



Reforestation Project Forecast Methodology

Methodology Overview Webinar

March 12, 2020

Program Overview

Reforestation Forecast Methodology

1. Introduction
2. The GHG Removal Project
3. Eligibility Rules
4. The GHG Assessment Boundary
5. Quantifying GHG Removals
6. Project Implementation, Monitoring, and Reporting
7. Confirmation Guidance

Questions

PROGRAM OVERVIEW

GHG Accounting Experts

- Pioneered standardized GHG accounting, leading to robust, reliable, and transparent compliance and voluntary carbon markets
- 78% of North American offset credits used by companies and individuals in 2017 in the voluntary market* are issued by the Reserve
- Design innovative GHG accounting frameworks that are user-friendly, and financially feasible

Beyond Carbon Offsets

- **Climate Forward**
- Climate Impact Score
- GHG policy consulting
 - Mexico
 - Ontario
 - Quebec
 - World Bank, USDA, USAID
 - California agencies, and more

*Ecosystem Marketplace 2018 data





Invest now in emissions reduction projects to mitigate future emissions

- **1 FMU = one metric ton of anticipated CO₂e reduction, to counter anticipated GHG emissions**



Expands the scope and scale of feasible climate action across the economy

- **Enormous potential for diverse, creative climate solutions**



Issues Forecasted Mitigation Units (FMU) to projects that follow Reserve-approved methodologies

- **Follows ISO 14064-2 and GHG Protocol for Project Accounting Standards**



Tracks FMUs and project activities in a publicly accessible database

- **A registry of forward-looking GHG reductions to balance against forward-looking GHG impacts**

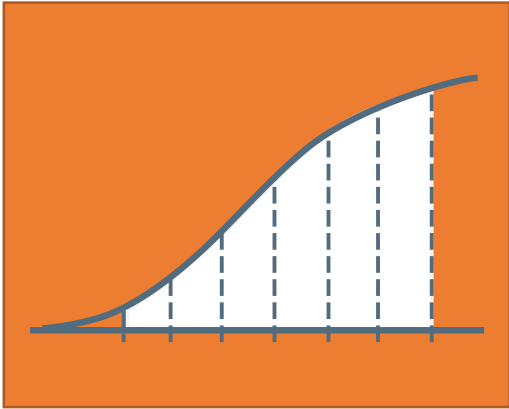
Accelerating Climate Mitigation: CLIMATE FORWARD

CLIMATE FORWARD▶

Offsets

Climate
Reserve
Tonnes

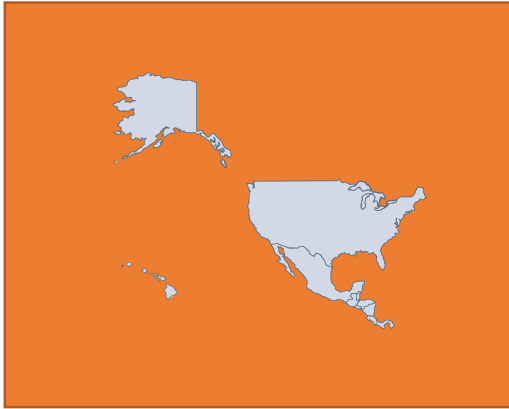
1 CRT = 1 tCO₂e of
achieved reductions



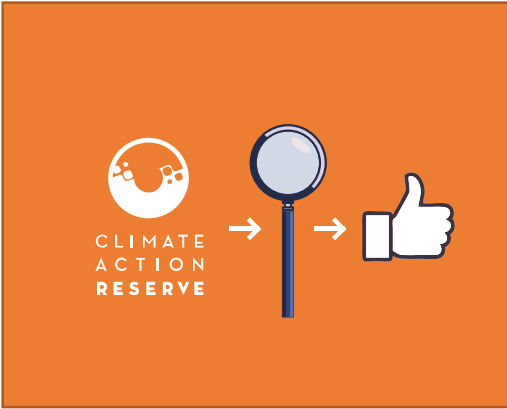
Issued for achieved
GHG removals



Used to mitigate any
emissions



Protocols available for
US- and Mexico-based
projects

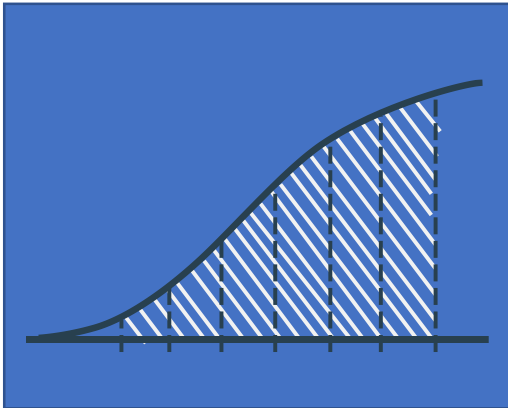


Reserve develops
protocols for the offsets
it issues

FMUs

Forecasted
Mitigation
Units

1 FMU = 1 tCO₂e of
anticipated reductions



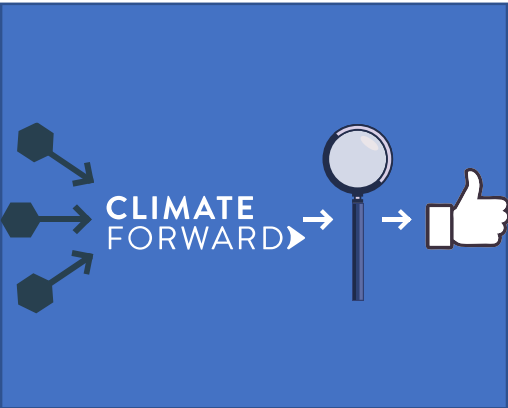
Issued for **forecasted**
GHG removals



Used to mitigate
anticipated emissions



Projects may be located
anywhere in the world



External parties may submit
forecast methodologies

tCO₂e = tonne of carbon
dioxide equivalent

Why forward crediting?

A new paradigm, reducing barriers to entry for innovative, targeted climate solutions that can also achieve sustainability goals beyond climate impacts

- Customized climate projects with specific **co-benefits** tailored to align with organizational goals and values
- **Local** projects in communities directly affected by operations
- New opportunities: demonstrate climate **leadership**

Companies and organizations mitigating future emissions

Any new operational or project investment creating GHGs

- e.g., anticipated emissions identified via CEQA analysis process

Not appropriate for addressing current emissions in a compliance program

- e.g., cap-and-trade

Not appropriate for mitigating historical emissions

- Cannot mitigate past emissions with future actions
-

Examples of future mitigation needs

New manufacturing facility

New data center

New retail complex

New residential/commercial developments

New transportation projects

Facility expansions

Operational expansions

Section 1

INTRODUCTION

1. Methodology introduction

Reforestation Project Forecast Methodology accounts for carbon sequestration associated with **the restoration of forest cover on sites where trees are not regenerating on their own.**

Methodology provides: eligibility rules, methods to calculate expected GHG removals, and procedures for reporting project information to the Reserve.

Projects receive **independent confirmation** by a Reserve-approved confirmation body (CB) selected by the project proponent (PP)

Forecasted Mitigation Units (FMUs) are awarded on an *ex ante* basis based on application of this methodology and confirmation of project implementation

1.1 Methodology introduction

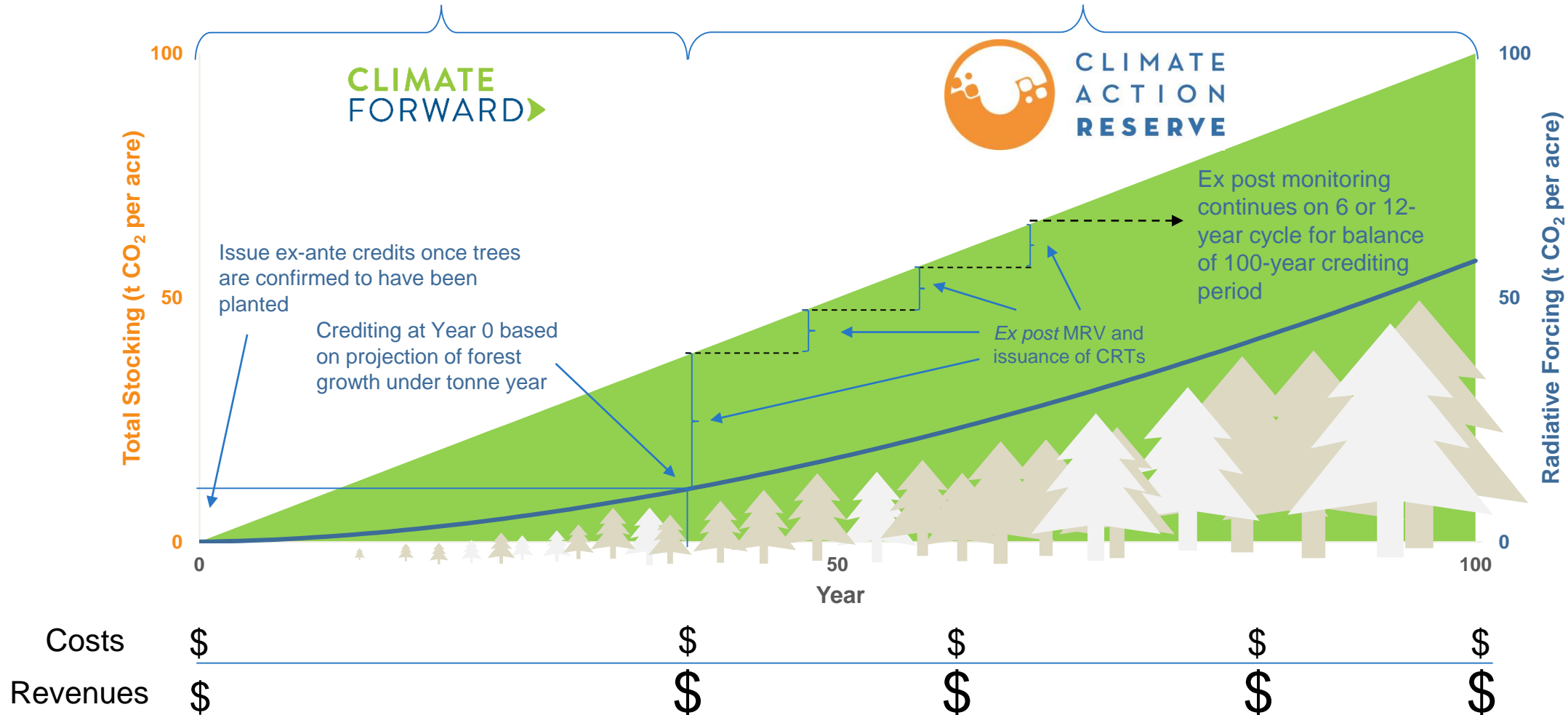
Ex ante crediting shifts the project economics, helping to cover a portion, if not all, of the initial reforestation costs



1.2 *Ex ante* and *ex post* options

Ex ante crediting

Ex post crediting (optional)



Section 2

THE GHG REMOVAL PROJECT

2.1 Project Definition

Removal of CO₂ from the atmosphere by restoring forest cover via:

- direct planting of native trees
- site preparation activities that promote the natural regeneration of tree seedlings

The activities will result in forest growth that occurs above business as usual conditions.

2.1 Project Proponent (PP)

An entity that has an active account on the Climate Forward registry, submits a project for listing and registration with the Reserve, and is ultimately responsible for all project reporting and confirmation

Required Attestations:

- Attestation of Title
- Attestation of Legal Additionality
- Attestation of Regulatory Compliance

2.1 Project Proponent (PP)

Assumed to be the landowner/owner of the trees

BUT can be another entity with evidence of transfer of right to be issued credits

- Attestation of Title
 - Identify the legal owner(s) of the trees
 - Contract with owner
- Allows for aggregation of projects from multiple landowners/land holdings by a single PP

Section 3

ELIGIBILITY RULES

3.1 Location

- Unlimited geography with Reserve-approved tree seedling growth projections
 - Currently limited to certain forest communities in the US
 - PPs may propose other forest communities for approval, subject to a fee
- Not on prior project site, unless prior project closed in good standing
- Appropriate for reforestation, with validation from professional forester or ecologist via Reforestation Project Goals Form
 - Requires intervention to establish forest cover
 - Conditions favorable for seedling establishment and growth
 - Not at high risk for conversion to non-forest use

3.2 Start Date & Crediting Period

- Start date
 - First date that trees are planted or site preparation initiated
 - Earliest start date: January 1, 2018
- Submitted for listing within one year after completion of planting or site preparation
- Crediting period
 - Period for which future projections of sequestered carbon are recognized for crediting
 - Crediting period linked to permanence
 - Varies based on forest community and land ownership, up to 100 yrs

3.3 Additionality

- Projects must yield surplus GHG removals “additional” to what would have occurred in the absence of the project
- Performance standard test
 - Not under forest cover for at least 10 years, or
 - Affected by natural disturbance within past 10 years, resulting in <25% canopy cover
- Legal requirement test
 - Project activities must not be legally required
 - Attestation of Legal Additionality

3.4 Environmental & Social Safeguards

- Must support/enhance native ecosystems
- Initiate forest composed of diversity of native tree species
- Voluntarily report any non-GHG benefits, including any alignment with the United Nations' Sustainable Development Goals

3.5 Regulatory Compliance

- Sign an Attestation of Regulatory Compliance
- Assess risk of future non-compliance during the crediting period and identify how such risks will be reduced or mitigated

3.6 Ownership & Double Counting

Provisions to ensure clear ownership of FMUs and to prevent double counting

- PPs must provide a signed Attestation of Title document
 - Exclusive claim to the project's GHG removals
 - No other entities are reporting or claiming the project's GHG removals
 - Project's GHG removals not being reported to other GHG programs

3.8 Permanence

Climate benefits of GHG removals are realized when removals are permanent

Reserve's standard

- 100 years = permanent
- Forest offset protocol → additional carbon maintained for 100 years

How is this standard applied within an *ex ante* framework?

3.8 Permanence (cont'd)

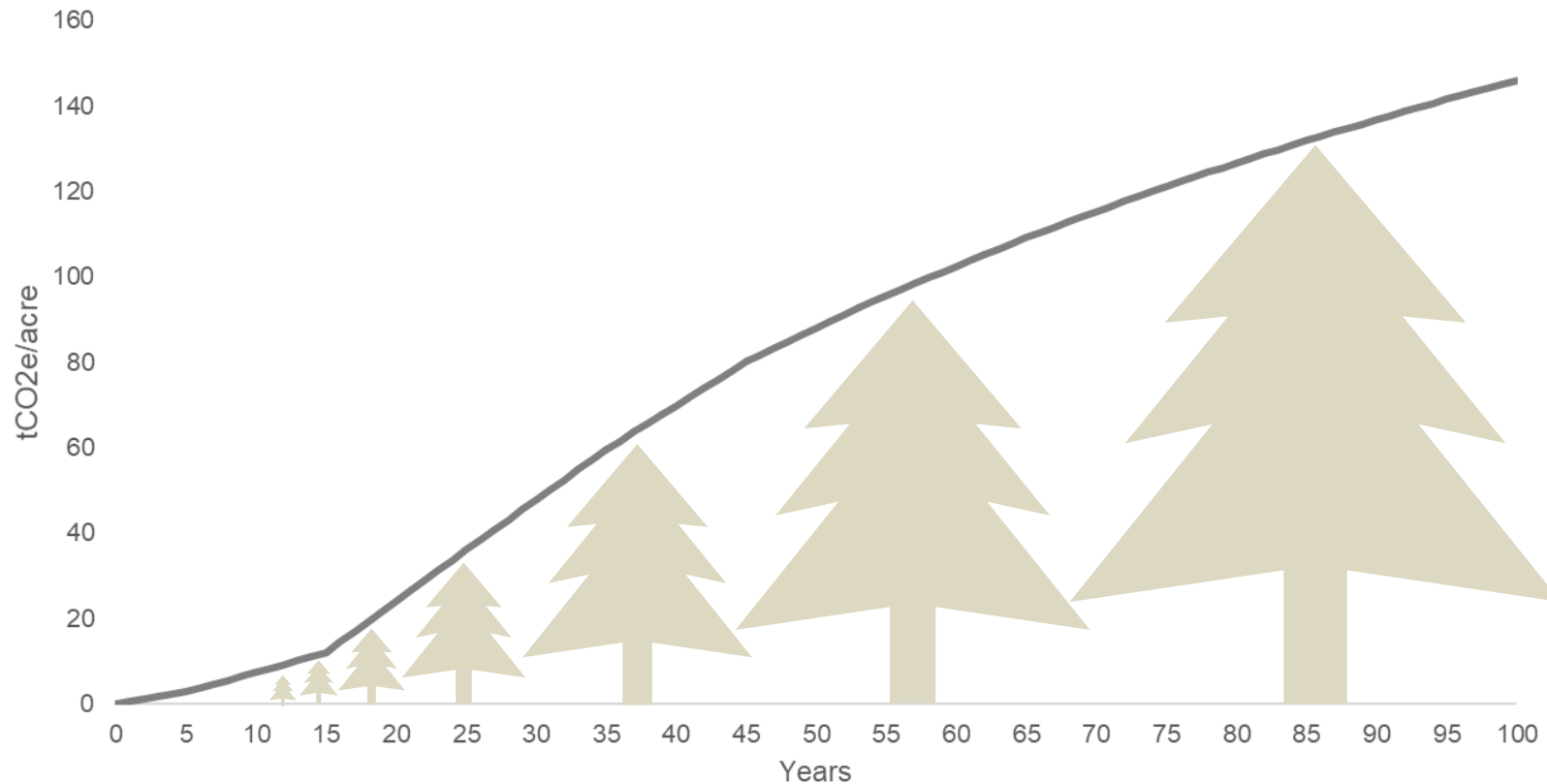
If assured additional stocks will remain sequestered 100 years

- 1 credit (FMU) issued for each additional tonne of CO₂ sequestered (tonne-tonne accounting)

If not assured additional stocks will remain sequestered 100 years

- Assume 1% of 100-yr climate effect of CO₂ achieved for each year a tonne remains sequestered
- 0.01 FMU per tonne per year (tonne-year accounting)

3.8 Permanence (cont'd)

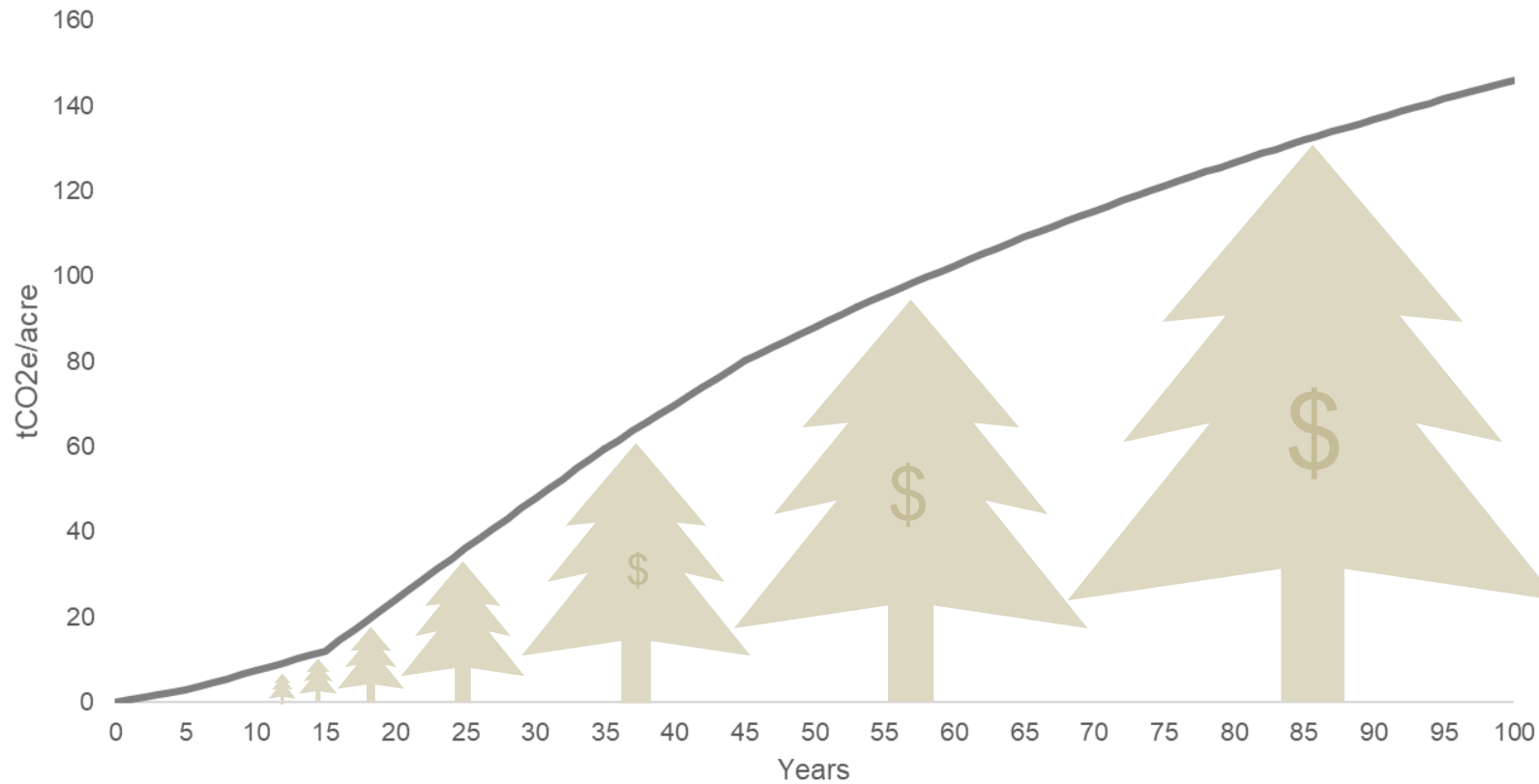


Projections show expected increases in timber volume and C stocks

Ideally, stocks would be maintained for 100 years after being sequestered

But...

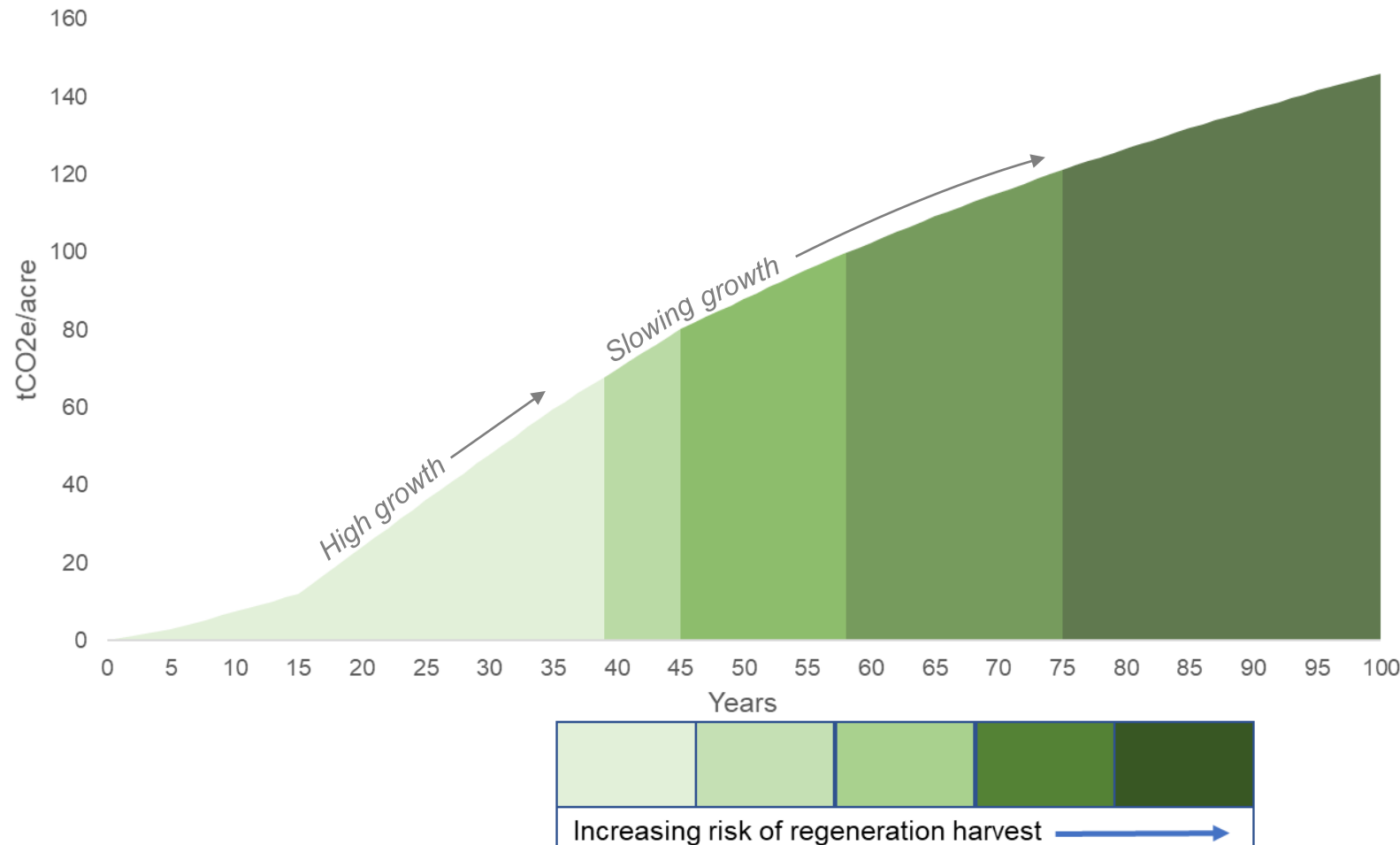
3.8 Permanence (cont'd)



There are risks to realizing the projected stock increases

As timber value increases, risk of harvest increases

3.8 Permanence (cont'd)

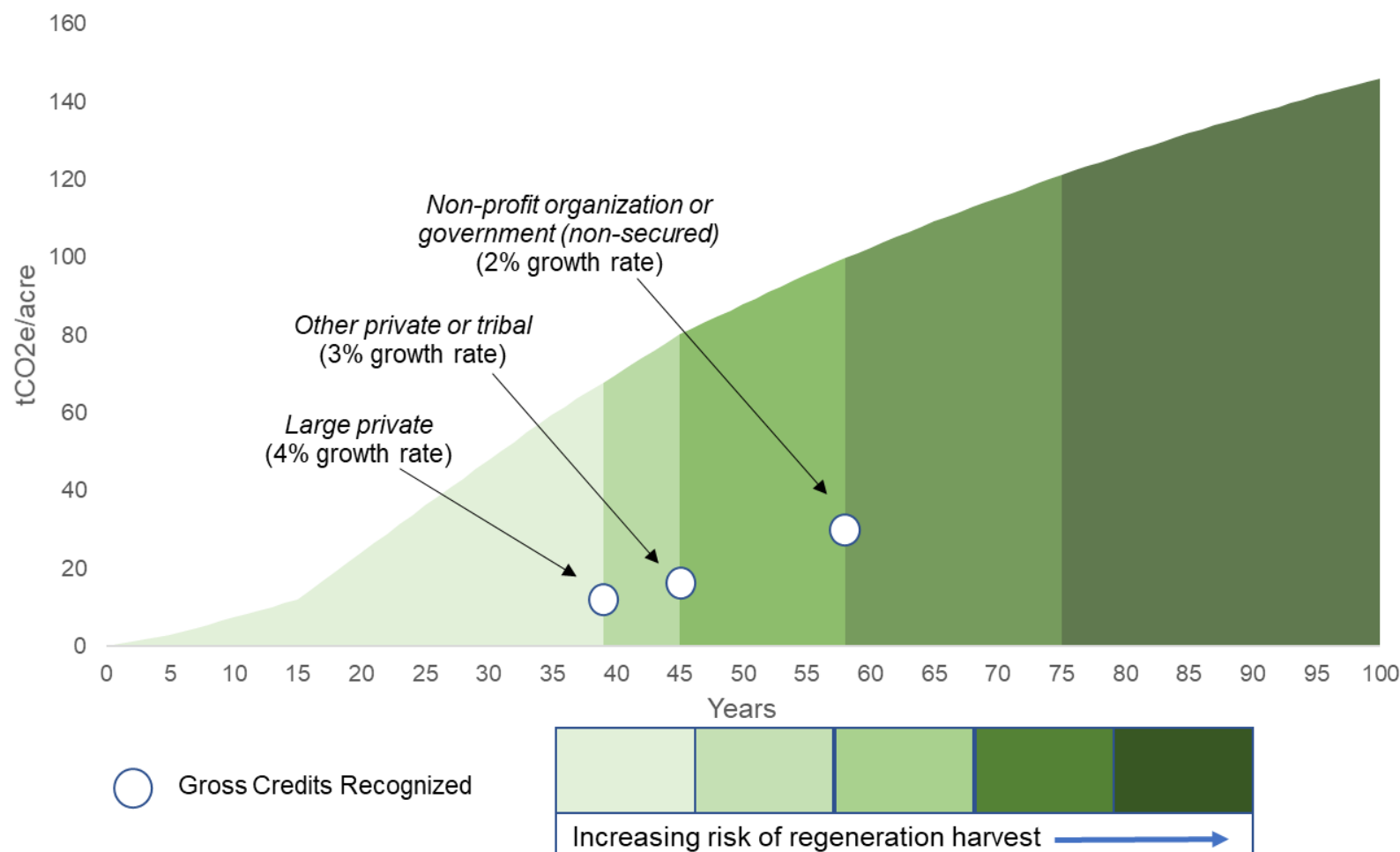


Risk increases as trees reach merchantable sizes and as growth rate declines

→ varies by forest community

Methodology recognizes heightened risk when growth rate becomes lower than desired economic rate of return

3.8 Permanence (cont'd)

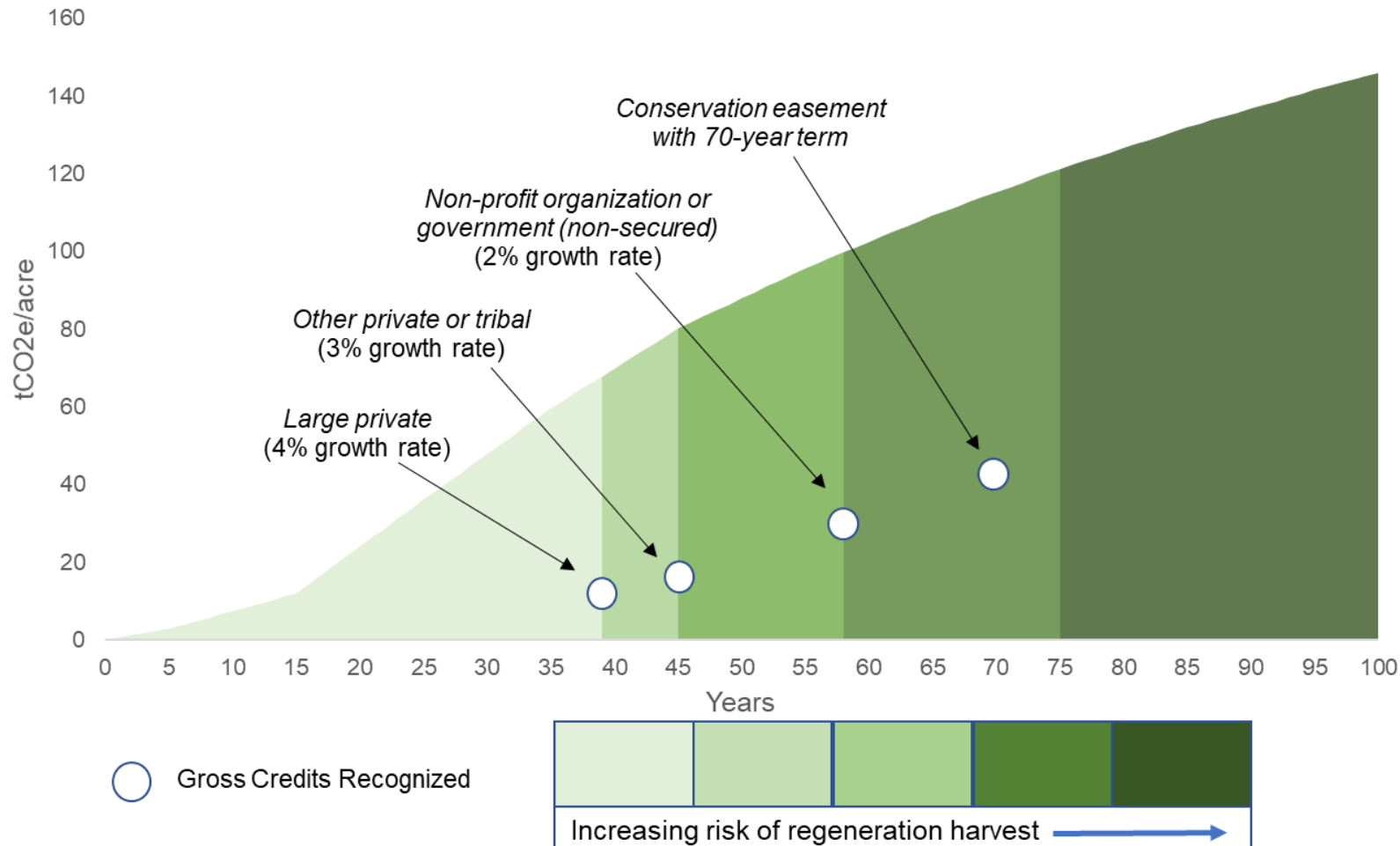


Different landowner types have different expectations for rates of return

Without long-term monitoring and reporting:

- Credit to when risk of regeneration harvest is reached, based on when growth rate drops below target rate of return (crediting period)
- Apply tonne-year accounting

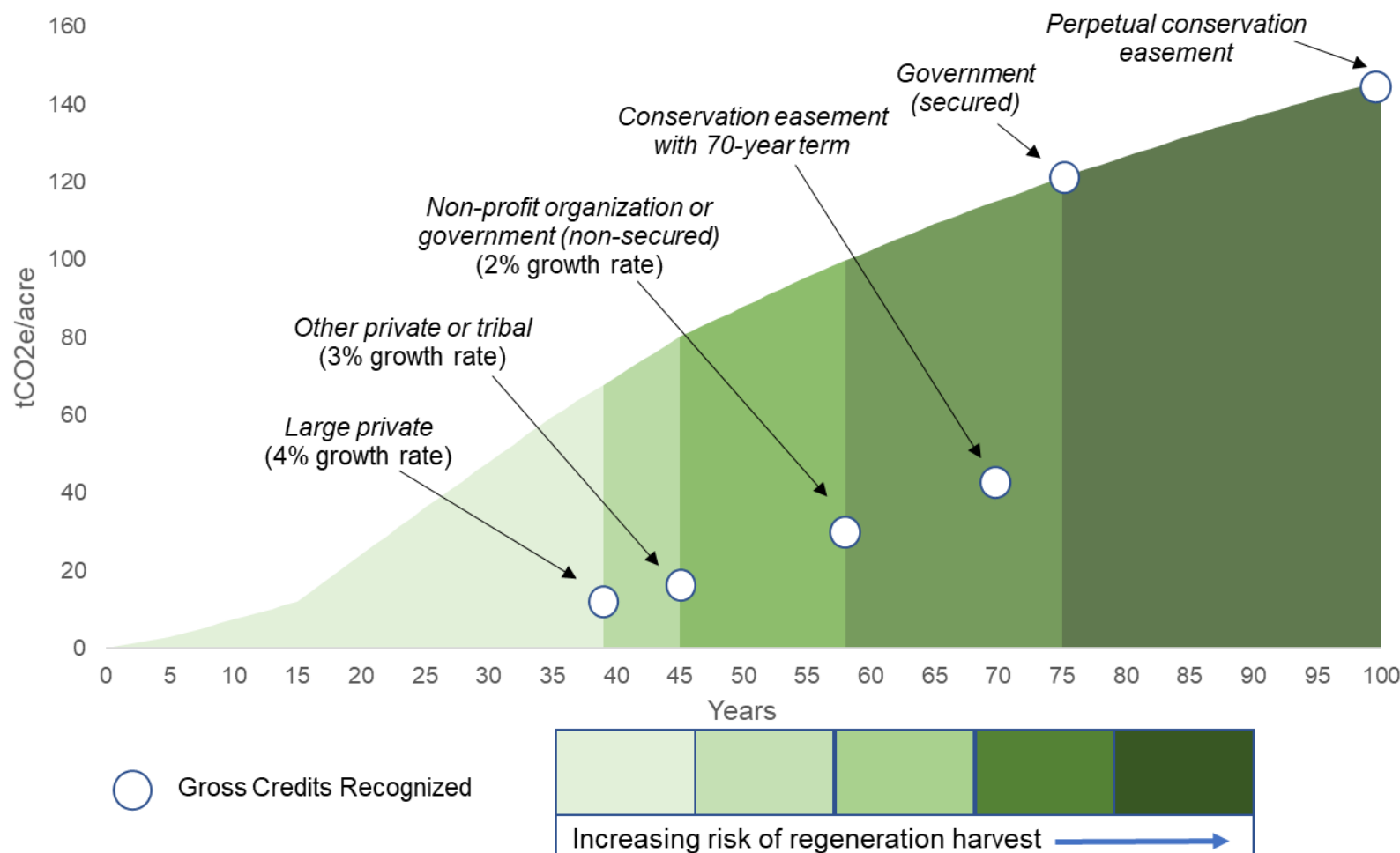
3.8 Permanence (cont'd)



Conservation easement with fixed term

- Provides additional security to the longevity of the projections
- Extends crediting period
- Still uses tonne-year accounting

3.8 Permanence (cont'd)



Government owner with
future stocks secured

OR

Private owner with
perpetual conservation
easement

- Provides assurances about long-term maintenance of C stocks
- Credit out to:
 - CMAI (gov't secured)
 - 100 years (perpetual CE)
- Apply tonne-tonne accounting

3.8 Permanence (cont'd)

Additional measures to ensure integrity of FMUs issued

- Confirmation occurs at least 1 year after seedling planting/site prep
- Standard deduction applied to ensure programmatic integrity
 - 2% for projects without conservation easements or on public lands where longevity of C stocks is not secured
 - Programmatically insures against individual project failure
 - 10% for projects with conservation easements or on public lands where longevity of C stocks is secured
 - Provides an added buffer to account for landowners managing for resiliency as forest matures, which is not captured well by projections

Section 4

THE GHG ASSESSMENT BOUNDARY

4. The GHG Assessment Boundary

- Live trees
 - Estimated from pre-approved projections
- Mobile emissions (CO₂ only) from site preparation
 - Emissions factor based on % brush cover
- Biological emissions from displacement (leakage) of previous land use activities on project area to other sites (e.g., trees cleared at another site to establish crops)
 - Decision tree with standardized rates

Section 5

QUANTIFYING GHG REMOVALS

5. Quantifying GHG Removals

Compare project stocks to baseline stocks, projected forward throughout the crediting period

- **Baseline:** live tree stocks assumed to be 0 t CO₂/acre
- **Project:** growth of live tree stocks according to approved projections
- **GHG Removals:** Increase in carbon stocks, minus site preparation and/or leakage emissions and standardized deductions

5. Quantifying GHG Removals (cont'd)

GHG removals/FMUs are calculated in the Reforestation Communities Data File

Input required:

- Landowner type
- Length of conservation easement (if applicable)
- Forest type and acreage
- Site prep acreage and intensity
- Activity-shifting leakage rate

| | |
|--|---|
| Total FMUs to be issued, net of project abandonment discount (2%) or resiliency management discount (10%, for projects employing a conservation easement or on government lands where sequestration to CMAI is secured) | [Enter data below] |
| Project-wide variables | |
| Landowner type | [Select landowner type] |
| Duration of conservation easement (in years; enter value for term easements only, up to a maximum of 100 years) | |
| Growth rate threshold | [Select landowner type] |
| CMAI discount threshold | [Select landowner type] |
| <i>Stratum 1</i> | |
| Variables | |
| Forest type | [Select forest type] |
| Forest type acres | |
| Assumed year of heightened harvest risk | [Select forest type and landowner type] |
| Per acre gross FMU value at end of crediting period | [Select forest type and landowner type] |
| Acres treated mechanically for site preparation (if no site prep, enter '0') | |
| Brush cover % prior to site prep (if no site prep, enter '0') | |
| Mobile emissions from mechanical site prep | [Enter mechanical site prep info] |
| Activity-shifting leakage rate (see Figure 2) | [Select rate from Figure 2] |
| Emissions from activity-shifting leakage | [Select activity shifting leakage rate] |
| Total FMUs to be issued for forest type | [Enter data above] |

5. Quantifying GHG Removals (cont'd)

GHG removals/FMUs are calculated in the Reforestation Communities Data File

| | |
|---|-------------------------|
| Total FMUs to be issued, net of project abandonment discount (2%) or resiliency management discount (10%, for projects employing a conservation easement or on government lands where sequestration to CMAI is secured) | 30,142 |
| Project-wide variables | |
| Landowner type | Other Private or Tribal |
| Duration of conservation easement (in years; enter value for term easements only, up to a maximum of 100 years) | |
| Growth rate threshold | 3.0% |
| CMAI discount threshold | 80.0% |
| <i>Stratum 1</i> | |
| Variables | |
| Forest type | Douglas-fir PWW |
| Forest type acres | 450 |
| Assumed year of heightened harvest risk | 45 |
| Per acre gross FMU value at end of crediting period | 68 |
| Acres treated mechanically for site preparation (if no site prep, enter '0') | 30 |
| Brush cover % prior to site prep (if no site prep, enter '0') | 25% |
| Mobile emissions from mechanical site prep | 5 |
| Activity-shifting leakage rate (see Figure 2) | 0% |
| Emissions from activity-shifting leakage | 0 |
| Total FMUs to be issued for forest type | 30,757 |

Sections 6 and 7

PROJECT IMPLEMENTATION, MONITORING, AND REPORTING

6/7. Project Implementation, Monitoring, and Reporting

Required Project Implementation Report (PIR) addresses all project monitoring and reporting activities and includes:

- Project location (e.g., map of project area)
- Ownership
- Demonstration of site suitability (Reforestation Project Goals Form)
- Estimated GHG removals (from Reforestation Communities Data File)
- Co-benefits (optional elaboration beyond default co-benefits associated with restoration of native forest cover)

7.1 Project Submittal Documentation

Required documentation:

LISTING:

- Project Submission form
- Reforestation Project Goals form
- Signed Attestation of Title form

CONFIRMATION/REGISTRATION:

- Signed Attestation of Legal Additionality form
- Signed Attestation of Regulatory Compliance form
- Project Implementation Report (PIR)
- Reforestation Communities Data File
- Confirmation Report, and Confirmation Statement
- From Confirmation Body: confirmation plan, sampling plan, and list of findings (not made public)

Section 8

CONFIRMATION GUIDANCE

8. Confirmation Guidance

Confirmation guidance supplements the Program Manual and Confirmation Manual and describes confirmation activities specifically related to reforestation projects being confirmed under this methodology

CBs trained to confirm reforestation projects must be familiar with the following:

- Climate Forward Program Manual
- Climate Forward Confirmation Manual
- Reforestation Project Forecast Methodology
- Reforestation Forecast Methodology companion documents
 - Reforestation Project Goals Form
 - Reforestation Communities Data File

8. Standard of Confirmation

Accredited Confirmation Body must confirm project has been implemented as described in the forecast methodology – and that estimated emission reductions have been calculated accurately

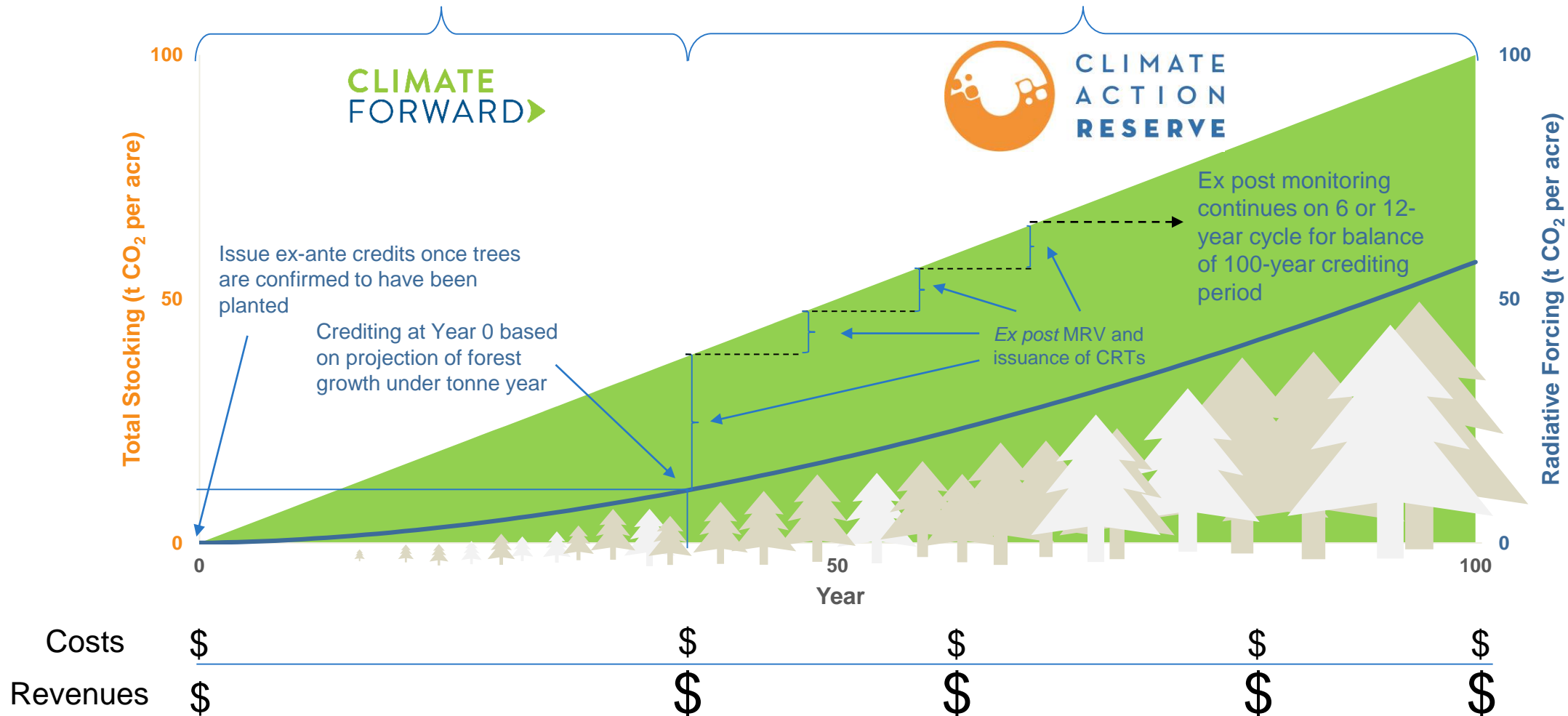
- Desktop review of PIR and companion documents
- Site visit to confirm reforestation activities
 - Project area
 - Seedling species diversity
 - Rate of viable seedlings (via sampling)
- Confirmation activities may commence no sooner than 1 year after the PP has completed planting or site preparation activities
 - Exceptions allowed to 1 year waiting period, at the sole discretion of and subject to any terms/conditions specified by the Reserve to ensure the integrity of issued credits is maintained

Option to transition after FMU issuance

CLIMATE FORWARD ►

Ex ante crediting

Ex post crediting (optional)



Methodology Available for Use

CLIMATE FORWARD ►

Project submissions now being accepted

<https://climateforward.org/program/methodologies/reforestation/>

Special Thanks

- John Nickerson, Dogwood Springs
- David Shoch, Terra Carbon
- Sarah Wescott, Climate Action Reserve

Questions?

CLIMATE FORWARD ►

Contact Information

- **Jon Remucal**
Senior Forest Policy Manager
(213) 542-0280
jremucal@climateactionreserve.org
- Info@ClimateForward.org
- Newsletter signup
<https://climateforward.org/sign-up/>



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