



Afforestation and Reforestation Protocol

Version 11 | February 24, 2023



Urban Forest Carbon Registry, City Forest Credits, a 501(c)(3) non-profit organization
PO Box 20396
Seattle, WA 98102
info@cityforestcredits.org

Copyright © 2016-2023 Urban Forest Carbon Registry and City Forest Credits. All rights reserved.

Protocol Drafting Group

The list below comprises the members of the protocol drafting group and their affiliations in 2015:

Zach Baumer - City of Austin, Climate Program Manager

Rich Dolesh - National Recreation and Park Association, Vice President Conservation & Parks

Ian Leahy - American Forests, Director of Urban Forest Programs

Scott Maco - Davey Institute, Director of Research & Development

Jenny McGarvey - Alliance for Chesapeake Bay, Forest Programs Manager

Greg McPherson - U.S. Forest Service, Research Scientist

Mark McPherson - City Forest Credits, Executive Director

Darren Morgan - Seattle Department of Transportation, Manager

Walter Passmore - City of Palo Alto, City Forester

Shannon Ramsay - Trees Forever, Founder

Heather Sage - Pittsburgh Parks Conservancy, Director of Community Projects

Misha Sarkovich - Sacramento Municipal Utility District, Customer Solutions

Gordon Smith - Ecofor

Skip Swenson - Forterra, Vice President

Andy Trotter - West Coast Arborists, Vice President of Field Operations

TABLE OF CONTENTS

1. Eligibility Requirements	1
1.1 Project Operators and Projects.....	1
1.2 Planting Designs and Quantification Methods.....	1
1.3 Project Implementation Agreement.....	1
1.5 Defining the Project Area and Time within which Trees Must be Planted	2
1.6 Programs of Aggregation.....	3
1.7 Ownership or Eligibility to Receive Potential Credits	3
1.8 Legal Requirements Test	3
1.9 Conversion Out of Forest Before Planting Not Eligible.....	3
2. Key Project Dates	4
2.1 Project Submittal Date	4
2.2 Project Duration	4
2.3 Tree Sampling, Quantification, and Issuance of Credits.....	4
2.4 Credit Commencement Date	5
2.5 Deadlines for Sampling and Requests for Credit Issuance	5
2.6 Monitoring Reports	6
2.7 Vintage of Credits	6
2.8 Project Timeline and Key Dates	6
3. Project Documentation and Record-keeping	7
4. Additionality.....	8
5. No Double Counting and No Net Harm	8

6.	Issuance of Ex Ante Carbon Forward Removal Credits	9
6.1.	Credit Issuance Schedule.....	9
6.2	Credits for Reversal Pool Account.....	10
6.3	Conversion and Marking of Carbon Forward Removal Credits as Ex Post at Year 26.....	10
6.4	Issuance of Ex Post City Forest Carbon+ Credits.....	10
7.	Monitoring and Reporting	11
8.	Reversals	12
8.1	Avoidable Reversals	13
8.2	Unavoidable Reversals.....	14
9.	Continuation of Projects after 26-Year Project Duration	14
10.	Quantification for Credits.....	15
11.	Social Impacts.....	15
12.	Validation and Verification	16
12.1	Validation	16
12.2	Verification	17

Appendix A - Quantification Methods

Appendix B - Verification

Abbreviations, Acronyms, and Glossary

Carbon (C)	A chemical element
Carbon Dioxide (CO ₂)	One carbon atom and two oxygen atoms
Carbon Dioxide Equivalent (CO ₂ e)	Unit for comparing the radiative forcing of a GHG to carbon dioxide
Credit	A unit representing one metric ton of CO ₂ e
Credit Commencement Date	The date from which credit issuance is calculated per specific Protocol requirements
Diameter at Breast Height (DBH)	The standard for measuring trees (4.5 feet above the ground)
Greenhouse gas (GHG)	Gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds
International Organization for Standardization (ISO)	Independent international nongovernmental organization made up of standards bodies
Project Implementation Agreement (PIA)	Contract with the Registry setting forth the Project Operator's obligation to comply with the Protocol
Project Operator (PO)	Individual or entity who undertakes a Project, registers it with the registry of City Forest Credits, and is ultimately responsible for all aspects of the Project and its reporting
Registry	City Forest Credits/Urban Forest Carbon Registry
Reversal	A reversal is tree loss that results in release of credited CO ₂ such that the carbon stock in the project falls below credited CO ₂
Vintage	The vintage of credits shall be the year in which credits are issued to a project. This includes credits issued under the status of "issued and held" in the Registry credit database

Introduction

This City Forest or Urban Forest Carbon Protocol sets forth the requirements for Afforestation and Reforestation projects in urban areas in the United States to quantify greenhouse gas (“GHG”) emission mitigation from woody biomass. That woody biomass is referred to herein by the broader terms “city forests” or “urban forests.” For brevity, the Protocol will be referred to herein as the Afforestation Protocol, even though it includes reforestation projects.

This Protocol provides eligibility rules, methods for quantifying biomass and CO₂ storage, and reporting, monitoring, issuance of credits, reversal, and validation and verification requirements. We have been guided in drafting by one of the foundational documents for carbon protocols, the World Resources Institute/World Business Council for Sustainable Development Greenhouse Gas Protocol for Project Accounting, which describes greenhouse gas (“GHG”) project accounting principles. We refer to this document as the WRI GHG Protocol.

The goal in this Protocol is to provide for accounting of GHG emission mitigation in a consistent, transparent, and accurate manner, consistent with the principles and policies set forth in the WRI GHG Protocol document. This process will form the basis for GHG removals that are real, additional, permanent, verifiable, and enforceable, which can then result in the issuance of city forest carbon offset credits. The City Forest Credit Standard on the Registry website contains more information and discussion of Protocol elements such as additionality, permanence, and credit issuance.

The Registry, through its Protocol Drafting Group and iterative comment from stakeholders and projects, has developed an ex ante credit that contains numerous safeguards for its performance. These ex ante credits, called City Forest Carbon Forward Removal Credits,TM are based on forecasted CO₂ storage at Year 26 and are issued at five different time periods containing mortality checks and measurement of trees or canopy. Section 6 of the Protocol contains more details. At Year 26 of all projects, after measurement and final quantification, validation, and third-party verification, these ex ante credits convert to ex post credits.

The Protocol Drafting Group and Registry developed these City Forest Carbon Forward Removal CreditsTM for the following reasons:

- Urban trees are not planted for harvest or for their timber value but for their environmental and social impacts delivered to human communities.
- Urban forests are public resources, and most tree planting and preservation is done by non-profit tree organizations, non-profit land trusts, and local governments.
- Urban tree canopies are in decline throughout the U.S., and public funding cannot keep up with tree loss.

- Urban forests are not equitably distributed or maintained.
- Ex ante crediting for city forests entails significantly less risk than rural forest carbon projects. City forests are planted for the sole purpose of providing social and environmental benefits through tree survival. They are not planted for harvest or profit. No city forest project owner will face the economic temptation partway through a project to cut the trees down to reap a harvest profit. No city forest project will increase a harvest rotation to earn credits.
- Carbon crediting is the only way to monetize city trees. City forests are aligned with carbon crediting, and risks of ex ante crediting are reduced – both the projects and the crediting seek long-term survival of the trees and forest.
- Urban forest planting projects cannot wait for 26 years to receive revenue. They need the revenue earlier to help maintain project trees.
- Given the tree loss and inequitable distribution of trees in cities and given that these afforestation projects are executed by non-profit organizations and local governments primarily on public land, public policy reasons strongly support a carbon protocol for these valuable urban forest projects.

The City Forest Credit Standard contains detailed information on urban forestry, urban forest carbon, and original development of this Protocol.

1. Eligibility Requirements

1.1 Project Operators and Projects

A Project requires at least one Project Operator (“PO”), an entity organized and licensed under the laws of its jurisdiction, or a governmental body, which undertakes a Project, registers it with the registry of City Forest Credits (the “Registry”), and is ultimately responsible for all aspects of the project and its reporting.

This Protocol contains requirements for afforestation and reforestation projects, both of which are referred to herein as Planting Projects or Projects.

1.2 Planting Designs and Quantification Methods

All Planting Projects must use one of three different quantification methods set out in Appendix A. The quantification method used depends on the planting design:

- **Single Tree Quantification Method:** This method applies to trees planted in a dispersed or scattered design and that are planted at least 10 feet apart (i.e. street trees). This method requires tracking of individual trees and tree survival.
- **Clustered Quantification Method:** This method applies to trees planted at least 10 feet apart but are relatively contiguous and designed to create canopy over an area (i.e. park-like settings). This method requires tracking change in canopy, not individual tree survival.
- **Area Reforestation Quantification Method:** This method applies to tree planting areas greater than five acres and where many trees are planted closer than 10 feet. Higher tree mortality is expected and the goals are to create canopy and a forest ecosystem. The Project Operator has several quantification models to choose from, all of which produce a carbon index on a per-acre basis.

1.3 Project Implementation Agreement

The Project Operator must sign a Project Implementation Agreement (PIA) with the Registry setting forth the Project Operator’s obligation to comply with this Protocol for a 26-year Project Duration.

1.4 Project Location

Projects must be located in parcels within or along the boundary of at least one of the following:

- A. The Urban Area or Urban Cluster boundary (“Urban Area”), defined by the most recent publication of the United States Census Bureau;

- B. The boundary of any incorporated city or town created under the law of its state;
- C. The boundary of any unincorporated city, town, or unincorporated urban area created or designated under the law of its state;
- D. The boundary of any regional metropolitan planning agency or council established by legislative action or public charter. Examples include the Metropolitan Area Planning Council in Boston, the Chicago Municipal Planning Agency, the Capital Area Council of Governments (CAPCOG) in the Austin, Texas area, and the Southeastern Michigan Council of Governments (SEMCOG);
- E. The boundary of land owned, designated, and used by a municipal or quasi-municipal entity for source water or watershed protection. Examples include Seattle City Light South Fork Tolt River Municipal Watershed (8,399 acres owned and managed by the City and closed to public access);
- F. A transportation, power transmission, or utility right of way, provided the right of way begins, ends, or passes through some portion of A through D above.

In recognition of the urban-rural gradient and the strong public policy interest in preserving open space and forest land within and along that gradient, the Project may lie outside the boundary of one of A through F above. But any Project outside the boundary of A through F above must lie within or across parcels that constitute a sequence, chain, or progression of contiguously connected parcels. In addition, some part of the property line of one of those contiguously connected parcels must be coterminous with the boundary of one of A through F above.

1.5 Defining the Project Area and Time within which Trees Must be Planted

The Project Operator may include more than one planting site in a project. The initial planting of trees for all properties in a project must occur within a 36-month period or less.

The Project Operator may include trees planted on multiple properties under one project including:

- Multiple properties in the same city or in multiple cities
- Properties under public and/or private ownership

The Project Operator must demonstrate compliance with all Protocol requirements for each property within a project.

The Project Design Document must include all properties. The final Project Design Document and request of credits shall be submitted after the last tree is planted in a project with multiple properties; i.e., all trees must be planted before a Project Operator submits its Project Design Document to request credits.

1.6 Programs of Aggregation

Stakeholders in a city, town, or other metropolitan area may design a separate, large-scale, long-term Program of Aggregation. A Program of Aggregation is a designed program that utilizes local or regional organizations to lead or facilitate a regional program that brings greater scale and efficiency.

The rules for those Programs of Aggregation are set forth in a separate document – the Programs of Aggregation Program Guidelines.

1.7 Ownership or Eligibility to Receive Potential Credits

The Project Operator must demonstrate ownership of potential credits or eligibility to receive potential credits by meeting at least one of the following:

- A. Own the land, trees, and potential credits upon which the Project trees are located; or
- B. Own an easement or equivalent property interest for a public right of way within which Project trees are located or own the Project trees and credits within that easement, and accept ownership of those Project trees by assuming responsibility for maintenance and liability for them; or
- C. Have a written and signed agreement from the land or tree owner granting ownership to the Project Operator of any credits for carbon storage or other greenhouse gas benefits, and other co-benefits delivered by Project trees on that landowner’s land. If Project trees are on private property, this agreement, or notice thereof, must be recorded in the public records of the county in which the land containing Project trees is located.

1.8 Legal Requirements Test

Trees planted due to an enacted ordinance or law are not eligible.

1.9 Conversion Out of Forest Before Planting Not Eligible

Proposed projects that convert a forested land use or that cut down healthy trees and plant project trees for crediting are not eligible.

2. Key Project Dates

2.1 Project Submittal Date

The Project Operator must submit a Project Application to the Registry and all other project documentation within six months of the planting of the last tree that is part of the Project. This six-month limitation applies to trees planted under a Project and does not apply to the planting of replacement trees over a Project's lifetime.

Plantings prior to May 1, 2017 are not eligible. The Registry retains sole discretion over acceptance and approval of applications and registration of projects.

2.2 Project Duration

The Project Operator must commit to a Project Duration of 26 years from the date the last Project Tree is planted ("Project Duration"). The phrase "Last Project Tree" is intended to mean the trees planted under a Project Application but not replacement trees planted over a Project's lifetime. Projects may earn credits after the 26-year Project Duration as provided in Section 9.

This Protocol is intended solely for trees planted for conservation, not harvest. Only trees planted for conservation are eligible, not trees planted for harvest.

City tree planting is generally undertaken on public land whose tenure is secure and is performed by cities, counties, and non-profit organizations rather than private landowners or those seeking a profit. The beneficiaries of these projects are the public. When a city invests in growing a tree for 26 years, all incentives drive toward maintaining and conserving the trees. These incentives include demands from the public, motivations of elected officials, support from utilities that benefit from stormwater and energy savings, and city budget managers who want their investments in the city forests to be fully realized. Further explanation can be found in the CFC Standard.

2.3 Tree Sampling, Quantification, and Issuance of Credits

The Project Operator must sample Project trees and quantify as set forth below. The specific sampling and quantification requirements are set forth in Section 10 and in Appendix A Quantification and Appendix B Verification. This Section 2.3 is intended to provide a short summary of dates for Project Operator ease of reference.

CFC Carbon Forward Removal Credits™ (ex-ante or forward credits):

- Sampling and mortality at Years 4 and 6
- Sampling, measurement of trees or canopy coverage at Year 14
- Sampling, measurement of trees or canopy coverage, and quantification of CO₂e at Year 26

- Credits issued as follows (subject to Protocol compliance, validation, and verification):
 - 10% of projected credits after planting
 - 30% of projected credits at Year 4
 - 30% of projected credits at Year 6
 - 10% of projected credits at Year 14
 - Remaining credits issued based on quantification of CO₂e at Year 26

2.4 Credit Commencement Date

The starting date for the time period of sampling and credit issuance begins at the date the last project tree is planted (this does not include replacement trees). This starting date shall be called the “Credit Commencement Date.”

Sampling and requests for credit issuance (referred to hereafter as “Requests for Credit Issuance”) at Years 4, 6, 14, and 26 can begin on the respective anniversaries after the Credit Commencement Date (which is the date the last project tree is planted).

For example, if the last project tree was planted on March 20, 2022, that is the Credit Commencement Date. The following timeline for Requests for Credit Issuance applies, with credit issuance subject to Project Operator’s compliance with all protocol requirements:

- Year 4 sampling and Request for Credit Issuance can begin after March 20, 2025
- Year 6 sampling and Request for Credit Issuance can begin after March 20, 2027
- Year 14 sampling and Request for Credit Issuance can begin after March 20, 2035
- Year 26 quantification and Request for Credit Issuance can begin after March 20, 2047

2.5 Deadlines for Sampling and Requests for Credit Issuance

All sampling data and an updated Project Design Document, together with a request for credit issuance, must be submitted within nine months of the respective anniversaries of the Credit Commencement Date.

For example, using the example above, here are the sampling and request for credit issuance anniversaries, together with the nine-month deadlines for submission to the Registry of sampling and requests for credit issuance.

Year 4 Sampling and Request for Credit Issuance	
Collect tree data and complete documentation	March 21, 2025 – December 21, 2025
Due date for documentation to be submitted to CFC	On or before December 21, 2025

Year 6 Sampling and Request for Credit Issuance	
Collect tree data and complete documentation	March 21, 2027 – December 21, 2027
Due date for documentation to be submitted to CFC	On or before December 21, 2027
Year 14 Sampling and Request for Credit Issuance	
Collect tree data and complete documentation	March 21, 2035 – December 21, 2035
Due date for documentation to be submitted to CFC	On or before December 21, 2035
Year 26 Sampling and Request for Credit Issuance	
Collect tree data and complete documentation	March 21, 2047 – December 21, 2047
Due date for documentation to be submitted to CFC	On or before December 21, 2047

2.6 Monitoring Reports

The Project Operator shall submit monitoring reports under Section 7 on each annual anniversary of the Verification Report for the Project Duration.

2.7 Vintage of Credits

The vintage of credits shall be the year in which credits are issued to a project. This includes credits issued under the status of “issued and held” in the Registry credit database.

2.8 Project Timeline and Key Dates

Key project dates are summarized in the table below:

Project Component	Timeline and Key Dates
Project Application	Submit to Registry within six months of planting the last tree in the Project. All trees must be planted to be included in the Project.
Project Design Document and Attachments	Submit to Registry within six months of planting the last tree in the Project.
Credit Commencement Date	The date the last project tree is planted (does not include replacement trees).
Subsequent Credit Issuances	Sampling and requests for credit issuance at Years 4, 6, 14, and 26 can begin on the respective anniversaries after the Credit Commencement Date. See chart in section 2.5 for more details.
Monitoring Reports	Due every year for the Project Duration. Due on the anniversary of the first Verification Report.
Project Duration	26 years, starts on the Credit Commencement Date

3. Project Documentation and Record-keeping

The Project Operator shall submit all documents required by this Protocol and the Registry, using templates or forms supplied by the Registry, including:

- Project Application
- Project Implementation Agreement
- Ownership or Eligibility to Receive Potential Credits
- Initial Project Design Document and supporting attachments
- Attestation of Planting
- Attestation of Planting Affirmation
- Attestation of Additionality
- Attestation of No Double Counting and No Net Harm
- Carbon and Co-Benefit Quantification
- Social Impacts
- Future Requests for Credit Issuance
- Monitoring Reports

At each Request for Credit Issuance, the Project Operator must update their Project Design Documents and quantification materials.

More information on credit issuance is in Section 10 below and in Appendix A.

The Project Operator shall keep all documents and forms related to the Project for the Project Duration. If the Project Operator seeks credits after the Project Duration, it must retain all documents for as long as it seeks issuance of credits. This information may be requested by the Registry at any time.

The Registry requires data transparency for all Projects. For this reason, all Project data reported to the Registry will be publicly available on the Registry's website or by request.

4. Additionality

A project activity is additional if it can be demonstrated that the activity results in emission reductions or removals that are in excess of what would be achieved under a “business as usual” scenario and the activity would not have occurred in the absence of the incentives provided by the carbon markets. In all cases, projects that are required by law or regulation are excluded.

The Project Operator must demonstrate compliance with the following additionality requirements:

- A Legal Requirements Test that declares city trees planted due to an enacted law or ordinance not eligible (Section 1.8); and
- A prohibition against crediting for projects that convert land out of forested use or cut down healthy trees and plant project trees (Section 1.9); and
- Either 1) a project-specific baseline or 2) the current version of the Registry’s performance standard baseline developed in adherence with the WRI GHG Protocol ([see City Forest Credit Standard, Section 4.9 at 17](#)); and
- The Project Operator must sign and comply with a Project Implementation Agreement with the Registry that requires a 26-year Project Duration.

The Project Operator must also sign an Attestation of Additionality stating that its 26-year Project Duration commitment is additional to and longer than any commitment it makes to non-carbon project tree plantings.

Urban trees are planted for many reasons depending on the local communities’ priorities, but almost no urban trees are planted for the purpose of storing carbon. And no urban trees have been credited other than under the City Forest Credits Standard.

Because the urban forest is a public resource, and because public funding falls far short of maintaining tree cover and stocking, carbon revenues will result in additional trees planted or in additional maintenance that will result in additional trees surviving to maturity.

5. No Double Counting and No Net Harm

- 5.1 No Project shall seek credits on trees, properties, or projects that have already received credits from the City Forest Credits Registry or any other carbon

- registry. The Project Operator must sign an attestation that there is no double counting of credits.
- 5.2 The Project Operator must check the location of the Project trees against the Registry-provided geospatial database, which contains geospatial data from all registered urban forest carbon planting (afforestation) projects to date. The Project Operator must submit documentation showing no overlap. This can take the form of a map that shows the Project Trees mapped against the Registry-provided geospatial data file. As part of the Validation and Verification process, the appropriate tool on GIS software will be used to analyze the intersection of the Project Trees and the locations of Project trees in all other registered urban forest carbon planting projects. The intersection or overlap must be zero points, to ensure no double counting of credits. Any trees that are identified as overlapping will be excluded from the Project.
- 5.3 No Project shall cause net harm to the environment of urban communities. Project Operators must sign an attestation that there is no net harm.

6. Issuance of Ex Ante Carbon Forward Removal Credits

6.1. Credit Issuance Schedule

The Registry issues ex ante CFC Carbon Forward Removal Credits™ as follows and requires the following safeguards to ensure performance of these ex ante credits. “Last Project Tree” is intended to mean the trees planted under a Project Application but not replacement trees over a project’s lifetime.

- After planting of the Last Project Tree, validation by the Registry, and third-party verification:
 - the Registry will issue 10% of total CO₂e stored by Year 26, according to quantification projections conducted under the Registry’s quantification methodology used by that Project;
- In Year 4, after the third anniversary of the planting of the Last Project Tree in a project, validation by the Registry, and third-party verification:
 - the Registry will issue 30% of total projected CO₂e stored by Year 26, subject to data collection, sampling, and quantification projections conducted under the Registry’s quantification methodology used by that Project;
- In Year 6, after the fifth anniversary of the planting of the Last Project Tree in a project, validation by the Registry, and third-party verification:

- the Registry will issue 30% of total CO₂e stored by Year 26, subject to data collection, sampling, and quantification projections conducted under the Registry's quantification methodology used by that Project;
- In Year 14, after the thirteenth anniversary of the planting of the Last Project Tree in a project, validation by the Registry, and third-party verification:
 - the Registry will issue 10% of total projected CO₂e stored by Year 26, subject to data collection, sampling, measurement of sampled trees or canopy, and quantification projections conducted under the Registry's quantification methodology used by that Project;
- In Year 26, after the twenty-fifth anniversary of the planting of the Last Project Tree in a project:
 - the Registry will issue all remaining credits after Final Quantification and third-party verification of carbon stored. Twenty percent of projected credits are withheld until the end of the project at Year 26. At that point, the Project Operator will conduct a Final Quantification with data collection, sampling, measurement of trees or canopy, approval by the Registry of the quantification methods by the Registry, validation by the Registry, and third-party verification. At that time, the Registry will issue "true-up" credits equaling the difference between credits already issued (which were based on projected CO₂e stored) and credits earned based on Final Quantification and verification of CO₂e stored;
- Projects can continue after Year 26, and earn credits, as provided in Section 11.

6.2 Credits for Reversal Pool Account

The Registry will issue 95% of Project Credits earned and will hold 5% of total credits in the Registry's Reversal Pool Account.

6.3 Conversion and Marking of Carbon Forward Removal Credits as Ex Post at Year 26

After Final Quantification, all credits issued will embody CO₂e stored. All credits issued under the Project to that point then will be marked in the Registry of credits as Ex Post Carbon+ Credits.

6.4 Issuance of Ex Post City Forest Carbon+ Credits

If a Project Operator does not need ex ante credits or has a buyer or funder that wants to purchase ex post planting credits, the Project Operator may choose issuance of ex post credits rather than ex ante City Forest Carbon Forward Removal Credits.

If a Project Operator chooses this option, the ex post City Forest Carbon+ Credits shall be issued only after sampling and measurement of trees or canopy coverage, and quantification of CO₂e at Year 14 and at Year 26. The credits shall be issued only for CO₂e stored in the trees at Year 14 and Year 26 (with credits issued in Year 26 for final quantified CO₂e minus credits issued in Year 14).

The Project Operator shall submit a Request for Credit Issuance and Project Design Document each time it seeks credits. All issuances shall be made only after validation and third-party verification.

7. Monitoring and Reporting

The Project Operator must submit an annual monitoring report to the Registry throughout the Project Duration.

The Project Operator must submit the monitoring report on the annual anniversary of the date of the first Verification Report. Note that the annual monitoring and reporting required in this Section is different from the reporting done under Section 6 for issuance of credits. If a Project Operator submits documents and seeks credits under Section 6 for issuance of credits, it does not need to submit a monitoring report that year.

The reports must be in writing, and the Project Operator must attest to the accuracy of the reports. The report must address the following questions:

1. Has the contact information for the Project Operator changed? If so, provide new contact information.
2. Have there been changes in land ownership of the Project Area?
3. Have there been any changes in the Project Design?
4. Have there been any changes in the implementation or management of the Project?
5. Have there been any significant changes to the site (such as flooding or human changes)?
6. Have there been any significant tree or canopy losses estimated to be greater than 8% of Project Trees or 8% of canopy?
7. Any other significant elements to report?

The annual monitoring report is intended to be an update on any project information and a low-cost assessment of any tree or canopy loss. If the monitoring report indicates to the Registry that a credit reversal may have occurred, the Registry will require more precise quantification of the biomass carbon stock present within the project area.

If the Project Operator estimates cumulative net loss of 8% or more of tree canopy, further investigation will be required. The Registry will work with the Project Operator to determine an efficient way to assess tree or canopy loss or to quantify carbon stocks within the Project Area and determine whether there is a reversal under Section 8.

If a Project Operator fails to submit a report when due under this section, the Registry shall notify the Project Operator of such failure. The Project Operator shall then have 60 days to submit reports under this section.

Monitoring reports are due even in years in which a Project Operator is submitting a Request for Credit Issuance (and an updated Project Design Document). However, if a Project Operator has submitted a Request for Credit Issuance (and updated Project Design Document), it may request that the Registry accept its Request for Credit Issuance and updated Project Design Document in lieu of that year's Monitoring report.

If a Project Operator fails to monitor or to report after receiving notice and an opportunity to cure its failure under the preceding paragraph, the Registry can investigate and take actions including assessing carbon stock and invoking the reversal provisions of Section 8 as well as cancelling of the Project and all credits issued.

Project Operators are always subject to the reversal provisions of Section 8, regardless of any monitoring and reporting they do.

8. Reversals

Reversals can occur if tree loss results in release of credited CO₂ into the atmosphere. Or, put it another way, a reversal can occur if there is a loss of stored carbon serving as the basis for credits for GHG emission mitigation after credits have been received by projects but before the expiration of the Project Duration. (References in this section to "carbon" shall mean CO₂e serving as the basis for credits for GHG emission mitigation). A "Reversal" is loss of stored carbon such that the remaining stored carbon within the Project Area is less than the amount of stored carbon for which Registry credits have been issued.

The Registry will retain in a Reversal Pool Account 10% of all credits issued to preservation projects and 5% issued to planting projects. This Reversal Pool Account shall be used to compensate for Unavoidable Reversals as set forth below. The Registry does not compensate Project Operators for the retained credits in the Reversal Pool Account. The

Registry may provide in the future for distribution of credits in the Reversal Pool Account to Project Operators if the actual reversals are less than current evaluation of risk.

This Section sets forth rules for determining the type of Reversal, calculating the amount of the Reversal, and compensating for the Reversal.

8.1 Avoidable Reversals

A. Notice and Calculation of Avoidable Reversals

An Avoidable Reversal is any Reversal that is due to the Project Operator's negligence, gross negligence, or willful intent, including harvesting, development, and harm to the trees in the Project Area due to the Project Operator's negligence, gross negligence or willful intent.

If the Project Operator becomes aware of a potential Avoidable Reversal, the Project Operator shall deliver written notice to the Registry within 60 days of becoming aware of the potential Reversal. If the Registry determines that an Avoidable Reversal has occurred, it shall deliver written notice to the Project Operator.

Within 90 days of receiving written notice from the Registry of an Avoidable Reversal, the Project Operator shall calculate the number of remaining creditable tonnes CO₂e in the Project Area using one of the quantification methods contained in this Protocol and its appendices. The Project Operator may use another quantification method only after receiving written approval by the Registry.

The Registry shall then determine the number of credits reversed and deliver written notice to the Project Operator of that amount and its obligation to compensate for those reversed credits.

B. Compensation for Avoidable Reversals

Within 60 days of being notified of the number of credits that it is obligated to replace, the Project Operator shall submit to the Registry a sufficient number of CFC Carbon Forward Removal Credits™ to cover the shortfall. One way for Project Operators to provide replacement credits is to purchase these from other projects that have received credits from the Registry.

Quantifications of carbon stocks determined by the Registry shall be considered to be verified amounts under this section.

8.2 Unavoidable Reversals

An Unavoidable Reversal is any Reversal not due to the Project Operator's negligence, gross negligence or willful intent, including, but not limited to disease, fire, drought, cold, ice/snow, wind/hurricane, flooding, earthquake, landslide, and volcano.

A. Notice and Calculation of Unavoidable Reversals

If the Project Operator becomes aware of a potential Unavoidable Reversal, the Project Operator shall deliver written notice to the Registry within 60 days of becoming aware of the potential Reversal. If the Registry determines that an Unavoidable Reversal has occurred, it shall deliver written notice to the Project Operator.

The Registry shall calculate the number of remaining creditable tonnes CO₂e in the Project Area using one of the quantification methods contained in this Protocol and its appendices. If the Registry determines that more credits have been issued to the Project (counting both credits issued to the Project Operator and credits transferred to the Registry's Reversal Pool Account), the Registry shall notify the Project Operator of its calculation of remaining CO₂e and of the shortfall.

B. Compensating for Unavoidable Reversals

Unavoidable Reversals are compensated by credits retired by the Registry from the Registry's Reversal Pool Account.

If a Project has had its carbon stock go below the carbon stock necessary to support credits issued by the Registry, no further credits will be issued to the Project until the carbon stocks are above the amounts needed to support issued credits, including credits allocated to the Registry's Reversal Pool Account.

If a Project Operator fails to compensate for a reversal, that Operator's projects may be terminated and the Project Operator may be barred, at the sole discretion of the Registry, from submitting applications to the Registry.

9. Continuation of Projects after 26-Year Project Duration

After the 26-year Project Duration, Project Operators may continue their activities, submit Project Documents under Appendix A, and seek issuance of credits. Project Operators must comply with all applicable requirements of this Protocol.

If a Project Operator chooses to continue into a second 26-year Project Duration, the Project Operator can conduct at any time a quantification of CO₂ stored in Project trees. If that quantification yields more credits than were issued during the Project's 26-year Project

Duration (due to additional growth after 26 years or the planting of replacement trees), the Project Operator can request issuance of those additional credits.

10. Quantification for Credits

The Registry will issue ex ante City Forest Carbon Forward Removal Credits or ex post City Forest Carbon+ Credits™ to a Project upon request by a Project Operator, validation by the Registry, and third-party verification of compliance with this Protocol. The Project Operator must follow the quantification methods set forth in Appendix A.

Each quantification method requires specific steps, data samples provided by the Project Operator, data from imaging, data from look-up tables that are or will be provided, and/or calculations.

Appendix A also provides methods for calculating co-benefits, such as rainfall interception (one element of stormwater run-off reduction), energy savings, and air quality. Appendix A contains a description of the quantification methods and the science used to develop those methods.

11. Social Impacts

In 2015, all United Nations Member States agreed to the 2030 Agenda for Sustainable Development, sharing a blueprint for peace and prosperity for people and the planet, now and into the future. The 17 United Nations Sustainable Development Goals (SDGs) are an urgent call for action and global partnership among all countries, representing key benchmarks for creating a better world and environment for everyone. There are 169 targets and associated indicators for the 17 SDGs.

Urban tree planting carbon projects drive action towards one or more SDGs.

The Project Operator shall use the Registry's Carbon Project Social Impact Template to evaluate the SDGs to determine and describe how a Project provides social impacts that contribute towards achievement of the global goals. The City Forest Credits Carbon Projects Social Impact Background Document describes the development of this Social Impact Reporting in more detail.

12. Validation and Verification

The Registry requires validation and verification of all GHG projects before it issues credits. The Registry will conduct validation and will retain a qualified and approved independent Validation and Verification Body for verification of all projects.

12.1 Validation

The Registry shall conduct validation activities at three times. The Registry shall document its validation activities in a written report that shall be posted publicly with other project documents.

A. Pre-Application

Before reviewing an application, the Registry conducts a validation screening:

- Validate eligibility under the Protocol eligibility requirements
- Validate the Project Operator's understanding of the commitments it must make if it proceeds with the Project:
 - Complying with the Protocol
 - Submitting project documents, including a Project Implementation Agreement with Registry
 - Quantifying carbon dioxide and ecosystem co-benefits according to the appropriate methodology
 - Conducting monitoring and reporting for the Project Duration

B. Before Third-Party Verification

Upon submittal of a final Project Design Document (PDD) and before third-party verification, the Registry will:

- Review the PDD and its supporting documents for:
 - Compliance with Protocol PDD requirements
 - Demonstration that the Project meets the Protocol eligibility requirements

C. After Receiving the Verification Report

When the third-party verifier produces its Verification Report, the Registry then reviews that Report to ensure the following:

- The Verification Report accurately reflects the documentation contained in the PDD and supporting documents.

12.2 Verification

The Registry will retain a qualified and approved Validation and Verification Body (VVB) to verify compliance with this Protocol per the requirements set forth herein and per International Standards Organization 14064-3 and in Appendix B, "Verification." The Registry retains the third-party VVB, rather than allowing Project Operators to do so, in order to avoid conflicts of interest or situations where the financial interests of the VVB are aligned with the Project rather than with the standards body. Specifically, the Registry adopts and utilizes the following standards from ISO 14064-3:

- Upon receiving a completed Project Design Document with data on eligibility, quantification of carbon, and a request for credits, the Registry will retain a VVB to verify the project's compliance with this Protocol. The Registry will be independent of specific project activities.
- Verification by a VVB is described in more detail below and in Appendix B. Urban forest projects, unlike many other types of carbon offset projects, will be conducted in and around urban areas, by definition. The trees in urban forest projects will be visible to virtually any resident of that urban area, and to anyone who cares to examine project trees.
- The Registry will maintain independence from the activities of projects and will treat all projects equally with regard to verification.
- The Registry requires a reasonable level of assurance in the accuracy the asserted GHG removals.
- The verification items identified in Appendix B and the following sections are all material elements, and any asserted GHG removals must be free of material errors, misstatements, or omissions regarding those elements.
- The Registry will record, store, and track all quantification and verification data and either display it for public review or make it available for public review upon request.
- The Registry will follow a process for follow-up and maintenance for consistency and continuity. This process will consist of a validation by the Registry to ensure that the Verification Report for each Project is consistent with the Project Documents submitted by the Project Operator.
- Appendix B contains requirements for geocoded photographs, imaging, data, or similar landmarking that provides verification of the Project Operator's data on quantification.

- Project Operators may use data from management or maintenance activities regularly conducted if the data was collected within 12 months of the project's request for credits.

Credits issued prior to completion of the 26-year project period will be subject to the Reversal Requirements set forth in Section 8.