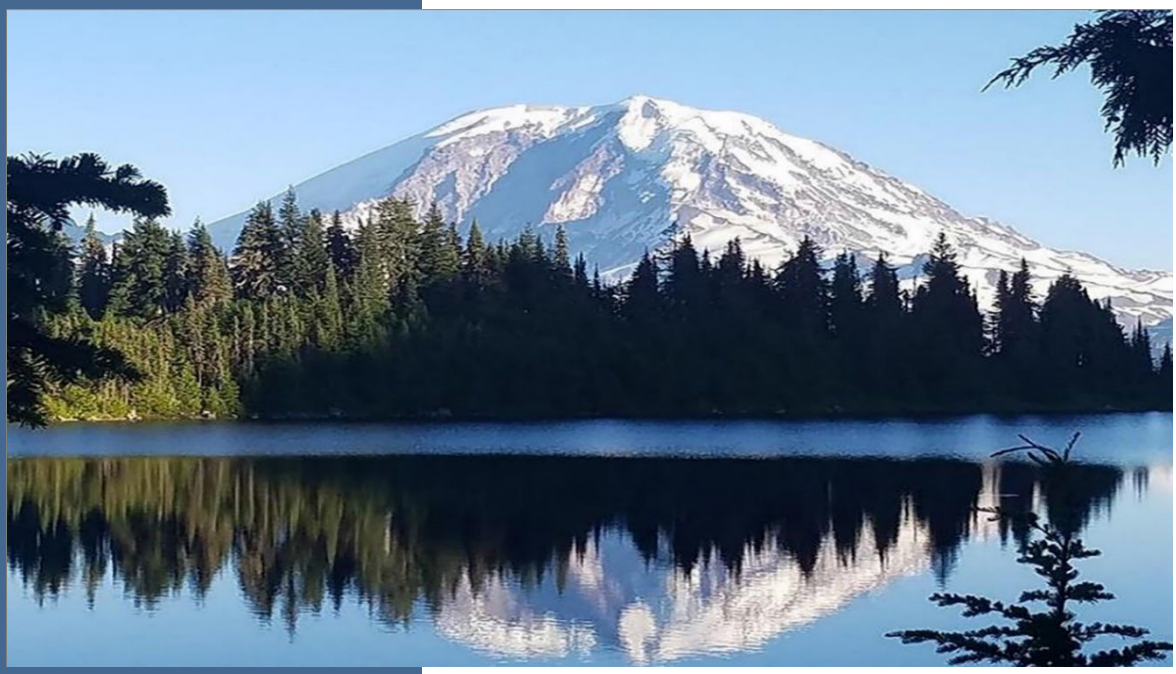

COMET-Planner User Guide

Emissions Modeling for Agricultural and Riparian Land Use Modification

By

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From

Climate Pollution Reduction Program

Washington State Department of Ecology

Olympia, Washington

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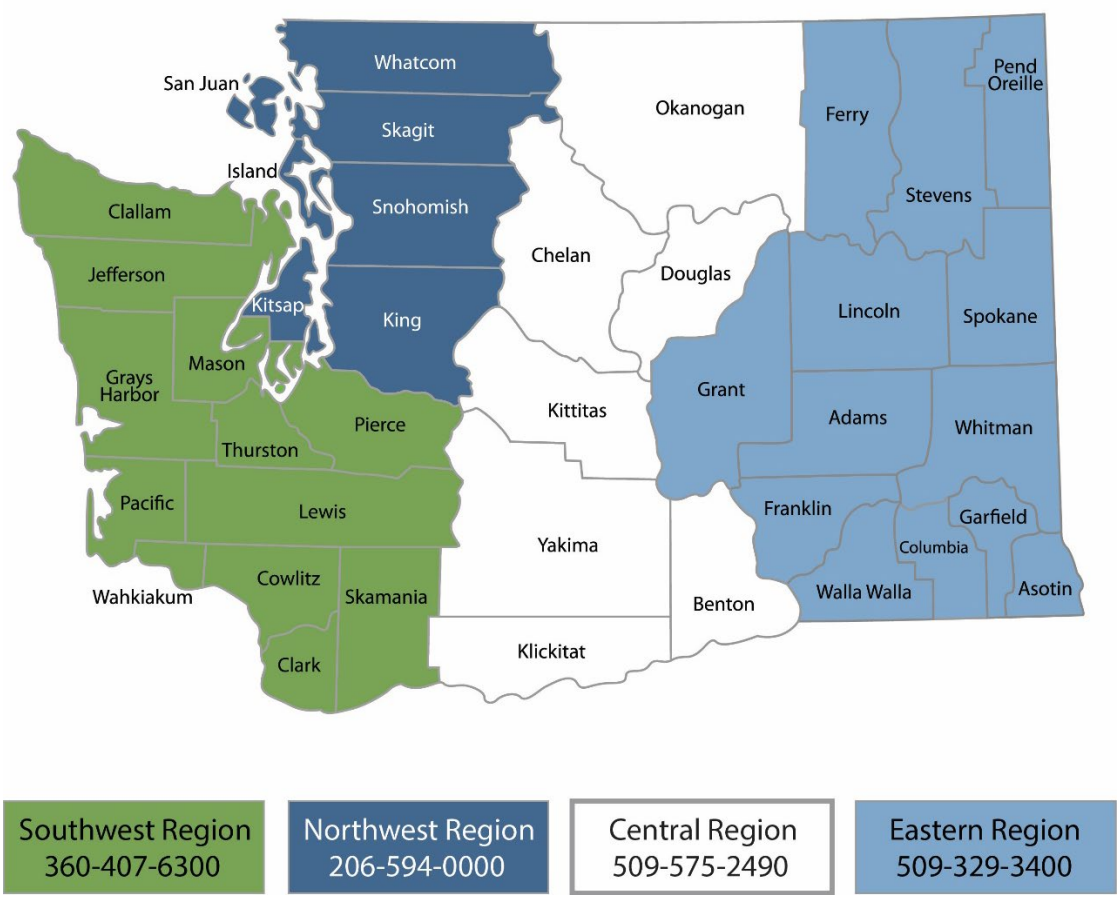
[1] www.ecology.wa.gov/contact

Department of Ecology's Regional Offices

Map of Counties Served



Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

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Table of Contents

List of Acronyms and Abbreviations

Acronym	Term
CCA	Climate Commitment Act, the program
COMET	CarbOn Management & Emissions Tool
CPRP	Climate Pollution Reduction Program
$MTCO_2e$	Metric Ton of Carbon Dioxide equivalent
NRCS	Natural Resources Conservation Service
USDA	United States Department of Agriculture

List of Definitions

Term	Definition
Co-benefit	A social, economic, and/or environmental benefit as a result of the CCA funded project in addition to the greenhouse gas benefit.
CO_2 equivalent	A unit for comparing the atmospheric warming potential of various greenhouse gasses via how much CO_2 it would take to produce a similar impact.

Section A. Introduction

Washington State's Climate Commitment Act (CCA) is a statewide initiative that puts billions of Cap-and-Invest dollars to work. These funds promote reduce climate impacts by facilitating reductions in greenhouse gas emissions; promote climate resilience by improving public health and the environment; and invest in overburdened communities, Tribes, and low-income households. Funding from the CCA accounts come with reporting obligations including whether they benefit vulnerable populations and overburdened communities, benefit Tribes, and reporting on emissions reductions compared to a baseline of the scenario where the investments were not made.

For CCA funded projects that do reduce emissions, an estimation of emissions reduced compared to the baseline must be made. This document includes guidance on how to estimate the net greenhouse gas reductions for CCA funded projects that modify agricultural practices or restore riparian areas. For complete documentation on agricultural practices the COMET-Planner covers, please see the table available online.[2]

The Department of Ecology adopted the COMET-Planner tool from the United States Department of Agriculture (USDA) for emissions reduction accounting purposes relevant to land use modifications in agriculture and riparian restoration. This CCA Agricultural and Land Use Modifications User Guide provides instructions and background information for estimating the greenhouse gas benefit of CCA investments that reduce emissions resulting from agriculture and other land use modification.

The COMET-Planner Calculator Tool was developed by the USDA in partnership with Colorado State University. The COMET-Planner webpage[3] provides a link to step-by-step user guide with a project example, and outlines documentation requirements. Projects will report the total greenhouse gas reductions estimated using the COMET-Planner Tool as well as the total leveraged cost per metric ton carbon dioxide equivalent (MTCO2e) reduced.

Projects will also report the following key variables from Agricultural and Land Use Modification projects:

- Total project cost
- Other sources of funding
- Number of years CCA funding is required to complete the project

We encourage agencies to additionally report co-benefits associated with the project that extend beyond reducing emissions.

[2] https://storage.googleapis.com/comet-planner-public-assets/fiftyStates/pdfs/NRCS_RankingTools.pdf
[3] http://comet-planner.com

About the COMET-Planner

This methodology uses the USDA COMET-Planner to estimate carbon sequestration from changes in agricultural land use as well as restoring degraded streambanks with woody plantings. Agencies must use the COMET-Planner to estimate the annual greenhouse gas reductions of CCA funded projects where applicable. COMET-Planner is a web-based tool available at: www.comet-planner.com.

Colorado State University and the United States Department of Agriculture (USDA) developed COMET-Planner, derived from the COMET-Farm model[4], to evaluate greenhouse gas carbon sequestration from the implementation of conservation practices on natural and working lands[5]. COMET-Planner estimates are generalized by multi-county USDA Major Land Resource Areas and include on-site activities only. COMET-Planner greenhouse gas benefit estimates for riparian restoration are derived from United States Forest Service Forest Inventory and Analysis database woody bioaccumulation rates[6], USDA entity-scale greenhouse gas inventory carbon stock values[7], and Intergovernmental Plan on Climate Change stock change methods[8].

Project Types/Use Cases

This tool was developed by the USDA for a variety of emissions reducing interventions to land use. The following types of lands are supported for emissions reduction accounting:

- Cropland management
- Grazing lands
- Conversion of cropland to herbaceous cover
- Restoration of disturbed ecosystems (such as wetlands or riparian buffers)
- Woody plantings

For a complete list of supported emissions reducing interventions, please see the Natural Resource Conservation Service (NRCS) *Practice Standards for Greenhouse Gas Emission Reduction and Carbon Sequestration*[9].

[4] Colorado State University and the United States Department of Agriculture. COMET-Farm. April 2019. http://cometfarm.nrel.colostate.edu/.
[5] Colorado State University and the United States Department of Agriculture. COMET-Planner Report. April 2019. http://bfuels.nrel.colostate.edu/beta/COMET-Planner_Report_Final.pdf.
[6] United States Forest Service. Forestry Inventory and Analysis. 2019. https://www.fia.fs.ffed.us/.
[7] United States Department of Agriculture. Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-scale inventory. July 2014. https://www.usda.gov/oce/climate_change/Quantifying_GHG/USDATB1939_07072014.pdf.
[8] Intergovernmental Plan on Climate Change. 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use. 2006. https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html.
[9] https://storage.googleapis.com/comet-planner-public-assets/fiftyStates/pdfs/NRCS_RankingTools.pdf

Summary of inputs/outputs for the COMET-Planner

The COMET-Planner requires the following data to be readily available for a project to obtain an emissions estimate from the tool.

- Project name, state, and county
- Classification of conservation practices applied that best describes the project, between:
    - Cropland management
    - Grazing lands
    - Cropland to herbaceous cover
    - Restoration of disturbed lands
    - Woody plantings
- Conservation Practice Standard (CPS) code (available in tool) and how it was implemented
- Acreage of land the practice was applied to

The COMET-Planner calculates the following metrics for use in CCA Funds Reporting. Outputs that are not used for CCA Funds Reporting are italicized.

- *Carbon dioxide reductions in $MTCO_2e$*
- *Nitrous oxide reductions in $MTCO_2e$*
- *Methane reductions in $MTCO_2e$*
- Total reduced $MTCO_2e$ – Output for CCA Reporting

Program Assistance

Recipients should use the following resources for additional questions and comments:

- For more information on Ecology's efforts to support agencies in reporting on expenditures from CCA accounts see: CCA account spending & funds reporting - Washington State Department of Ecology
- Questions about this user guide and about how to use the COMET-Planner Calculator Tool should be sent to olivia.mcgoldrick@ecy.wa.gov

Section B. How to use this tool for CCA Funds Reporting

The following section provides details on the methods supporting greenhouse gas benefits in the COMET-Planner tool.

Using the COMET-Planner

Methods used in the COMET Planner for estimating greenhouse gas benefit of agricultural land use modifications and riparian restoration projects are provided in this section. These methods account for carbon sequestration from woody plantings and soil in restored areas.

For guidance on using the COMET-Planner tool, please consult the Start Using COMET-Planner guide[10]. The tool comes with thorough documentation and user guides, and this information will not be repeated in this document. While the help page states the COMET-Planner emissions estimates are for planning purposes and fail to consider site specific conditions, CPRP lacks staff capacity to develop a more accurate calculator for emissions reduction reporting purposes at this time. While guidance within the tool states its use is for planning purposes only, the methods work for acquiring an emissions estimate for funded projects and are suitable for this report.

If an agency has the ability to develop a more preferred tool for emissions calculations for their CCA funded agricultural or land use modifications project, please contact Olivia McGoldrick (olivia.mcgoldrick@ecy.wa.gov) for approval of alternative greenhouse gas calculation methods.

[10] https://storage.googleapis.com/comet-planner-public-assets/fiftyStates/pdfs/Start_COMET-Planner.pdf

Entering COMET-Planner outputs into CCA funds reporting template

After completing the COMET-Planner inputs, total projected emissions can be pulled from the COMET-Planner results section, depicted below in Figure 1.

Approximate Carbon Sequestration and Greenhouse Gas Emission Reductions*

(tonnes CO_2 equivalent per year)

NRCS Conservation Practices	Acreage	Carbon Dioxide	Nitrous Oxide	Methane	Total CO_2 Equivalent
Restore Degraded Riparian Areas by Planting Woody Plants	20 ac	44	0	N.E.**	44
Restore Highly Disturbed Areas by Planting Permanent Vegetative Cover	20 ac	38	0	N.E.**	38
Totals	40	82	0	0	82

Unless proration is necessary, this will be the value you enter into the Funds Reporting Template Ecology provided to agencies. In certain cases, agencies must prorate the total project emissions reductions before entering it into the reporting template. Guidelines for when to prorate can be found in the following section.

When to prorate emissions reductions

Following the FY24 reporting cycle, Ecology reviewed its initial guidance on proration for emissions reduction projects that include non-CCA funding sources. The review concluded that, to better align with best practices from other agencies, prorating based on the portion of CCA funding was not necessary for accurate greenhouse gas emissions reduction reporting.

As a result, for the 2025 reporting year, Ecology will adopt a reporting methodology consistent with the approaches used by the Washington Joint Transportation Commission, the California Air Resources Board (CARB), and other agencies that support a leveraged analysis of emissions reductions achieved through combined CCA and non-CCA investments. This approach to calculating cost per ton of emissions reduced enables Ecology to make better use of tools and methodologies used by other agencies and organizations, streamlining our data collection process.

Proration is still required in some cases. If a CCA funded project:

- Acquires its CCA funding from multiple state agencies OR
- Is expected to take multiple years of CCA funding to complete the project

In these cases, proration of the total estimated MTCO2e reduced by the project is necessary to double-counting the impact of CCA funds.

Proration for projects receiving CCA funds via multiple agencies

It is the responsibility of agencies funding projects to determine whether their projects are funded by multiple agencies from CCA accounts. The following variables are necessary to conduct a proration of the estimated total emissions reductions to be split between agencies when reporting:

- G_{total} = The total emissions reductions estimated to be achieved by the project
- C_A = The expended CCA dollars on the project by Agency A
- C_B = The expended CCA dollars on the project by Agency B

For Agency A to calculate what emissions value to enter into their reporting spreadsheet (G_A), the following function can be used:

$$G_A = G_{total} * \frac{C_A}{C_A + C_B}$$

For Agency B, the calculation can simply be flipped for subscripts between agencies A and B:

$$G_B = G_{total} * \frac{C_B}{C_A + C_B}$$

After obtaining the value of emissions reduced that each agency will report on their respective reporting spreadsheets (column X), the cost per emissions reduced metric will be calculated the same as usual. A good way to check the calculation is to see if agencies A and B have the same cost/emissions reduced value.

Proration for projects expending CCA dollars over multiple fiscal years

Some larger infrastructure projects will require multiple rounds of CCA funding across several fiscal years. In this scenario, the total emissions expected to be reduced by a project must be prorated by the total funding across all fiscal years CCA funding is invested, past present and future. This will require some estimation work based on total expected project cost and what portion of that total cost is anticipated to be CCA funded.

The following variables are necessary to prorate the total estimated emissions reductions of a project across multiple years of funding:

- G_{total} = The total emissions reductions estimated to be achieved by the project
- C_{past} = Total expenditure from CCA funding sources in prior fiscal years
- $C_{present}$ = Total expenditure from CCA funding sources in the fiscal year being reported on
- C_{future} = Total anticipated CCA funding to be expended to complete the project

C_{past} can be obtained using prior report data or reviewing financial records for the project. C_{future} will need to be estimated -- Ecology recommends agencies review the percentage of the project funded from CCA accounts up to the present, and then apply that percentage to the anticipated remaining project cost after the current fiscal year.

To calculate the portion of the total emissions reduction of a multi-year project, the following function can be used:

$$G_{present} = G_{total} * \frac{C_{present}}{C_{past} + C_{present} + C_{future}}$$

Proration for multi-year projects funded by multiple agencies

In rare cases, a project may be granted CCA funding from multiple agencies and require multiple years of CCA funding to complete. When this is the case, both prorations methods must be conducted. Reusing the variables from before, the following functions can be used to get the emissions estimate for agency A.

We can first assume, that $C_{present}$ is equivalent to the sum of CCA funds expended by both agency A and B. Given CCA funds can only come from state agencies, the total amount of CCA funding for the present fiscal year being reported on will always be the sum of CCA funding each agency expends on the same project.

$$C_{present} = C_A + C_B$$

To get the prorated emissions value that agency A would report to Ecology in our template (G_A), the following function can be used:

$$G_A = G_{total} * \frac{C_A}{C_{past} + C_{present} + C_{future}}$$

If you have any questions about prorating emissions reductions for reporting, please contact Olivia McGoldrick or the CCA Reporting Email. Thank you.

Section C. References

The following references were used in the development of this user guide and the COMET-Planner Calculator Tool.

California Air Resources Board: https://ww2.arb.ca.gov/resources/documents/california-climate-investments-quantification-benefits-and-reporting-materials

NRCS COMET-Planner User Guide: https://storage.googleapis.com/comet-planner-public-assets/fiftyStates/pdfs/Start_COMET-Planner.pdf

NRCS Practice Standards for Greenhouse Gas Emission Reduction and Carbon Sequestration: https://storage.googleapis.com/comet-planner-public-assets/fiftyStates/pdfs/NRCS_RankingTools.pdf