



PRINTRELEAF STANDARD

PRX-STD-V02.2-INTL

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CONTACT: Jordan K. Darragh CEO / PrintReleaf, Inc.
www.printreleaf.com

Ronald E. Wald CoC Manager / SGS North America, Inc.
www.sgsgroup.us.com

EMAIL: info@printreleaf.com

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PrintReleaf, Inc. has developed a patented software platform - PrintReleaf Exchange - which calculates and equates paper consumption to forest impact measured in trees. Customers of paper-based products 'releaf', or replant, their calculated paper consumption by planting the equivalent number of trees across reforestation projects managed by PrintReleaf's network of certified Global Reforestation Partners. Meanwhile, contributions to reforestation projects are subject to increase creating an accelerated rate of reforestation and improving social and ecological systems for the planet.



Overview

This version of the PrintReleaf Standard was developed by cooperation of PrintReleaf, Inc. (PrintReleaf), non-profit, non-government reforestation organizations which are partners of PrintReleaf, the University of Colorado – Masters of the Environment Program, and SGS North America, Inc.

Use of the PrintReleaf Standard

This standard outlines the minimum organizational requirements by PrintReleaf's network of certified Global Reforestation Partners.

The purpose of this standard is to uphold the integrity of the PrintReleaf Exchange [PRX] and ensure the quantitative volume of trees planted which are determined as PrintReleaf Certified by the PrintReleaf Exchange is truthful and correct while accounting for any reconciliation required due to survival rates which are less than 100%.

The certification requirements for Global Reforestation Partners of PrintReleaf are divided into the following sections:

Section 1 describes the PrintReleaf Exchange scope and calculation methodology

Section 2 describes the general requirements for Global Reforestation Partners to achieve and maintain PrintReleaf Certification

Section 3 describes the definition of the PrintReleaf Certificate Process and eligible use of PrintReleaf marks

Please send any comments about the PrintReleaf Standard to:

PrintReleaf, Inc.
6820 N. Broadway
Unit T
Denver, CO 80221
Email: info@printreleaf.com

Table of Contents

<u>Section 1: Overall Scope and Calculation Methodology</u>	5
1. Scope.....	5
2. Calculation Methodology.....	5
3. Effective Date.....	7
4. References.....	7
5. Terms and Definitions.....	7
<u>Section 2: Global Reforestation Partners – Requirements</u>	9
6. Organizational Requirements.....	9
7. Project Specifications.....	10
8. Project Field Audit Requirements, Specifications and Process.....	11
<u>Section 3: User Certification and Marks</u>	12
1. Definition of the User Certificate Process.....	12
2. Eligible Allowance of Use.....	12

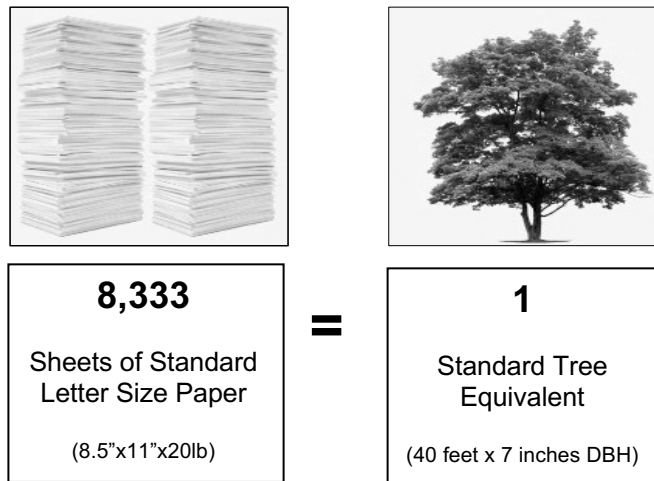
Section 1: Overall Scope and Calculation Methodology

1 Scope

The PrintReleaf Exchange (PRX) is the world's first known technology platform connecting consumers of paper-based products with global reforestation projects to certifiably 'releaf' (reforest) their paper consumption and achieve a 'net-neutral', if not 'net-positive', balance. Customers releaf their consumption by planting new trees – equivalent to their consumption – across projects managed by PrintReleaf's network of certified Global Reforestation Partners. As a result, customers effectively achieve a net-neutral or net-positive balance and contributions are accelerated to the reforestation projects that are aggressively replanting what has been lost from the world's original forest canopy over the last century: approximately 80% of the world's old growth forests¹. Customers are certified by the projects within PRX that their consumption will be releafed.

2 PRX Calculation Methodology

PRX employs a calculation methodology to determine the estimated amount of paper content per tree by normalizing both sides of the equation as follows:



PRX collects paper consumption data from print monitoring software applications, print estimating software, or online marketplace systems to determine and normalize the number of sheets of paper. The paper consumption data may contain details specific to paper size and density. When this is the case, PRX will automatically calculate the equivalent number of standard pages of paper (8.5 × 11 inch size, 20lb stock). Additionally, PRX may collect paper consumption data in the form of business cards, hard copy books, or other paper-based products. Regardless of form, PRX will always mathematically normalize consumption to standard pages before equating consumption to standard tree equivalents. When processing paper consumption data, if the paper size and/or density data is absent, PRX will default the paper size and/or density calculation to standard paper size and density values.

¹ World Resources Institute



Below is an example transaction calculation based on the following paper consumption data:

1,450,000 sheets of tabloid size 11" x 17", 100lb. stock paper

Variable Paper Data
Quantity: 1,450,000
Width: 0.2794m (11")
Height: 0.4318m (17")
Density: 150g/m²

PRX will normalize the variable paper data to standard page units as such:

$$(1,450,000 \times 0.2794m \times 0.4318m \times 150g/m^2) / (0.2159m \times 0.2794m \times 75g/m^2) = 5,800,000 \text{ standard pages}$$

Upon normalizing and representing paper consumption data in standard pages, PRX will equate the data to a number of standard tree equivalents:

$$(5,800,000 / 8,333) = 696.023 \text{ standard tree equivalents}$$

Example Calculation 1:

Faidherbia Albida tree with an average height of 65 feet and average diameter of 24 inches at maturity

Variable Tree Data
Height: 19.812m (65')
Diameter: 0.6096m (24")

PRX will normalize the variable tree data to standard tree equivalents using a cylindrical volumetric calculation:

$$(\pi * (0.6096m / 2)^2 * 19.812m) / (\pi * (0.1778m / 2)^2 * 12.192m) = 19.102 \text{ standard tree equivalents}$$

To complete the conversion in the above example and equate **1,450,000 sheets of tabloid size 11" x 17", 100lb. stock paper to an equal number of mature Faidherbia Albida trees**, the formula and resulting amount is:

$$((1,450,000 \times 0.2794m \times 0.4318m \times 150g/m^2) / (0.2159m \times 0.2794m \times 75g/m^2) / 8333) / ((\pi * (0.6096m / 2)^2 * 19.812m) / (\pi * (0.1778m / 2)^2 * 12.192m)) = 36.437 \text{ Faidherbia Albida trees}$$

Example Calculation 2:

Lagerstroemia indica tree with an average height of 14 feet and average width of 4 inches at maturity

Variable Tree Data
Height: 4.2672m (14')
Diameter: 0.1016m (4")

PRX will normalize the variable tree data to standard tree equivalents using a cylindrical volumetric calculation:

$$(\pi * (0.1016m / 2)^2 * 4.2672m) / (\pi * (0.1778m / 2)^2 * 12.192m) = 0.114 \text{ standard tree equivalents}$$

To complete the conversion in the above example and equate **1,450,000 sheets of tabloid size 11" x 17", 100lb. stock paper to an equal number of mature Lagerstroemia indica trees**, the formula and resulting amount is:

$$((1,450,000 \times 0.2794m \times 0.4318m \times 150g/m^2) / (0.2159m \times 0.2794m \times 75g/m^2) / 8333) / ((\pi * (0.1016m / 2)^2 * 4.2672m) / (\pi * (0.1778m / 2)^2 * 12.192m)) = 6,090.244 \text{ Lagerstroemia indica trees}$$

3 Effective Date

November 1, 2018

4 References

The following information sources were referenced in formulating the PrintReleaf Standard:

- FSC Standard for Chain of Custody Certification: FSC-STD-40-004 V2-1 EN
- Recycled Papers: The Essential Guide (Cambridge, MA: MIT Press, 1992)
- USDA Forest Service Manual: FSM 2400, Chapter 2470 – Silvicultural Practices

5 Terms and Definitions

For this standard the following terms and definitions apply to this document:

GIS: stands for Global Information System which is a system of hardware and software used for storage, retrieval, mapping, and analysis of geographic data.

GPS: stands for Global Positioning System which is a satellite-based system for identifying a location on the earth based on latitudinal and longitudinal coordinates.

Indigenous: originating in and characteristic of a particular region or country; native.

Naturalized: to introduce (organisms) into a region and cause them to flourish as if native.

Normalize: to convert variable data to a standard set of dimensions, e.g., converting paper size and stock to a consistent standard page equivalent; or to convert tree size to a consistent standard tree equivalent - average height of 40 feet and average diameter of 7 inches.

Nursery: refers to a place where trees are grown to a usable or transportable size, e.g., growing a seed into a seedling.

OEM: stands for Original Equipment Manufacturer, i.e., the company that originally manufactures a product.

Paper Density: a unit of measure used in the pulp and paper industry to denote the mass of the product per unit of area for a type of paper. Paper density is expressed in grams per square meter (g/m², commonly 'GSM').

Net-Neutral: refers to a position of balance when an equal number of standard tree equivalents have been planted equal to a normalized amount of paper consumption.

PRX: PRX stands for PrintReleaf Exchange – the software platform developed by PrintReleaf, Inc. connecting electronic OEM print monitoring software or online marketplace systems with eligible global reforestation projects for purposes of 'releafing'.



Releaf: to plant trees equivalent to paper consumption.

Silviculture: refers to the care and cultivation of forest trees.

Standard Page: a standard unit of measure equivalent to one sheet of paper with a width of 0.2159 meters (8.5"), height of 0.2794 meters (11"), and a density of 75g/m².

Standard Tree Equivalent (STE): a standard unit of measure equivalent to one tree with a mature height of 12.192 meters (40') and diameter (DBH) of 0.1778 meters (7") – softwood or hardwood.

Verbal Forms of Expression used within the PRX Standard

Should: must or ought, past tense of shall – indicates the most suitable possibility of out of multiple possibilities with regard to requirements within the standard

May: expression of possibility – indicates permission within the limits of the standard

Can: to be able to or know how to – used in statements within the standard to define possibility and capability

Shall: must or obliged to – indicates strict requirements to adhere to within the standard

SECTION 2: Global Reforestation Partners – Requirements

6 Organizational Requirements

6.1 Tenure and Reputation

- 6.1.1 The organization shall have an established history as a legal entity that is equal to or greater than three years or have experience in the region they are reforesting for at least 12 months.
- 6.1.2 The organization shall not have any illegal convictions brought against them in their past history.

6.2 Reforestation Expertise

- 6.2.1 The organization shall have a history of three or more years of dedicated reforestation efforts and expertise.
- 6.2.2 The organization shall have a public facing presence visible via marketing communications (web, print, etc.) which documents their ability to deliver satisfactory reforestation.

6.3 Financial

- 6.3.1 The organization shall have one or more of the following:
 - a. total net assets of \$100,000 or more
 - b. maintain cash balances of \$100,000 or more as of their last audited fiscal year
 - c. total cash revenues of \$200,000 or more per year for the last two fiscal years

6.4 Field Operations

- 6.4.1 The organization shall have a dedicated Field Operations Manager (or similar title) for each of their reforestation projects participating in connection with PrintReleaf. The Field Operations Manager shall maintain a regular presence at the physical site of the project. A regular presence is defined as 60% or more of their working hours.
- 6.4.2 The organization shall have a dedicated Compliance Manager (or similar title) responsible for organizational adherence to the PrintReleaf Standard. This person is responsible for ensuring the Global Reforestation Partner is complying with all of the Organizational Requirements of the PrintReleaf Standard, not just Field Operations.
- 6.4.3 The organization is responsible for building staff awareness subject to the PrintReleaf Standard.

6.5 Training

- 6.5.1 The organization is responsible for training their direct staff across all titles and responsibilities for those individuals responsible for meeting the requirements of the PrintReleaf Standard.
- 6.5.2 The organization is responsible for training their indirect staff as an extension of their field operations for all projects participating in connection with PrintReleaf.

6.6 Documentation and Management

- 6.6.1 The organization is responsible for keeping timely records and providing quarterly progress reports upon request for each project participating with PrintReleaf. Requested quarterly progress reports will include updates to inform on 1) sources and uses of funds 2) seedling acquisition and nursery development progress 3) quantitative tree planting by species and 3) a general narrative outlining development status both backward and forward looking.
- 6.6.2 The organization is responsible for keeping timely records and shall keep PrintReleaf informed of any expected changes relative to their ongoing ability to meet the minimum requirements of the PrintReleaf standard.
- 6.6.3 The organization shall provide legal evidence of their right to land entry with legal 'in country' authority to plant trees.
- 6.6.4 The organization shall provide legal evidence of their right to access land to plant trees.
- 6.6.5 The organization is responsible for providing online content, i.e., video, photography, written content, and statistics on a minimum interval of every 365 days or annual calendar year.
- 6.6.6 Specific to statistics, while organizations are subject to the PRX audit process, the organization shall update available forest capacity for each participating project on a minimum interval of every 365 days or annual calendar year.
- 6.6.7 Upon receipt of contributed funds from PrintReleaf, the organization shall ensure the corresponding volume of trees and specified tree species be planted in the ground (no longer residing in a nursery) within 365 standard calendar days (one year).
- 6.6.8 Should the organization determine they cannot meet the timing requirement for a specific transaction or set of transactions they shall have the right to re-queue transactions and plant trees at another project location so long as the project is managed by the same parent organization and the correct number of standard tree equivalents are re-queued and planted.

7 Project Specifications

7.1 Logistics & Parameters

- 7.1.1 The organization is responsible for providing and maintaining the tree species content visible in PRX associated with each eligible reforestation project participating in PRX.
- 7.1.2 The organization is responsible for providing the percentage of PrintReleaf species planted within a project site among additional different species planted within the same project site.
- 7.1.3 The organization is responsible for providing a digital boundary (e.g., KMZ boundary) for the project site area.
- 7.1.4 The organization is responsible for declaring if there is a specific dedicated PrintReleaf plot area within the overall project site area. If applicable, the organization is responsible for providing a specific digital boundary for the PrintReleaf dedicated site.
- 7.1.5 The organization is responsible for providing accurate GPS coordinates for the location of the project site area.
- 7.1.6 As in section 7.1.4, the organization is responsible for declaring if there is a specific dedicated PrintReleaf plot area within the overall project site area. If applicable, the organization is responsible for providing specific GPS coordinates for the PrintReleaf dedicated site.
- 7.1.7 The organization is responsible for providing the expected mature height and diameter (DBH) of the tree species for each eligible reforestation project participating in PRX to allow for Standard Tree Equivalent normalization calculations.

8 Project Field Audit Process & Requirements

8.1 Field Audit Process

PrintReleaf's audit methodologies will either employ the Circle Plot Method or Drone Audit Method. The decision to use one method rather than the other will be at the discretion of PrintReleaf.

8.1.1 Circle Plot Method

In-person field audits will be completed via third party certifying bodies. The field audit and corresponding desk audit will be conducted by SGS International auditors. Field auditors will conduct surveys at each reforestation site by utilizing the circle plot method to survey and analyze the forest density, tree survivorship, and total inventory for PrintReleaf reforestation projects. SGS International field auditors will conduct each audit according to the site-specific requirements detailed by PrintReleaf. Upon completion of the field analysis, data gathered will be analyzed by SGS International auditors. The final product or corrective action requests will be addressed on a project-by-project basis.

8.1.2 Drone Audit Method

The drone audit method will consist of a data collection phase, data analysis phase, and verification by SGS International. Data collection will be conducted by a licensed and PRX approved (see below) drone operator at the reforestation project. For data collection the drone operator will fly their drone over the project site and take images that will later be georectified. For data analysis the imagery will be uploaded into a spatial analysis program (e.g. ArcGIS or QGIS) to determine forest density, tree survivorship, and total inventory. Finally, the raw data, georectified image, and post analysis imagery and results, will be sent to certifying body SGS International for final approval.

8.1.3 Drone Operator Standard Requirements

- Must possess a valid and up to date FAA Part 107 license
- Must possess a drone no heavier than 55 lbs with photography capabilities
- Must be familiar with PRX Standard

8.2 Field Performance Requirements

- 8.2.1 The organization is responsible for planting the tree species corresponding to each transaction associated with contributions to their projects, i.e., the project cannot substitute tree species because it would risk disqualifying the accuracy of the standard tree equivalent required to meet the paper consumption data for the transaction.
- 8.2.3 The organization is responsible for planting trees specific to the quantities and species prescribed by each transaction derived from PRX.
- 8.2.4 The organization is responsible for tending to commonly accepted silvicultural restoration practices to include planting indigenous species relative to the location of each project.
- 8.2.5 Reforestation projects will be audited, at minimum, within 8 years after the first contribution or within a year after the first 100,000 trees are planted into a specific project – whichever occurs first. A project may be audited more than once before the 8 year mark but no more than 8 years after the first contribution or within a year after the first 100,000 trees are planted into a specific project – whichever occurs first. Reforestation projects will then be audited at least once every 8 years, or more frequently, after the initial audit. A final audit will be performed within 8 years after the final contribution.
- 8.2.6 The organization is responsible for upholding the PrintReleaf warranty which guarantees 100% survival.
- 8.2.7 After each audit, should a project auditor determine that survival is less than 100%, then the organization is responsible for planting the required number of trees at their cost as determined by the auditor to meet the minimum standards of the PRX warranty guarantee within one year of being notified by the auditor. Failure to meet this requirement may result in decertification from PrintReleaf.
- 8.2.5 Reforestation projects will be audited, at minimum, within 8 years after the first contribution to a specific project. A project may be audited more than once before the 8 year mark but no more than 8 years after the first contribution. Reforestation projects will then be audited at least once every 8 years, or more frequently, after the initial audit. A final audit will be performed within 8 years after the final contribution.
- 8.2.6 The organization is responsible for upholding the PrintReleaf warranty which guarantees 100% survival.
- 8.2.7 After each audit, should a project auditor determine that survival is less than 100%, then the organization is responsible for planting the required number of trees at their cost as determined by the auditor to meet the minimum standards of the PRX warranty guarantee within one year of being notified by the auditor. Failure to meet this requirement may result in decertification from PrintReleaf.
- 8.2.8 The only factor which would release a project from meeting 100% survival is an 'Act of God', i.e., an event that directly and exclusively results from the occurrence of natural causes that could not have been prevented by the exercise of foresight or caution; an inevitable accident.

SECTION 3: PrintReleaf User Certificate and Marks

8 Description of PrintReleaf Certificate Process

Users that access PRX to reforest their paper consumption will receive certificates for each transaction. Certificates represent that trees have been planted in the customer's name and warrant that their paper consumption has been reforested.

9 Eligible Allowance of Use

Authorization to use the PrintReleaf logo requires original issuance from PRX or written consent from PrintReleaf or must be issued to by PrintReleaf or an authorized PrintReleaf partner.