

## 1 Introduction

The [California's Climate Action Reserve Forest Project Protocol](#) (FPP) provides requirements and guidance for quantifying the net

climate benefits of activities that sequester carbon on [forestland](#). The [protocol](#) (FPP) provides project eligibility rules; methods to calculate a project's net effects on greenhouse gas (GHG) emissions and removals of CO<sub>2</sub> from the atmosphere ("removals"); procedures for assessing the risk that carbon sequestered by a project may be reversed (i.e., released back to the atmosphere); and approaches for long term project monitoring and reporting. The goal of this protocol is to ensure that the net GHG reductions and removals caused by a project are accounted for in a complete, consistent, transparent, accurate, and conservative manner and may therefore be reported to the Climate Action Reserve (Reserve) as the basis for issuing carbon offset credits (called Climate Reserve Tonnes<sup>1</sup>, or CRTs).

The Reserve is a national offsets program working to ensure integrity, transparency and financial value in the North American carbon market. It does this by establishing regulatory quality [standards](#) for the development, quantification and verification of GHG emissions

reduction projects in North America; issuing carbon offset credits known as CRTs generated from such projects; and tracking the transaction of credits over time in a transparent, publicly accessible system.

Adherence to the Reserve's high standards ensures that emissions reductions associated with projects are real, permanent and additional, thereby instilling confidence in the environmental benefit, credibility and efficiency of the U.S. carbon market. Only those Forest Projects that are eligible under and comply with the FPP may be registered with the Reserve. Section 9 of this protocol provides requirements and guidance for verifying the performance of project activities and their associated GHG reductions and removals reported to the Reserve.

### 1.1 About Forests, Carbon Dioxide, and Climate Change

Forests have the capacity to both emit and sequester carbon dioxide (CO<sub>2</sub>), a leading greenhouse gas that contributes to climate change. Trees, through the process of photosynthesis, naturally absorb CO<sub>2</sub> from the atmosphere and store the [carbon in the form of complex molecules that forms the tree's gas as carbon in their biomass](#), i.e., trunk (bole), leaves, branches, and roots. Carbon is also stored in the soils that support the forest, [as well as the understory plants and litter on the forest floor](#). Wood products that are harvested from forests can also provide long term storage of carbon.

When trees are disturbed, through events like fire, disease, pests or harvest, [some](#) of their [stored biomass carbon may oxidize](#) or decay over [relatively short periods of time](#) releasing [the stored CO<sub>2</sub> carbon as CO<sub>2</sub> back](#) into the atmosphere. The quantity and rate of CO<sub>2</sub> that is emitted [may vary](#), depending on the circumstances of the disturbance.

Forests function as reservoirs in storing CO<sub>2</sub>. Depending on how forests are managed, [if](#) impacted by natural events, [and or human actions](#), they can be a net source of emissions, resulting in a decrease to the reservoir, or a net sink, resulting in an increase of CO<sub>2</sub> to the reservoir. In other words,

<sup>1</sup> ["One CRT is equal to 1,000 kilograms of carbon dioxide equivalents" or similar qualifier.](#)

**Commented [JAM1]:** Some readers will be from other countries and might want to consider using this document, so placing its origin would kind of help set the stage, in my opinion.

**Commented [JAM2]:** "in North America"? Consider defining specific latitudes with a footnote. Would it be useful to put three words about forest type or some general qualifier?

**Commented [JAM3]:** and technical?

**Commented [JAM4]:** I tried to mansplain the photosynthesis process a touch, I think it can use some better wording to make the process and its importance clear, without making the text longer... I took some of the condensed thoughts from: Introduction to Geochemistry by Konrad Krauskoff, McGraw-Hill

**Commented [JAM5]:** This part is not very clear to me. Is this storage quantifiable or plays a role in the quantification process? If not, I would say consider excluding.

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**Commented [JAM6]:** Because in general terms, I'm saying in general, biomass+O<sub>2</sub>+fire=> CO<sub>2</sub> + H<sub>2</sub>O+ etc.

CO<sub>2</sub> is not stored as such in trees, its stored as complex carbon containing molecules.

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**Commented [JAM7]:** Is there a technical difference between emit and release or they are being used interchangeably?

**Commented [JAM8]:** See prior comment

**Commented [JAM9]:** Meaning that if I intentionally or unintentionally cause a big forest fire my actions impacted the forest's carbon balance.

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forests may have a net negative or net positive impact on the climate.

Through sustainable management and protection, forests can also play a positive and significant role to help address global climate change. The Reserve's FPP is designed to address the forest sector's unique capacity to sequester, store, and emit CO<sub>2</sub> and to facilitate the positive role that forests can play to address climate change.

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