CLIMATE ACTION RESERVE

Soil Enrichment Version 2.0

Workgroup Meeting 3
May 29, 2024

Housekeeping

- Please keep yourselves muted unless / until you would like to speak
- Please use the raise your hand function when answering a question
- All other attendees/observers are in listen-only mode
- Observers are free to submit questions in the question box
  - **All attendees will be able to see questions submitted to the Q&A section, as well as comment on questions / up-vote questions**
- **For workgroup members submitting comments and questions via chat: Please change your message settings to send comments to Everyone**
- The slides and a recording of the presentation will be posted online

AGENDA

- **Project Definition** (1 hour)
  - Defining Project Activities
  - Defining Project Area
- **Start Date** (20 mins)
- **Break** (10 mins)
- **Cumulative Accounting** (1 hour including discussion)
- **Model & Soil Sampling Task Force** (15 mins)
- **Next steps** (15 mins)

PROJECT DEFINITION (SECTION 2.0)

Project Definition – areas of focus

- Continuing conversation from last meeting, we are focusing on the following areas under Project Definition that need further clarification/definitions:
  - Refining Project definition – require inclusion of SOC (?)
  - Defining Project Activities – provide examples of appropriate practice changes
  - Defining Project area
    - Tree canopy threshold
    - Native ecosystem definition

Section 2.2 Project Definition

Current language:

"… defined as the adoption of agricultural management practices that are intended to increase soil organic carbon (SOC) storage ***and/or*** decrease net emissions of CO2, CH4, and N2O from agricultural operations, as compared to the baseline.

Proposed language:

"…defined as the adoption of agricultural management practices that are intended to increase soil organic carbon (SOC) storage **with the option to also** decrease net emissions of CO2, CH4, and N2O from agricultural operations, as compared to the baseline."

- Add similar language under 2.2.1 Defining Project Activities?

Section 2.2.1 Defining the Project Activities

Current language:

Land management practices considered for soil enrichment projects include those which result in one or more changes to:

- Fertilizer (organic or inorganic) application; and/or,
- The application of soil amendments (organic or inorganic); and/or,
- Water management/irrigation; and/or,
- Tillage and/or residue management; and/or,
- Crop planting and harvesting (e.g., crop rotations, cover crops); and/or,
- Fossil fuel usage; and/or,
- Grazing practices and emissions.

Should activities be prioritized based on practices that explicitly effect SOC?

Project Activities – Example Scenarios

Scenario 1:

- Project consists of ~1,000 fields, with 700 fields implementing practice changes targeting N2O or CH4 reductions (rice), and 300 fields implementing changes targeting SOC accrual
  - All fields included in soil sampling of SOC

Scenario 2:

- Project consists of 500 fields of orchard crops. 20 fields implement alley cover cropping targeting SOC accrual, but all fields implement improved irrigation reducing fossil fuel usage.

How to determine eligibility based on project activities?

Project Definition (Section 2.0)

PROJECT AREA DEFINITIONS - GRASSLAND & CROPLAND, WOODY BIOMASS, NATIVE ECOSYSTEM

2.2 Project Definition

- "Soil enrichment projects must be located on land which is, as of the project start date, cropland or grassland (including managed rangeland and/or pastureland), and which remains in agricultural production throughout the crediting period."
  - **Intent of protocol to focus on cropland and grasslands – but need clearer definitions for these land classifications**
- "Projects shall not include areas which have been cleared of native ecosystems or other restored or protected areas (i.e., restored grassland) within the 10 years prior to the project start date."
  - **Clarify definition of "native ecosystems" (see also slides for Section 2.2.2)**
- "Project activities must not decrease carbon stocks in woody perennials on the project area."
  - **Expanded definition in Section 2.2.1 – expand here as well?**

Protocol - Glossary of Terms

- **Cropland:**

  "Arable and tillage land and agro-forestry systems where vegetation falls below the threshold used for the forest land category (>10% canopy cover)."

- **Grassland:**

  "Areas dominated by grasses with <10% tree canopy cover, including savannas (i.e., grasslands with scattered trees). Grasslands also include managed rangeland and pastureland that is not considered cropland where the primary land use is grazing, and which may also include grass-dominated systems managed for conservation or recreational purposes."

Proposed language from Grasslands Protocol:

- DRAFT language being considered under the Grasslands Protocol:

  "For the purposes of this protocol, grassland is defined as an area of land dominated by native or introduced grass species with little to no tree canopy. Other plant species may include woody shrubs, legumes, forbs, and other non-woody vegetation. **Tree canopy may not exceed 10% of the project land area in total. However, areas that exceed 10% tree canopy may be included in the project area up to 5 contiguous acres."**

- Alternatively, others have proposed:
  - Raising tree canopy cover threshold for grasslands from 10% to 30%, provided the project area has historically been grazed and the project activity includes improved grazing management.

- Potential for combination of the above approaches, given SEP definitions have different intent than Grasslands Protocol (avoided conversion)?

Removal of woody biomass

From Section 2.2.1 Defining the Project Activities:

- "Project activities must not result in long-term material decreases in carbon stocks in woody perennials on the project area**, but the removal of small volumes of woody biomass (such as the removal of trees along fence rows) is allowed.** Projects that employ some controls for woody species encroachment into grasslands will remain eligible, provided similar controls were present in the baseline."

  - **Ways to clarify this further?**

Native Ecosystem Definition

From Section 2.2.2 Defining the Project Area:

- The project area must adhere to the following criteria:
  - Projects may not include areas which have been cleared of **native ecosystems, including established and restored grasslands**, within the 10 years prior to the project start date. The prohibition on clearing native ecosystems does not include the removal of a small numbers of trees, such as the removal of trees along fence rows that is immaterial respective to project emission reductions.
    - **Define native ecosystems**
    - **More clearly define "removal of a small number of trees"**

CLIMATE ACTION RESERVE

START DATE

Project Start Date – Section 3.2

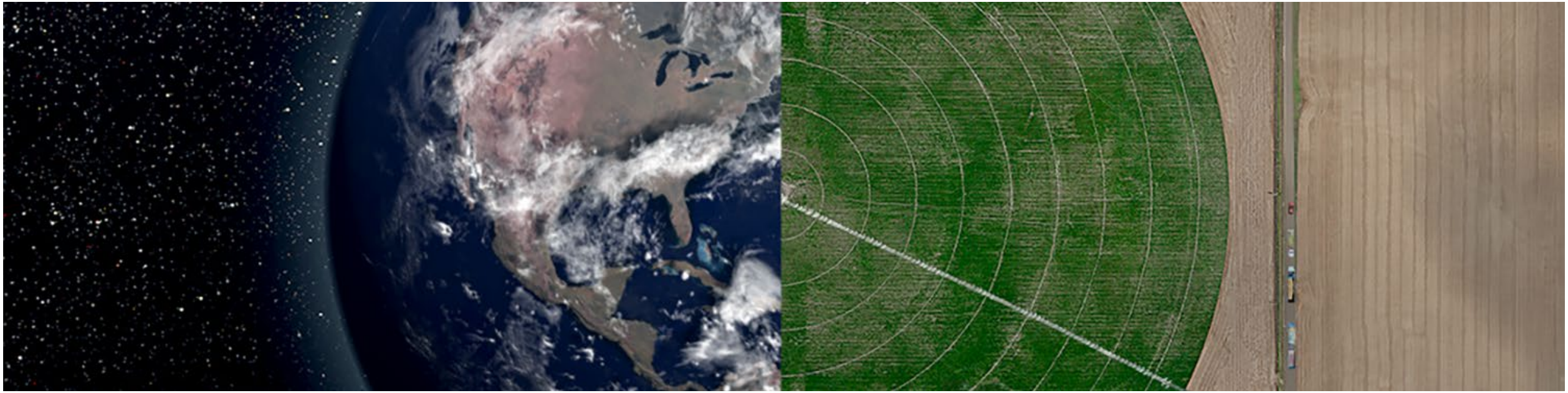
New fields may be added to projects if submitted to the Reserve within 12 months after the field start date

- Challenges with this approach - timing, administration and guidance
- Proposed alternatives:
  - Use commitment date (i.e. field contracts) to set deadline for eligibility of a field entering a project.
  - Change deadline from 12-months of field start date to contract signed prior to the end date of the field's initial cultivation cycle
  - Extend deadline – Following X number of cultivation cycles (plus stipulation not to exceed X number of months)
  - Align deadline to a different date than field start date?
- **How to ensure deadline is broad enough to encompass all agricultural systems?**

Project Start Date – Section 3.2

- Project Start Date is set by the earliest field start date
  - Earliest first day of a cultivation cycle during which an eligible practice was adopted
- To be eligible, new projects must be submitted to the Reserve within 12 months of the project start date.
  - **Keep this deadline or align with deadline for adding new fields to existing project?**
- **Add clarity regarding project start date potential to change depending on fields being brought in during verification?**
  - Current language (Section 2.2.3.1) : “New fields begin crediting at field start date or project-start date, depending on which is later”
  - Proposed language: “New fields begin crediting at their field start date. The project start date may change retroactively if a field is included in verification for the first time with an earlier start date that was submitted by the required deadline but not included in prior verifications.”

BREAK – 10 MIN



Cumulative Accounting

CAR Soil Enrichment Protocol v2.0 Working Group

indigo

May 29, 2024

Topics to cover

- Overview of cumulative accounting
- Considerations & implications for:
  - Modeling
  - Default equations
  - Uncertainty
  - Credit issuance + vintages
  - Reversals
  - Verification
- Optional vs required

Accounting options

1

- Discrete accounting for each period, picking up from where the previous period left off.

2

- Accounting over all reported periods (i.e., back to the start date), then ignoring results for previously-credited periods of time.

- These approaches work with SEP v1.1
- Most carbon projects employ Option 1
- Indigo uses Option 2 for CAR1459

$$CRT_t = \left(ER_{Rev,t} + ER_{Non-Rev,t}\right) \times (1 - UD_t)$$

3

- Accounting over all reported periods and adjusting new issuances to reflect updated results from past periods.

"Cumulative accounting"

$$CRT_t = \left[\left(CER_{Rev,t} + CER_{Non-Rev,t}\right) \times (1 - CUD_t)\right] - CRT_{t-1}$$

Accounting example

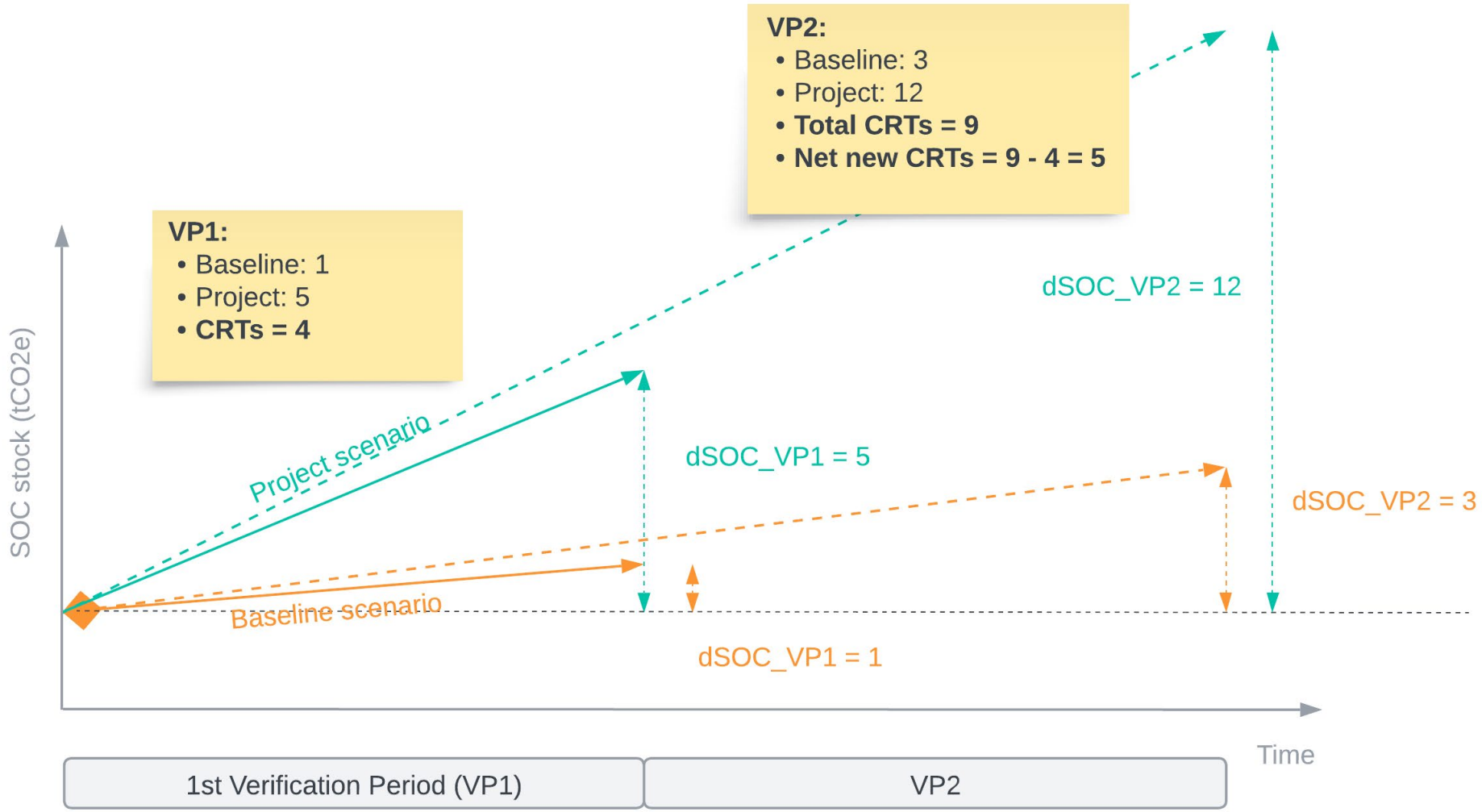
SEP v1.1

	VP1	VP2	CUMULATIVE
Total ERs in the verification period	100	100	200
Uncertainty deduction	50%	50%	
CRTs to be issued	50	50	100

Cumulative accounting 1

	VP1	VP2	CUMULATIVE
Total ERs in the verification period	100	**200**	200
Uncertainty deduction	50%	**30%**	
CRTs issued prior to current VP	-	50	
CRTs to be issued	50	**90**	**140**

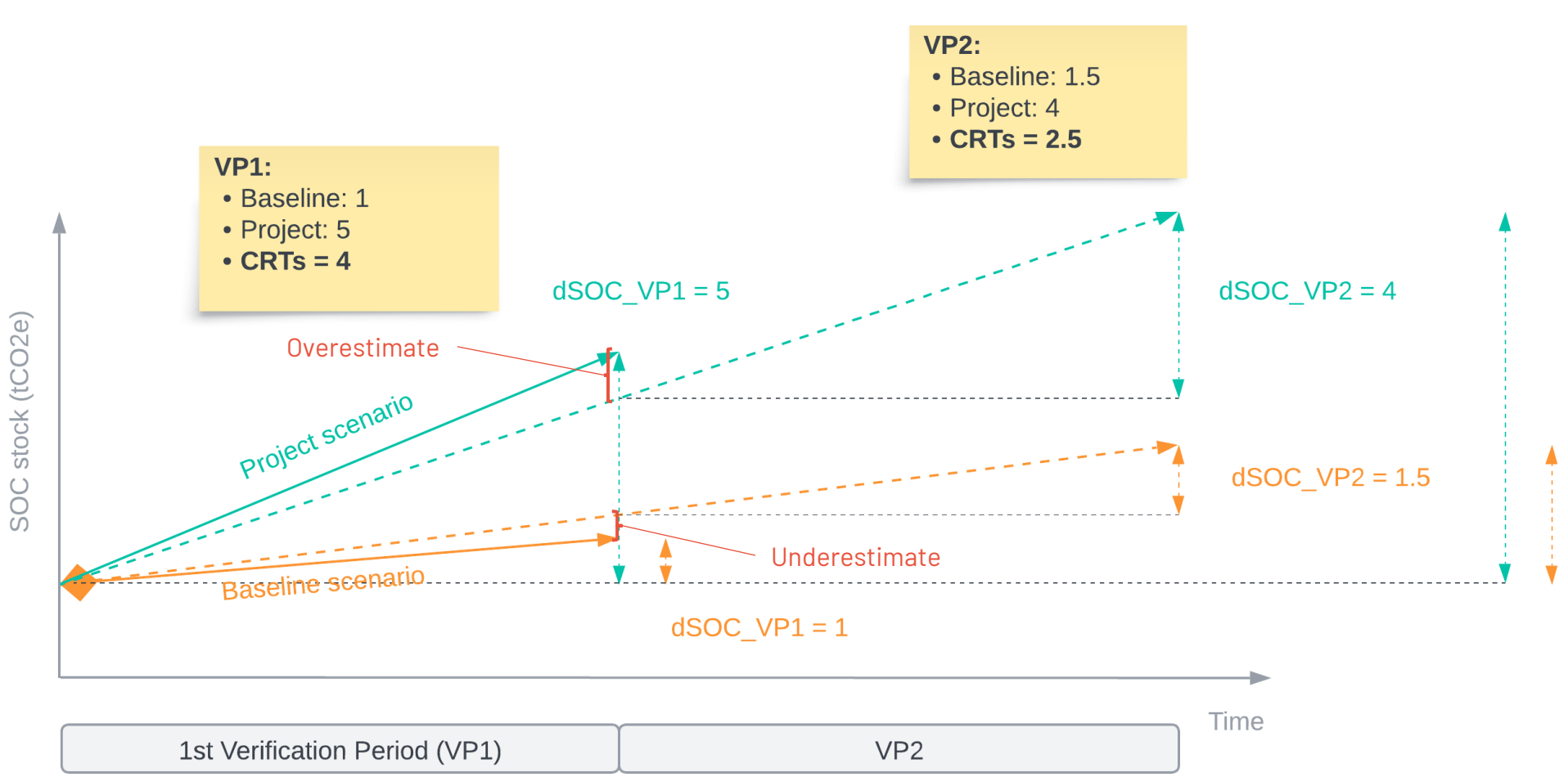
Overview of cumulative accounting



Note: This simplified example ignores the impact of reduced uncertainty

Comparison of accounting approaches (ex. 1)

Example 1: Underestimated baseline + overestimated project



SEP v1.1
VP1 CRTs = 4
VP2 CRTs = 2
Cumulative CRTs = 6

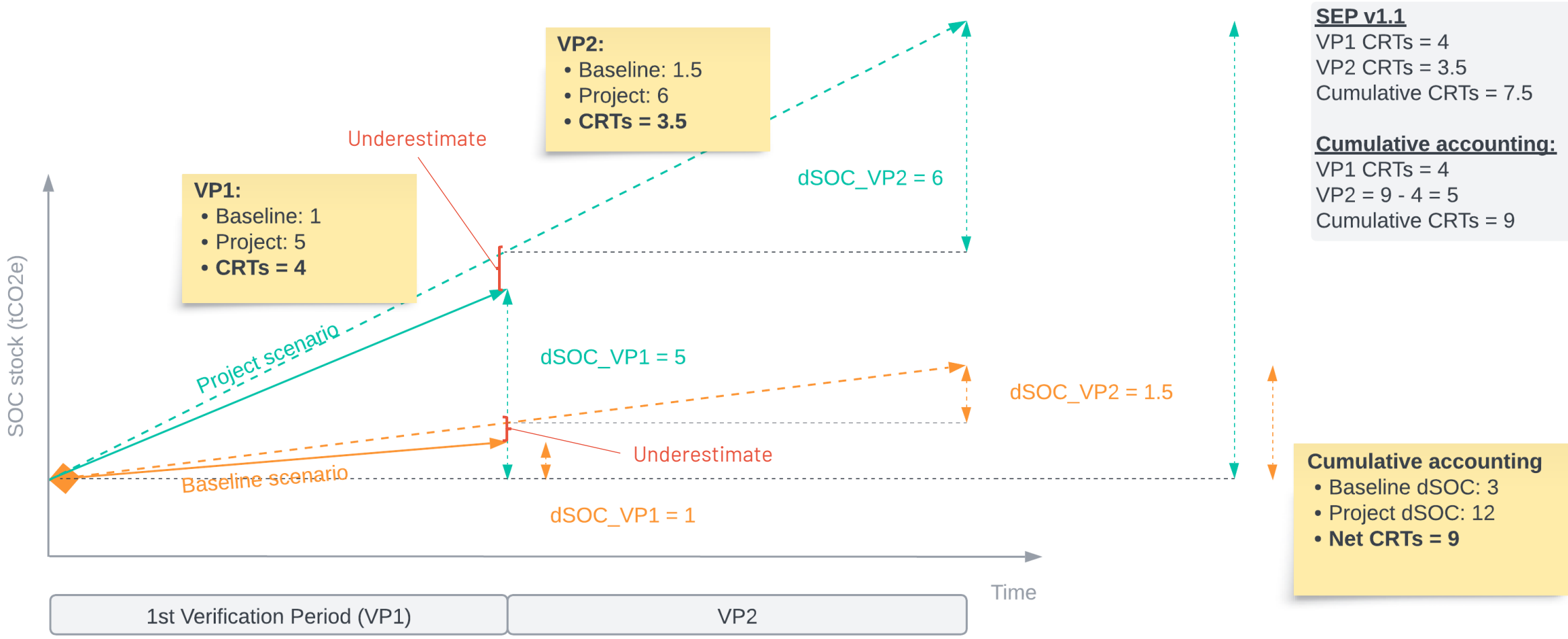
Cumulative accounting:
VP1 CRTs = 4
VP2 = 5 - 4 = 1
Cumulative CRTs = 5

Cumulative accounting
- Baseline dSOC: 3
- Project dSOC: 8
- **Net CRTs = 5**

Note: This simplified example ignores the impact of reduced uncertainty

Comparison of accounting approaches (ex. 2)

Example 2: Underestimated baseline + project



SEP v1.1
VP1 CRTs = 4
VP2 CRTs = 3.5
Cumulative CRTs = 7.5

Cumulative accounting:
VP1 CRTs = 4
VP2 = 9 - 4 = 5
Cumulative CRTs = 9

Cumulative accounting
- Baseline dSOC: 3
- Project dSOC: 12
- **Net CRTs = 9**

Note: This simplified example ignores the impact of reduced uncertainty

Why not just resume modeling from the endpoint of the prior period?

(i.e., why use accounting approach 2 rather than approach 1?)

- It could be that the simulation of the last period was found to be problematic (e.g., a bug was later found) or outdated (e.g., a new calibration of the model is available).
  - Better to re-run the whole simulation rather than try to continue simulating from a problematic/outdated SOC estimate.
- It simplifies the modeling task to re-run the whole simulation each time rather than try to resume where an old model run left off in a simulation run years ago.

Impact on uncertainty

- SOC stock at the beginning of the crediting period is the same in project and baseline scenarios, so **the error cancels out**.
  - However, the uncertainty in the results at the end of the first verification does not cancel out
  - In subsequent verifications, this ending uncertainty becomes starting uncertainty, plus you have new amounts of ending uncertainty for the new verification period
  - **Cumulative accounting avoids the effect of uncertainty from the prior period on the current period**
- The errors of daily stock changes are somewhat independent of each other, so aggregating over more days leads to some reduction in uncertainty.

Impact on vintages

For simplicity, we recommend applying current vintages to any CRTs that are generated under cumulative accounting related to vintages from prior verifications

- It would be a mess to be issuing tiny amounts of CRTs from a “tail” of vintages that may be several years (or decades) long
- This is conservative, given the time value of storage in the reversal equation
  - Assigning later vintages to the CRTs increases the reversal liability on those CRTs

Other questions

Question	Answer
Will this add more work in verification?	No. • The data, eligibility, etc. were all verified during the prior verification(s). The current verification will cover those items for the current period, along with the quantification approach for the current period (as is the case today). The difference is that the quant approach leverages data from prior periods. • The quant today *already* relies on data from the past during model spinup
Is this only for SOC, or would it include N2O, CH4, and CO2?	All GHGs are included.
What about when fields leave the project?	• The calculation only includes those fields for the period of time when they were active in the project (i.e., the field's crediting period). • So you capture any adjustments to past issuance for that field, but ignore any changes beyond the crediting period (monitoring for permanence is conducted separately).

MODEL AND SOIL SAMPLING TASK FORCE

Task Force Overview

- Created task force to start redlining more technical aspects of the protocol
  - Section 6.5 Soil Sampling and Testing Guidance
  - Requirements and Guidance for Model Calibration, Validation, Uncertainty, and Verification document
- Focus will be on collectively editing documents with occasional meetings
- Changes will be brought to the larger workgroup for review

Task Force Members

Organization (alphabetical)	Name	Nominating member
CIBO	Margaret Kosmala	Josiah McClellan
Environmental Defense Fund (EDF)	Jocelyn Lavallee / Emily Oldfield	
Grassroots Carbon LLC	Kabindra Adhikari	Henk Mooiweer
HabiTerre	Ben Chen	Jennifer Nelligan
Indigo Ag	Missy Motew	Max DuBuisson
Kateri	Kevin Tu	Robert Parkhurst
Perennial	David Schurman	Sami Osman
Regrow Ag	Beth Ziniti	Lucia von Reusner
Soil Health Institute (SHI)	Jason Ackerson	
The Nature Conservancy (TNC)	Negar Tafti	
Viresco Solutions	Brian McConkey	

Next Steps, Timelines & Expectations

- Aim to have initial meeting in June - will send out doodle pool to members shortly

- Other questions / input for the task force?

NEXT STEPS

Next Steps

- Email us with any feedback on topics discussed today
- Reach out any time to discuss protocol topics or process
- *Reserve Staff to identify priorities for discussion at next WG meeting*
- ***Next Workgroup Meeting TBD – June 2024 (Doodle Poll)***

Key contacts

Protocol development lead:

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CLIMATE ACTION RESERVE

THANK YOU!