₄)	A potent GHG, consisting of a single carbon atom and four hydrogen atoms.
MMBtu	One million British thermal units.
Project baseline	A “business as usual” GHG emission assessment against which GHG emission reductions from a specific GHG reduction activity are measured.
Project Implementation Report	A report prepared by the project proponent containing all data, calculations, and information necessary for the confirmation of the improved cook stove project and the issuance of <i>ex ante</i> FMUs.
Project Monitoring Report	A report prepared by the project proponent containing all monitoring data, calculations, and information necessary for the <i>ex post</i> verification of the improved cook stove project and the issuance of additional FMUs.
Project proponent	An entity that undertakes a GHG project, as identified in Section 2.1 of this methodology.
Project Resilience Measures	Activities tailored to the specific project that are undertaken to ensure the continuing implementation of the project for the duration of the crediting period.

10 References

International Organization for Standardization, ISO 14064-2:2006 Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements (2006).

World Resource Institute and World Business Counsel for Sustainable Development, Greenhouse Gas Protocol for Project Accounting (November 2005).

Climate Forward Program Manual

Climate Forward Confirmation Manual

This methodology employs the use of a separate Improved Cook Stove Project Forecast Methodology Parameters document, which contains information on specific values to be used for many parameters necessary for the estimation of emission reductions. References for the values used are provided within that parameters document.