Canada Grassland Project Protocol v1.0

2nd Technical Working Group Meeting

July 30, 2019

Agenda

1. Background
2. Discussion and feedback
   - Some items presented as informational
   - For some items we are specifically requesting feedback
3. Next steps

Housekeeping:

- *We have a very large group, please use the question panel to communicate*
- *We will take a couple of breaks*
- *This webinar will be recorded*
- *Please email bzavariz@climateactionreserve.org if you need assistance*

Protocol Development team

Climate Action Reserve

- **Max DuBuisson**, Policy Director
- **Bety Zavariz**, Policy Manager
- **Heather Raven**, Senior Project Coordinator

Viresco Solutions

- **Karen Haugen-Kozyra**, President
- **Jonathon Alcock**, Sustainability Specialist
- **Dr. Brian McConkey**, Chief Scientist

Technical Working Group

Robin Bloom	Environment Canada
Denise Chang-Yen	Shell Canada
Bill Dorgan	Trimble
Glenn Friesen	Government of Manitoba
Alastair Handley	Carbon Credit Solutions Inc.
Craig Harding	The Nature Conservancy Canada
Tom Lynch-Staunton	Alberta Beef
Cedric Macleod	Canadian Forage and Grassland Association
Chad MacPherson	Sasketchewan Stock Growers Association
Sheilah Nolan	Government of Alberta
Marianne Possberg	Sasketchewan Cattlemen's Association
Bill Salas	Applied GeoSolutions
Aaron Schroeder	Brightspot Climate
Tracy Scott	Ducks Unlimited Canada
Justin Thompson	Southern Alberta Land Trust Society (SALTS)

Timeline

Week beginning	22-Jul	29-Jul	5-Aug	12-Aug	19-Aug	26-Aug	2-Sep	9-Sep	16-Sep	23-Sep	30-Sep	7-Oct	14-Oct
TWG review draft protocol													
TWG meeting 2		30th											
Protocol revision													
Public comment period													
Public webinar						28th							
Final protocol revision													
Internal final reviews													
Final protocol to Board													
Board Adoption													16th

Protocol Table of Contents

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- Monitoring
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  - Mechanisms to prevent overgrazing
  - Monitoring Grazing Activities
  - Monitoring Ecosystem Health
  - Project Cooperatives
  - Parameters
- Reporting & Verification
  - Time Periods for Reporting & Verification
  - Joint Verification of Project Cooperatives
  - Site Visits and Desk review

THE GHG REDUCTION PROJECT

Project definition

- The GHG reduction project is defined as the prevention of emissions of GHGs to the atmosphere through conserving grasslands, shrublands, rangelands, or pasture land belowground carbon stocks and avoiding crop cultivation activities on an eligible project area.
- Conversion is avoided through the recording of a Qualifying Land Conservation Agreement
- The project area must be grassland, shrubland, rangeland, or pasture land
- Land must be suitable for conversion to crop cultivation
- Project area must have been in continuous grassland cover for at least 10 years prior to the project start date

Activities permitted in project area

- Moderate levels of seeding
- Organic fertilizer application
- Haying
- Forage harvesting
- Livestock grazing
- Irrigation
- Recreational or economic activities
- Manure not managed in liquid form

OWNERSHIP

Ownership

Project area

- One landowner
- One easement holder (could be multiple easements)
- May be a subset of the area covered by the easement

GHG reduction rights

- GHG rights may be separated from the land
- Rights holder = Project Owner and account holder
- All entities involved must be party to GHG reduction rights agreement

Multiple entities

- Landowner
- Easement holder
- Project Developer
- Cooperative Developer

Cooperative structure

- Joint monitoring, reporting, and verification
- Project data remain independent, and CRTs are issued to individual projects
- Projects may join or leave at any time

Cooperatives

- Cooperatives are collections of two or more individual grassland projects managed by a common entity (Cooperative Developer) that engage in **joint monitoring, reporting and verification**
- No comingling of project data or codependence of eligibility
- Projects may join or leave at any time without impacting other participants
- Cooperatives must:
  - Engage the services of a single verification body for all grassland projects enrolled in the cooperative
  - Coordinate submittal, monitoring, and reporting activities for all projects in the cooperative
  - Coordinate a verification schedule that maintains appropriate verification status for the cooperative
  - **Maintain traceability of credits to individual projects**

ELIGIBILITY & ADDITIONALITY SCREENS

Project Start Date

- No more than 12 months prior to project submission
- Events that mark project start date
  - Project submittal to the Reserve
  - Recordation of an LCA of the project area
  - Transfer or sale of property to a public or private entity for purpose of carbon project

Additionality

- **Legal Requirement Test**
  - Is the land legally able to be converted to cropland on the project start date?
- **Performance Standard Test**
  - Part 1: Financial additionality screen
    - A proxy for the financial pressure to convert the project area to annual cropland
    - Assessed through a site-specific appraisal
  - Part 2: Land suitability screen
    - Confirmation that the project area is suitable for annual crop cultivation

Default financial test

"CROPLAND PREMIUM" = (Crop rent – Pasture rent) ÷ Pasture rent

- "How much more is the land worth as cropland vs pasture?"

Cropland Premium	Eligibility	Baseline Discount
>100%	Yes	0%
40% - 100%	Yes	Sliding scale, 0% - 50%
<40%	No	N/A

- All projects must obtain a certified real estate appraisal to identify the financial pressure to convert
- Appraisals reviewed by an expert panel for ECOGift program participation are sufficient for this performance standard test

DISCUSSION: cropland premium thresholds

- Example:

Value of Cropland	Value of Grassland	Cropland Premium	Eligible?	Discount
$1,200/acre	$1,000/acre	20%	NO	N/A
$1,400/acre	$1,000/acre	40%	YES	50%
$1,700/acre	$1,000/acre	70%	YES	25%
$2,000/acre	$1,000/acre	100%	YES	0%

- In other words, at a 40% cropland premium, there's an assumed 50/50 chance of conversion, while at the 100% cropland premium, conversion is considered a "sure thing"
- **How appropriate are these thresholds?**

Certified real estate appraisal must show

1. **The project area is suitable for conversion to cropland**
2. **Conformance with a set of minimum standards, including**
   - Prepared and signed by a third-party, licensed Real Estate Appraiser
   - Specification and quantification of areas that are suitable for crop production
   - Inclusion of a complete description of the property land, site characteristics and improvements
   - Description of what would be described for a conversion to cropland
   - Presentation of evidence that demand exists for the conversion to cropland
   - Demonstration of of soil suitability, water availability and absence of limitations for crop productions
3. **The cropland land use has a higher market value than maintaining the project area for sustainable grassland management, such that it meets the financial additionality threshold**

Suitability threshold

- Suitability for conversion to cropland can be demonstrated by:
  - Determining the specific suitability classification for the project soils, according to the Land Suitability Rating System (LSRS) or,
  - Canada's Land Inventory data can be used when LSRS data are not available or,
  - Site-specific LSRS assessment with an independent expert.

Suitability: Land Suitability Rating System

Class	Soil Description
1	Soils in this class have no significant limitations in use for crops.
2	Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.
3	Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.
4	Soils in this class have severe limitations that restrict the range of crops or require special conservation practices.
5	Soils in this class gave very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible.
6	Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.
7	Soils in this class have no capacity for arable culture or permanent pasture.
8	Organic Soils (not placed in capability classes).

Land suitability screen

- Must be able to show that the project area is suitable for conversion to cropland
  - Class 1-4 soils are most suitable for cultivation
  - Lots of recent conversion on Class 5-6 soils
  - Class 7-8 soils are ineligible
- Each Reporting Zone has its own threshold for the minimum amount of Class 1-4 soils
  - Separate irrigated and non-irrigated thresholds
- *Option 2: Local Cropland Assessment*:
  - Allow for assessment of local cropland to determine appropriate LSRS threshold
  - Must include at least three actively-cultivated farms in the same ecoregion, no more than 200 km from the project area
  - Farms must be at least as large as the project area, and must assess entire farm property (no cherry-picking)

Concurrent Legally Binding Agreements and Credit Stacking

- A Grassland Owner may concurrently enter into a legally binding agreement related to ecosystem services or protection on the project area
- Agreement is considered concurrently entered if approved no more than 6 months prior to the project start date
- Credit and payment stacking must not violate the Legal Requirement Test
- Agreement or program must demonstrate legal additionality of the grassland project
- Any type of Concurrent Legally Binding Agreement must be disclosed to the verification body and the Reserve on an ongoing basis
- The Reserve will evaluate the additionality of Concurrent Legally Binding Agreements on an case by case basis

CREDITING PERIODS

Crediting periods

- Maximum of 30 years from project start date, based on emission factors
- Modeled emission factors are in 10-year increments
- **May voluntarily be ended early as long as permanence is maintained**
- Not a single crediting period applicable to the entire cooperative, unless all projects share the same start date
- All CRTS issued are subject permanence requirements

PERMANENCE

Permanence

- A CRT is ultimately retired ("used") as an offset, allowing the emission of 1 tCO_2e elsewhere
  - E.g., direct CO_2 emissions from air travel
- The "allowed" emission is effectively in the atmosphere forever
- The international community has defined "forever" as 100 years in order to make offsets practical
- Offsets must represent a "permanent" reduction in order to be credible

THEREFORE…

- ***Stored carbon must remain stored for 100 years to achieve equivalence***

Reversibility of emission reductions

Non-reversible

- Projects which capture, destroy, or avoid GHG emissions
- No long-term storage of the captured/avoided GHGs
- An emission avoided or destroyed is eliminated forever
- E.g., avoided fertilizer use

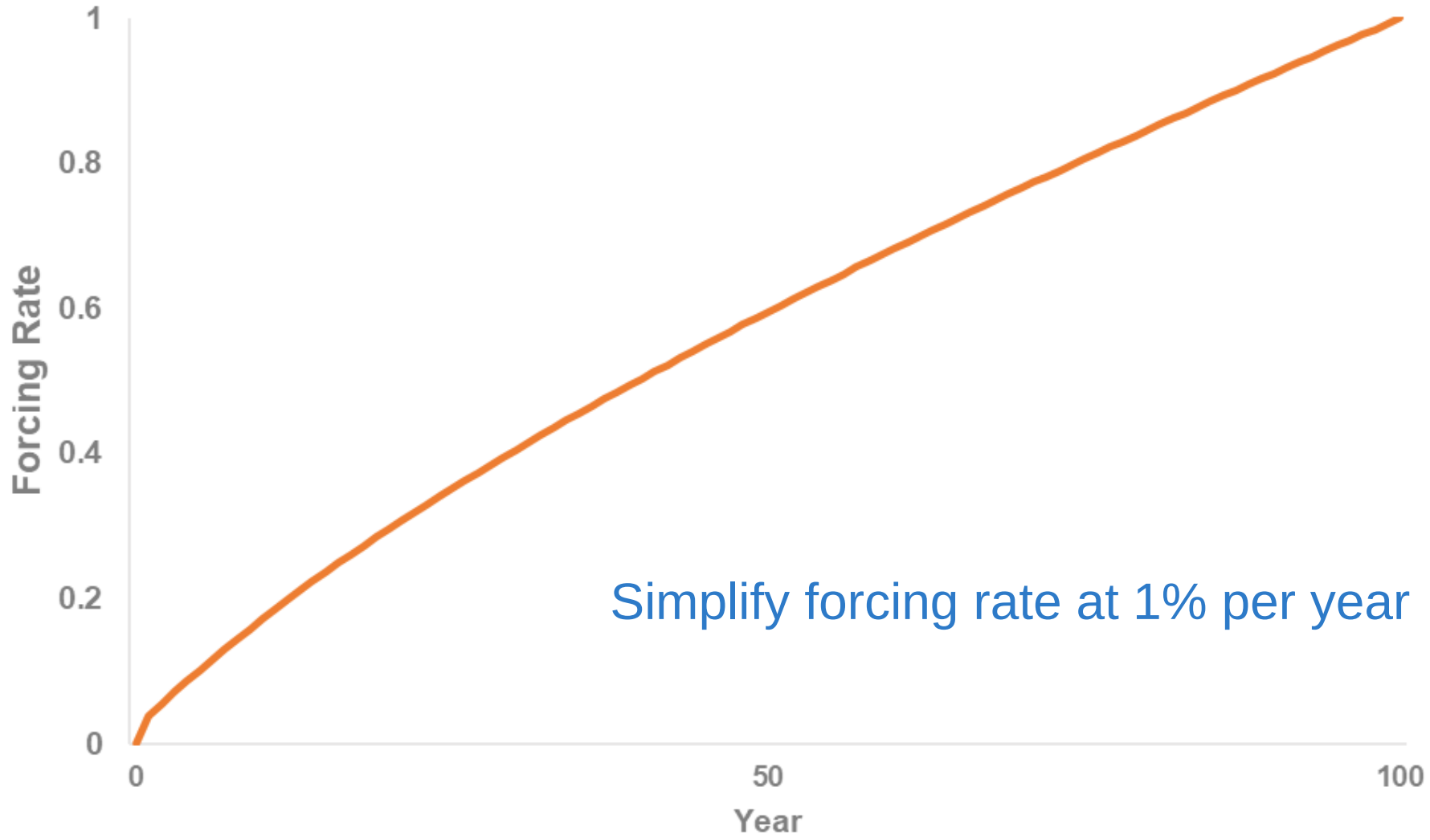
Reversible

- Land use projects (grassland and forestry)
- The carbon contained in biomass can be released at any time
- Needs special measures to be comparable to non-reversible ERs
- E.g., avoided soil carbon emissions

Compensating for reversals

- Avoidable reversals
  - Due to intent (e.g., plowing for crops) or negligence (e.g., allowing activities which disturb soil carbon)
  - Project Owner pays back the CRTs related to reversible emission reductions
- Unavoidable reversals
  - Acts of nature, etc.
  - CRTs are paid out of a shared risk buffer pool
  - Projects deposit into the buffer pool between 2% - 16.8% of baseline emissions

Radiative forcing over time



Options for ensuring permanence

3 options to ensure credit is only given for permanent emission reductions:

- **Tonne-tonne accounting (TTA)**: One CRT issued for each tCO_2e removed/reduced from the atmosphere, with a 100-year legal commitment to permanence

- **Hybrid tonne-year accounting (TYA):** tCO_2e securely removed/reduced from the atmosphere for a period of time less than 100 years → ***credited based on their atmospheric impact proportionate to the 100 year period***

- **"Pure" tonne-year accounting (TYA):** each tCO_2e removed/reduced from the atmosphere is credited 1% for each year it has been protected; **no future commitment to permanence, and no reversals; issuance increases over time**

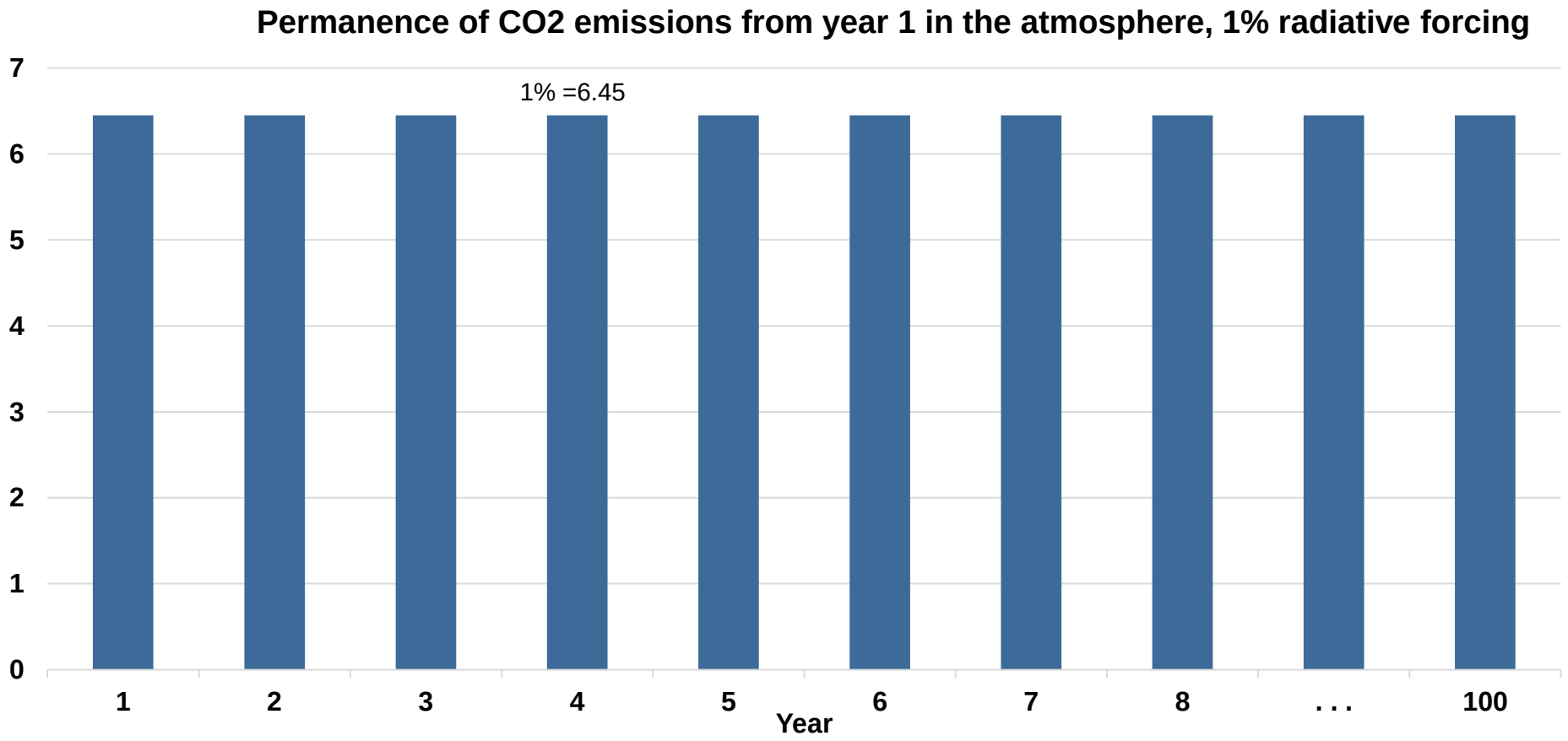
Permanence of emission reductions over time

Example:

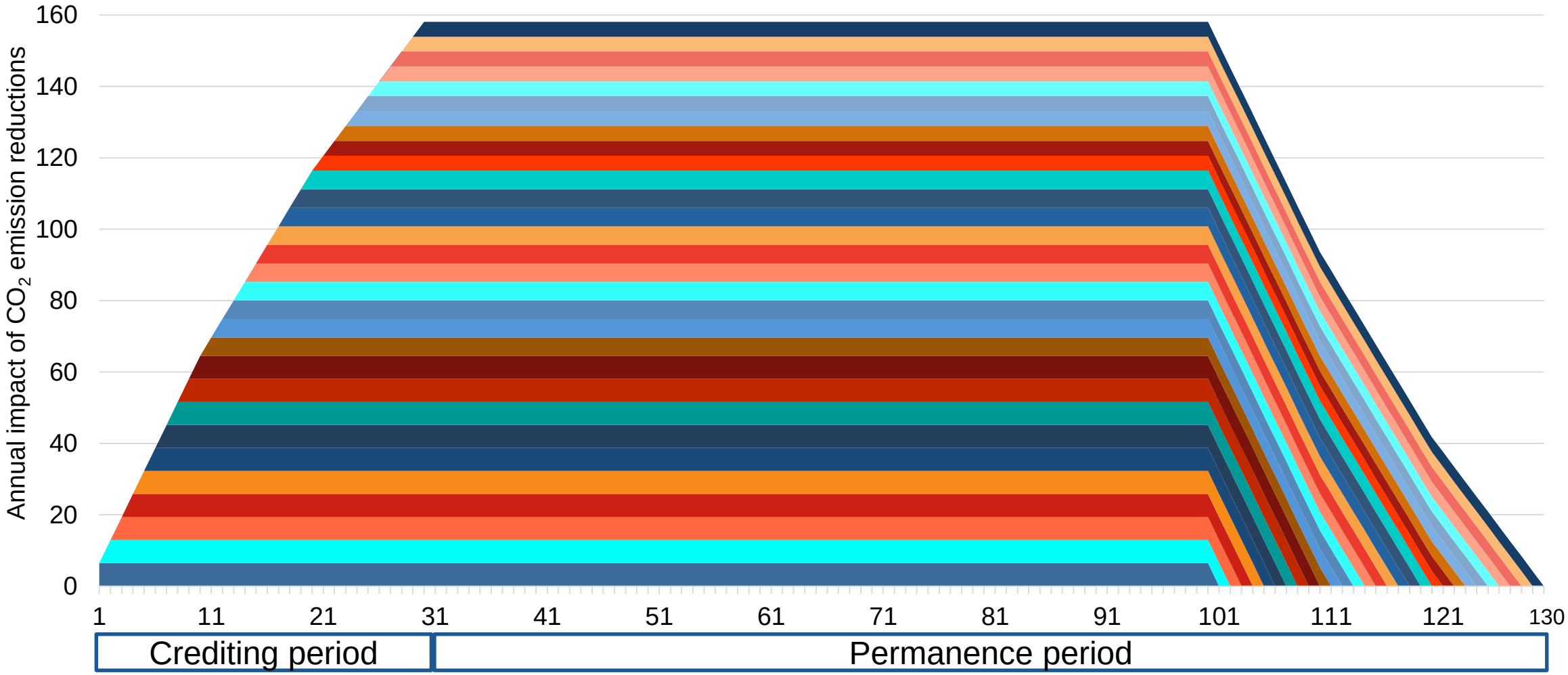
- Stratum: Semi arid prairies (fine soils)
- Emission factor: 645 kg CO2e/acre/year
- Project area: 1,000 acres

Emissions in year 1= 645 tCO_2

Yearly impact of CO2 emissions from year 1



Annual atmospheric benefit of grassland project



Two options: TTA & TYA

Tonne-tonne accounting

- 100-year legal commitment to monitoring and reporting
- Full credit value issued upon successful verification
- Higher cost & reversal risk = higher reward
- Higher risk of reversals and buffer pool contribution

Tonne-year accounting

- 20-year minimum commitment
- No obligation beyond 20 years
- Project Owner may decide on any length of commitment beyond the initial 20 years (0-100)
- Credit issuance is severely limited if no additional commitment is made
- Lower cost and reversal risk = lower/delayed reward
- In-built incentive to stay in the program and continue monitoring/verification in order to eventually receive all CRTs

LEGAL INSTRUMENTS

Relevant legal instruments

1. Qualified Land Conservation Agreement (QLCA)

- The mechanism by which conversion is avoided and permanence is maintained

2. GHG Reduction Rights Contract

- Involves landowner & QLCA holder (and maybe a 3rd party)
- Establishes identity of Project Owner

3. Project Implementation Agreement

- Contract between Project Owner and registry
- Ensures ongoing monitoring and reporting

Qualified land conservation agreements

- Required for all projects
- The easement terms must prevent the conversion of the project area from grassland
- Perpetual for TTA
- Minimum term of 20 years for TYA
- Protocol includes additional *recommended* provisions:
  - Make ownership of GHG reduction rights explicit
  - Make future encumbrances subject to the PIA

GHG reduction rights contract

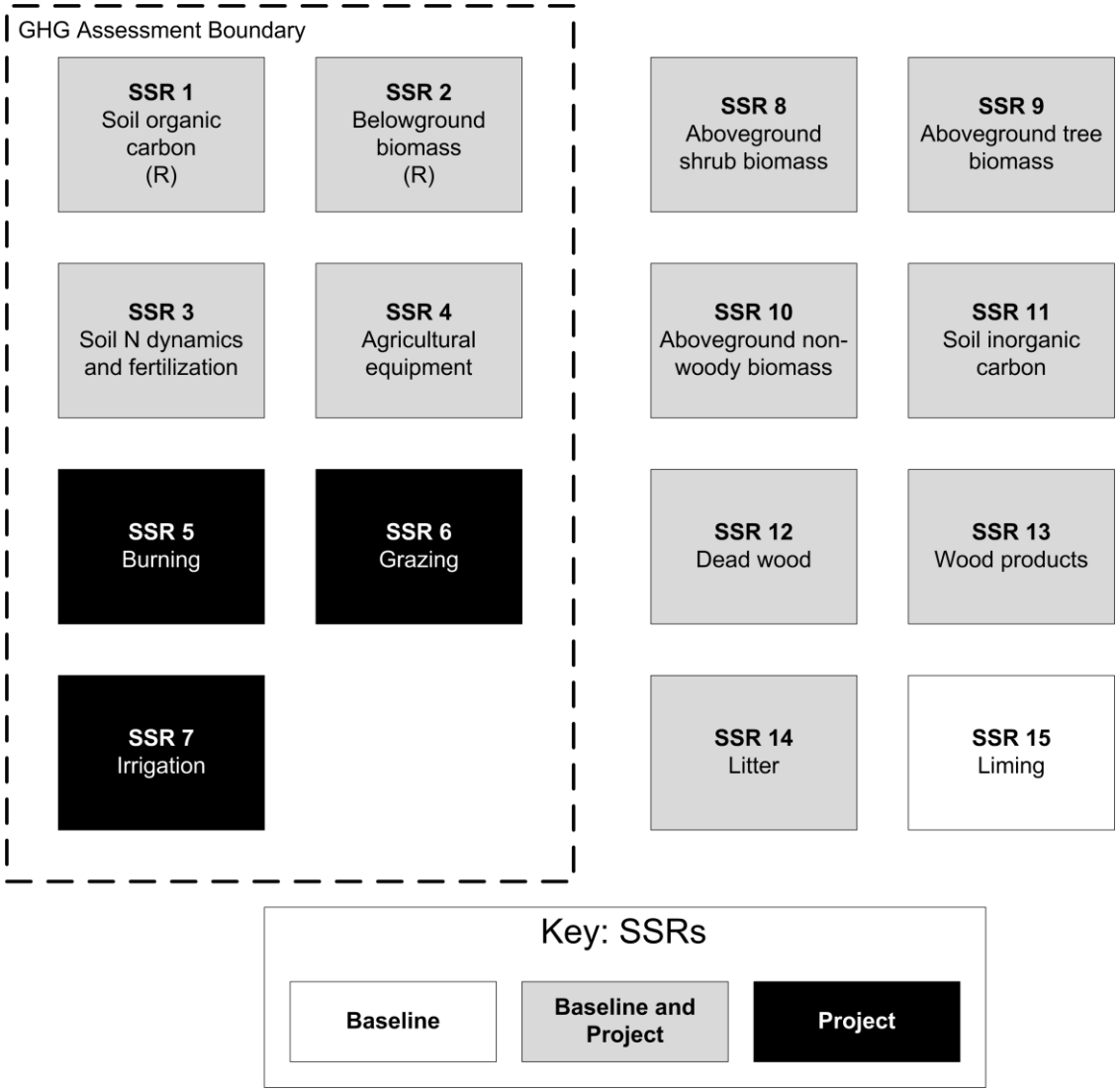
- Legally establishes ownership of GHG emission reductions, thereby defining the Project Owner
- May be in the form of easement language
  - Easement holder may take, or explicitly not take, ownership
- May be a separate contract
- May be a combination of contracts
- We have template language
- A third party (not the landowner or easement holder) may own the GHG rights

Project Implementation Agreement (PIA)

- Contract signed by the Project Owner and registry
- Commits PO to continued monitoring and reporting to avoid reversal determination
- This is the absolute final step during verification before credit issuance
- PIA amendment/extension is how the permanence commitment is extended
- Project Ownership may be transferred, and a new PIA will be executed
- If the PIA is recorded on the property, there is a lower buffer pool contribution
  - For projects under TTA
    - PIA is signed after credit issuance and amended at each subsequent verification
  - For projects under TYA
    - Minimum requirement of one PIA for a term of 20 years after the first reporting period

QUANTIFICATION

GHG assessment boundary



Quantification

- Baseline emissions
  - Avoided loss of belowground organic carbon (reversible)
  - Avoided cultivation emissions (N_2O from fertilizer, CO_2 from diesel) (non-reversible)
- Project emissions
  - Grazing (enteric CH_4, manure CH_4 and N_2O)
  - Electricity & fossil fuels
  - Burning (CH_4 and N_2O)
  - Organic fertilizer use
  - Leakage (20% for all projects)

Baseline emissions

- Baseline emissions = Reversible + Non-reversible baseline emissions
- Reversible: Organic carbon loss
  - TTA: Credited assuming 100-year permanence
  - TYA: Credited based on length of permanence maintained and committed
- Non-reversible
  - N_2O and CO_2 emissions from use of fertilizers
  - Fossil fuel baseline emissions
- Most baseline emission equations rely on default, area-based emission factors (by stratum)
- Determine acreage in each stratum and use lookup tables to identify appropriate emission factors
- SOC and N_2O factors are provided in 10-year groups
- Fossil fuel use rate is constant for each stratum

Stratification

- Two steps to identify strata:
  1. Geography & climate (Reporting Zone, RZ)
  2. Soil texture (using FAO Soil Texture Classification)
     - Coarse
     - Medium
     - Fine
- Examples of strata

Stratum	Reporting Zone	Soil Texture
5_Medium	5- Boreal Shield East	Medium
14_Coarse	14 – Mountane Cordille	Coarse

- Standardized emission factors were developed for reporting zones and soil textures across Canada based on Canada's NIR

Discounts

- Uncertainty of baseline conversion
  - Related to financial additionality test

Cropland Premium	Baseline Discount
>100%	0%
40% - 100%	**Sliding scale discount: 0% – 50%**
<40%	Not eligible (i.e., 100% “discount”)

- Uncertainty of modeling future practices
  - Fixed, indexed to 2019
  - Currently 1%, increases by 1% every 5 years

Project emissions

- Grazing
  - CH_4 from manure and enteric fermentation, plus N_2O from manure
  - Monitor the category, population, average ambient temperature, and grazing days for all livestock
- Burning
  - Quantification based on IPCC emission factors for N_2O and CH_4 from savannah burning
- Fossil fuel and electricity use and sources
  - Based on information from Canada's National Inventory Report
- Organic fertilizer application
  - IPCC default factors

Discussion: Emissions from Organic Fertilizer Use

- Mass of fertilizer applied and nitrogen content of fertilizer applied per type of fertilizer
  - Multiplied by a default N_2O emission factor
- Should we keep or remove quantification of emissions from organic fertilizer use?
- Arguments on favor of removing
  - Organic fertilizer application on grasslands is not a common practice in Canada
- Arguments against removing
  - Use of this section should be very straightforward where a project applies organic fertilizers
  - Project Developer needs to document the quantity of fertilizer used and a credible source to document nitrogen content
  - Low risk to keep this equation in the protocol

Leakage

- **Leakage** = conversion of grassland to cropland outside of the project area
- If there is pressure to convert grassland to cropland, protection of one area could lead to conversion elsewhere
- Upon review of several studies of “slippage” in the US Conservation Reserve Program (10-year contracts to keep cropland out of production), **20%** was chosen as a conservative estimate

ONGOING MONITORING

Annual monitoring

- Overall land use (i.e., is it still a grassland?)
- Soil disturbance (i.e., monitoring for reversals)
- Monitoring grazing
  - Highly flexible, allows for conservative estimation without direct data
- Other project emissions sources
  - Farm trucks
  - Pumps
  - Equipment
  - Emissions from recreational activities that wouldn't occur in the baseline

Land use history

- Project area must be continuous grassland cover for at least 10 years
- Flexible approach to documenting land use history, encouraging multiple forms of evidence, and usually requiring overlap/corroboration between different forms
- GOAL: verifier should be able to reach reasonable assurance of grassland cover for any particular year in the historical period, even if there's not a piece of dated evidence from that period
- The protocol includes a list which is not meant to be exhaustive
- The same mechanism is used for ongoing demonstration of grassland cover

Example forms of historical land use documentation

- Time-stamped aerial photos
- Georeferenced satellite imagery
- Time-stamped historical photographs
- Public records
- Grazing leases
- Haying contracts
- Signed attestations
- Drone imagery/video

Monitoring ecosystem health

- It is required that projects undergo a periodic assessment of ecosystem health
- Approach to be approved by the Reserve
- First health assessment within two first verifications, then every 6 years at a minimum
- Options for complying with this requirement
  - Use of the Rangeland Health Assessment Protocol developed by Alberta Environment and Parks
  - Use of an alternative assessment protocol which employs a robust sampling design, assesses widely recognized metrics for ecosystem health and was developed with input from relevant experts
  - Use of advanced remote sensing techniques coupled with scientific evidence to support their use for this purpose

Monitoring grazing for quantification of project emissions

- Data to monitor
  - Type of livestock
  - Total animal grazing days per type
- Type of valid documentation
  - Grazing logs
  - Animal purchase and sale records
  - Grazing management plans

Monitoring grazing to prevent ecosystem disturbance

- Each project needs to determine a mechanism to safeguard the project against overgrazing
- Reserve approves approach
- Potential mechanisms
  - Presence of terms within the LCA which would be violated in the event of significant overgrazing in the project area
  - Development and adherence to a prescribed grazing management plan, developed to a recognized government or industry standard for long-term grazing management
  - Use of mechanisms for monitoring ecosystem health

- All mechanisms should include requirements for monitoring and enforcement, and identify the entity responsible for enforcement

VERIFICATION

Verification activities

- **Site visits are optional**, but projects must apply a 5% buffer pool contribution until a site visit occurs
  - A single site visit removes the extra buffer contribution
- Verifications without site visits may rely on the documentation options for evidence of land use
  - There's not much to see in an avoided conversion site visit
  - Land use can be confirmed via remote sensing
- Review documentation for project emissions
  - Burning, grazing, fertilizer use

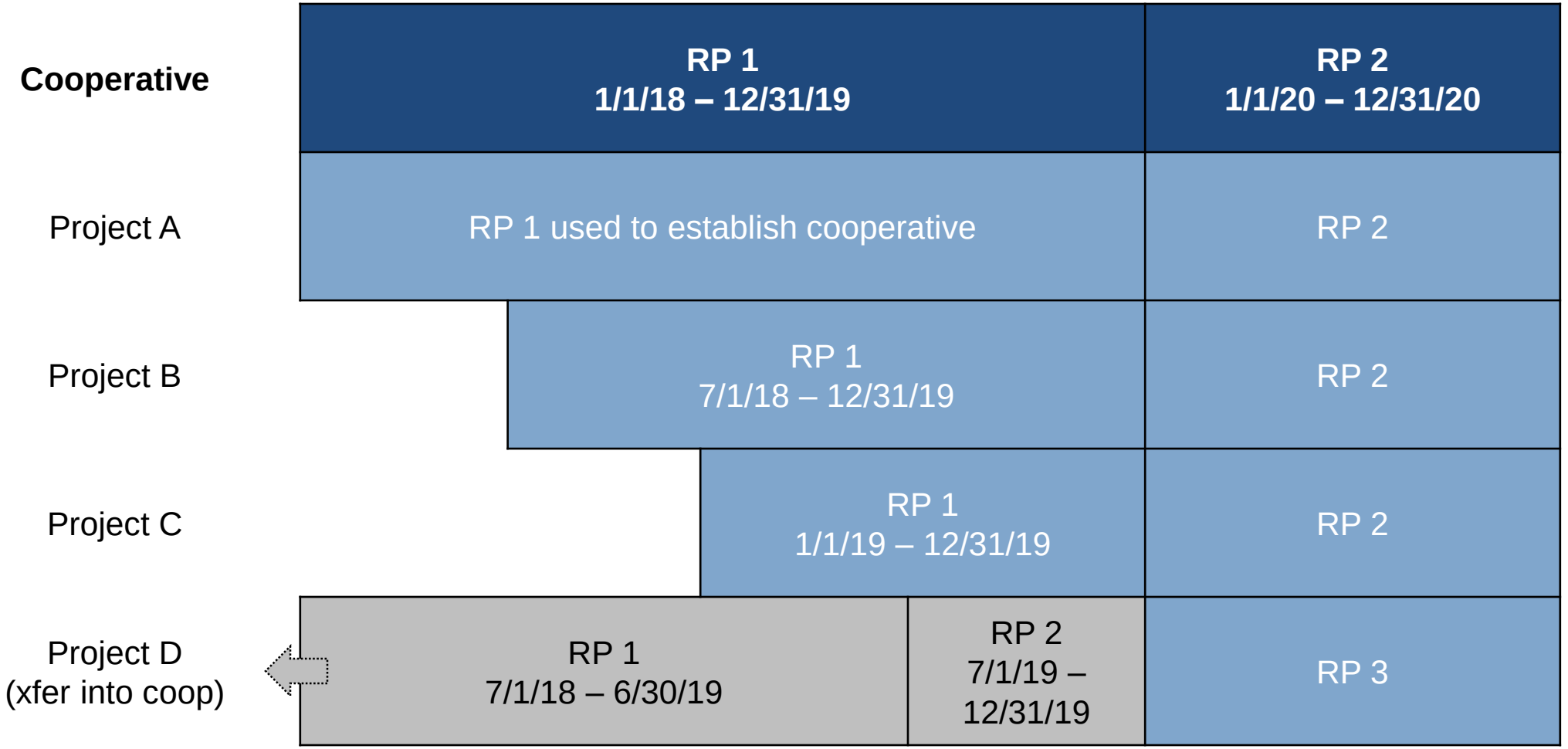
Reporting & verification cycle

- Reporting period (RP)
  - Initial RP may cover up to 24 months
  - Subsequent RPs may cover no more than 12 months
- Verification period (VP)
  - Initial verification period is one reporting period, beginning with the project start date
  - Subsequent VPs may cover up to 6 RPs, with interim monitoring reports in years without verification activities (similar to forestry)
- Calendar year cycle is recommended, but not required

Cooperative verification cycle

- Single verification period for cooperative
- For a project's first VP with the cooperative, it may start reporting at a date later than the other projects, but all projects end reporting on the same date
- Suggest CD use initial VP to get all projects coordinated on a single schedule for RPs and VPs
- If individual projects cannot meet protocol requirements, they can report zero CRTs and continue to be verified with the cooperative

Example cooperative verification cycle



NEXT STEPS

TWG review

- Please give particular focus to feedback on the following issues/sections:
  - Anywhere we've left a comment for your consideration
  - Real estate appraisal requirements (Sec 3.3.1)
  - 20-year minimum commitment
  - Will anyone ever opt for the TYA option?
  - Inclusion of accounting for organic fertilizer amendments (Sec 5.3.3)
  - Prevention of overgrazing (Sec 6.2.1)
  - Monitoring ecosystem health (Sec 6.4)

Next steps

- Please submit any additional comments/feedback in writing by **Tuesday, August 6th** (1 week from today)
- If you would like an individual phone call for discussion, let us know
- We would like to release the protocol for public comment by mid-August
  - 30 days for comments
  - Will include a public webinar
  - TWG members are welcome to submit comments again to have them made public
- Reserve Board will consider adoption in public session on October 16th
  - If adopted, project submittals will be accepted immediately

Thank you!

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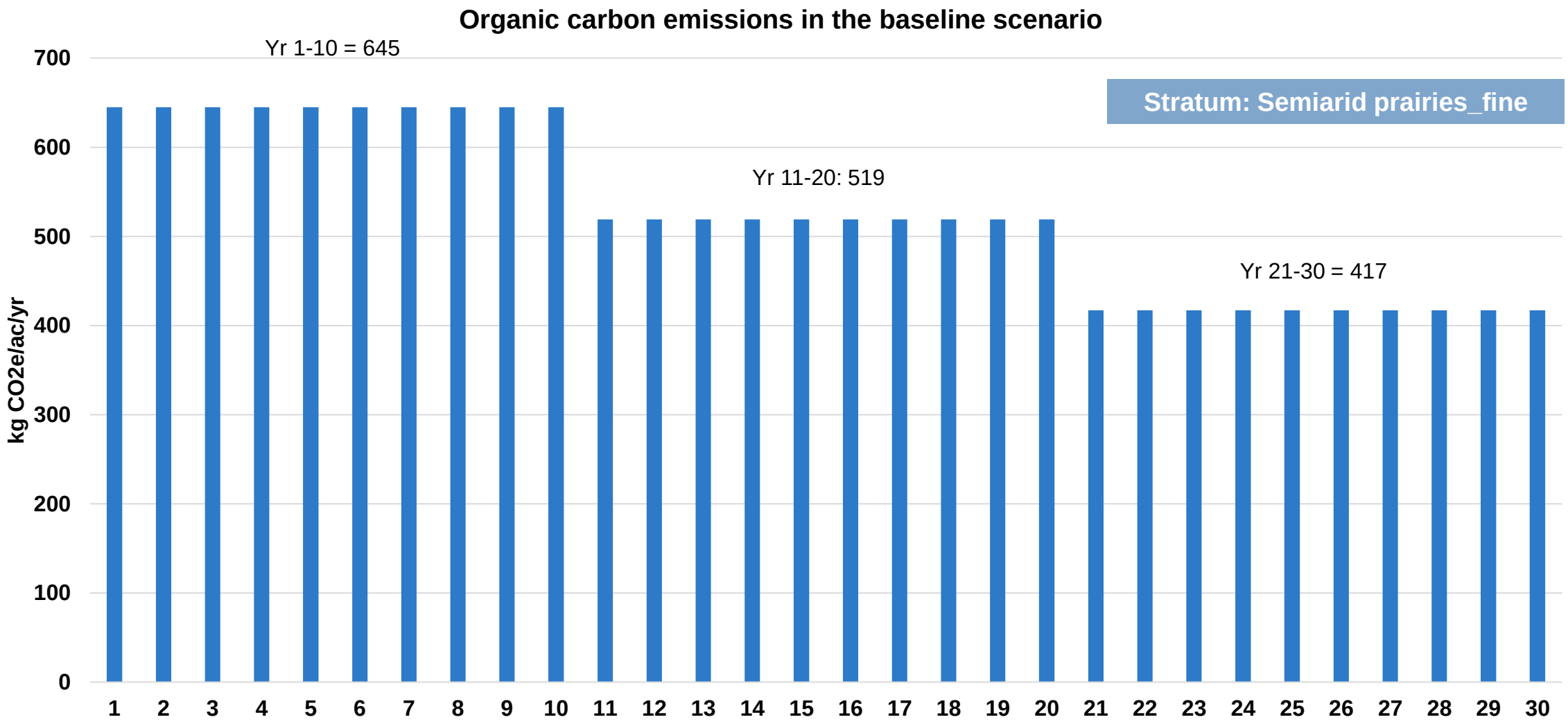
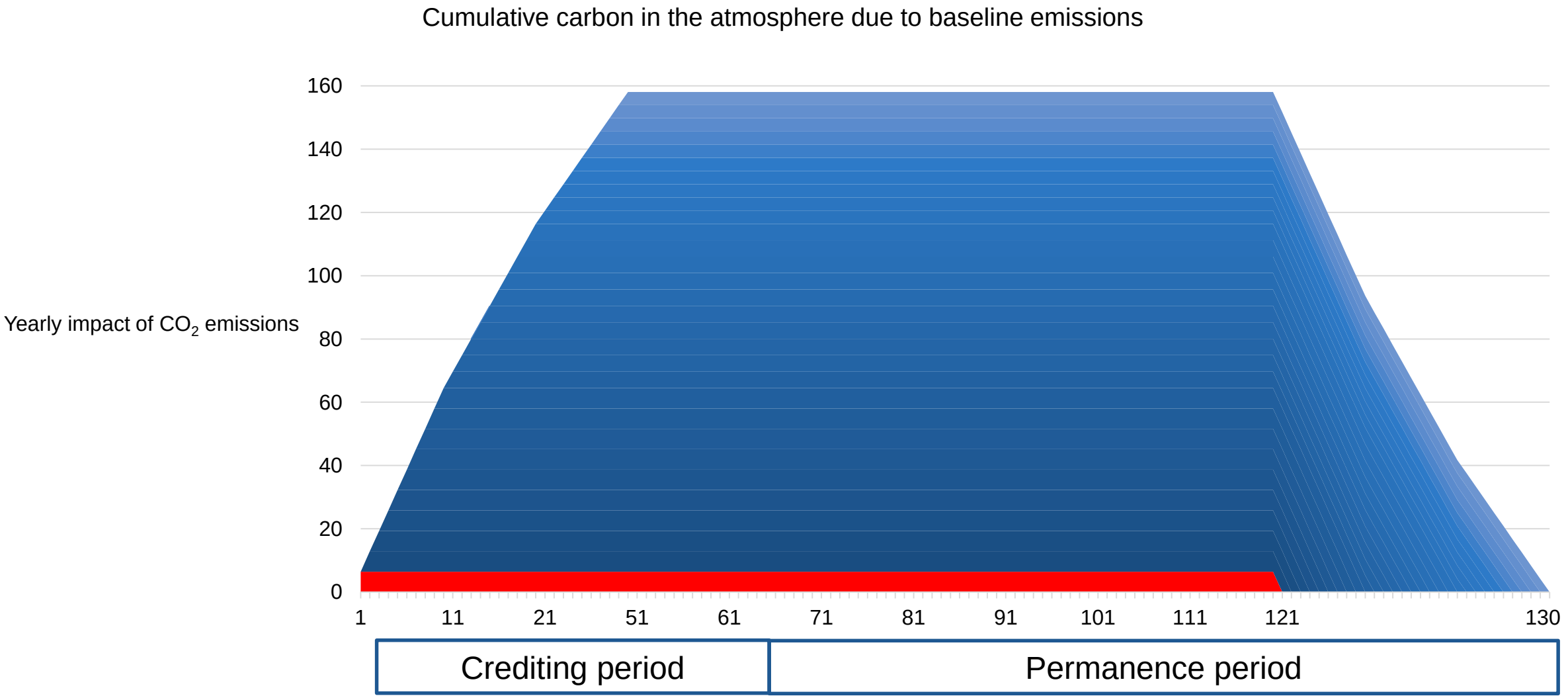
APPENDIX

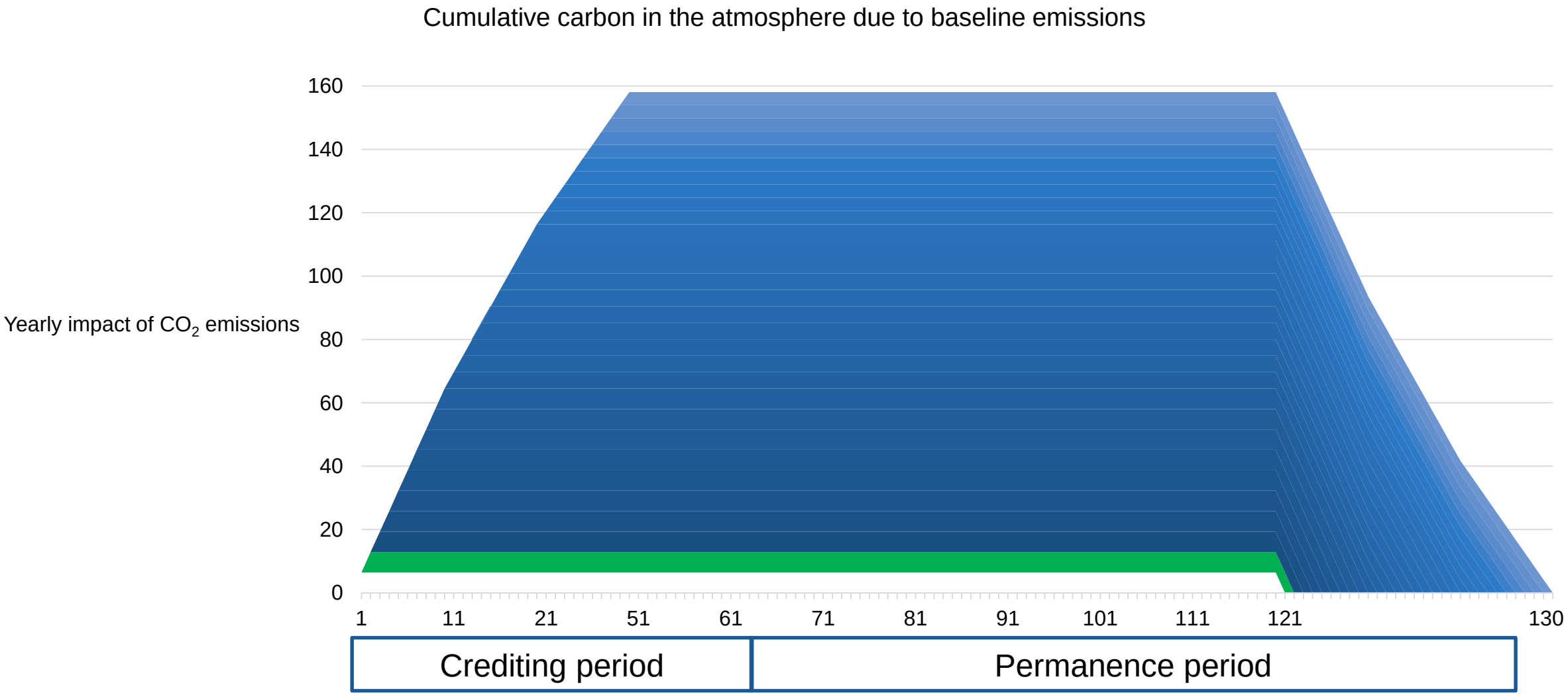
Organic carbon emissions in the baseline scenario



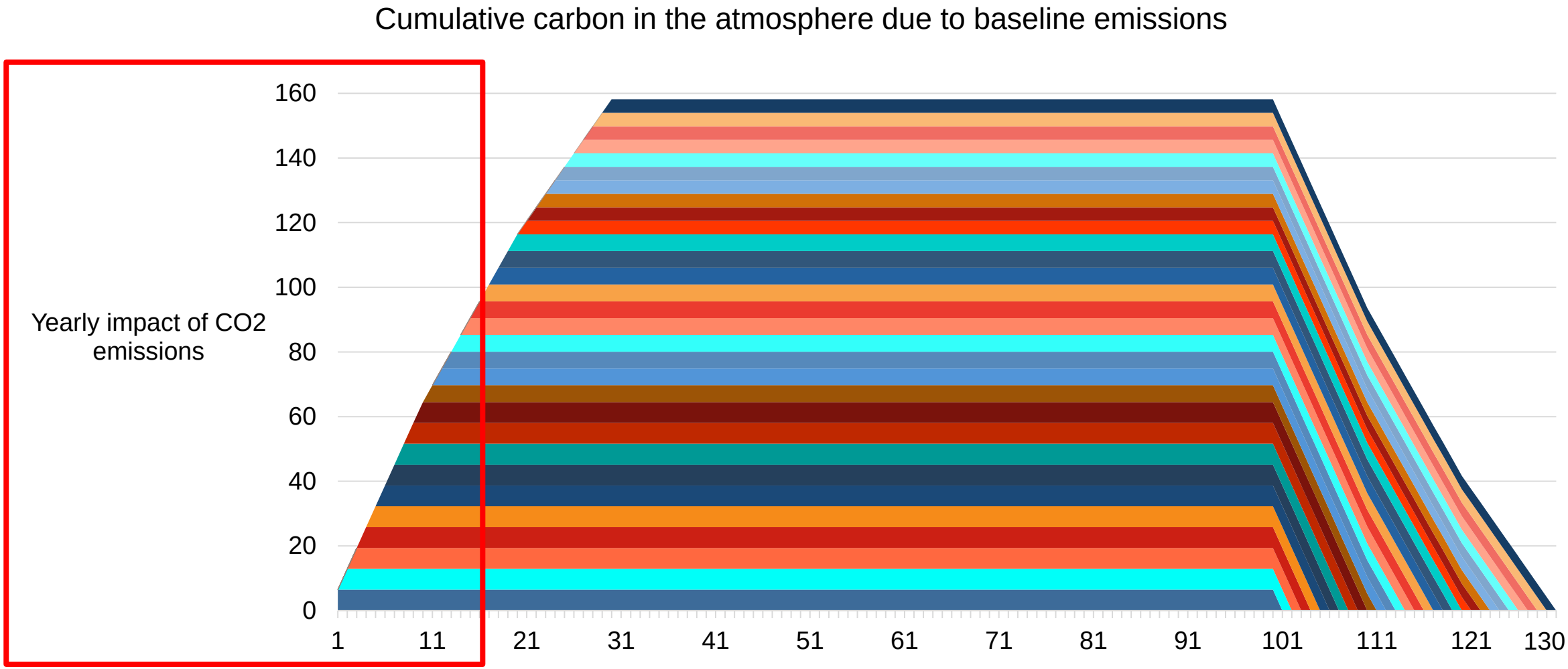
Credit issuance year 1 in Tonne-Tonne Accounting



Credit issuance year 2 in Tonne-Tonne Accounting



Tonne-Year Accounting in 15 first years



First 15 years

Credits issued under Tonne-Year Accounting