California Air Resources Board

User Guide

California Air Resources Board
Funding Agricultural Replacement Measures for Emission Reductions Program

California Climate Investments

FINAL
March 24, 2025

Disclaimer:

- This tool is designed to calculate emission reductions, cost-effectiveness, and maximum grant amounts. While every effort has been exhausted and made to ensure that the calculations are accurate and consistent with applicable program guidelines, determining final project eligibility and verifying outputs generated by the tool is the responsibility of district staff.

Table of Contents

List of Acronyms and Abbreviations

Acronym	Term
bhp	brake horsepower
CARB	California Air Resources Board
CCI	California Climate Investments
DGE	diesel gallon equivalent
Diesel PM	diesel particulate matter
EER	energy efficiency ratio
FARMER	Funding Agricultural Replacement Measures for Emissions Reductions
g	gram
gal	gallon
GGRF	Greenhouse Gas Reduction Fund
GHG	greenhouse gas
HHD	heavy-heavy duty trucks
hp	horsepower
kWh	kilowatt-hour
lbs	pounds
MHD	medium-heavy duty trucks
mi	mile
MJ	megajoule
$MTCO_2e$	metric tons of carbon dioxide equivalent
NO_x	oxides of nitrogen
PM	particulate matter
$PM_{2.5}$	particulate matter with a diameter less than 2.5 micrometers
PM_{10}	particulate matter with a diameter less than 10 micrometers
ROG	reactive organic gas
scf	standard cubic foot
UTV	utility terrain vehicles
VMT	vehicle miles traveled
yr	year

List of Definitions

Term	Definition
Activity	Annual operation of the equipment, measured in annual average hours of use.
Baseline Equipment	Engine technology applied under normal business practices, such as the existing engine in a vehicle or equipment for replacements and repowers. In other words, the equipment that is currently owned/in operation that will be repowered, or scrapped and replaced with a newer, cleaner piece of equipment.
Co-benefit	A social, economic, or environmental benefit as a result of the proposed project in addition to the GHG reduction benefit.
Cost-effectiveness	A measure of the dollars provided to a project for each ton of covered emission reduction.
Cost-effectiveness Limit	The maximum amount of funds the FARMER Program will pay per weighted ton of emission reductions.
Deterioration	The increased exhaust emissions over time taking into account wear and tear on engines and emissions control devices.
Deterioration Life	A factor calculated from the period of time the engine has deteriorated, plus half the project life, used to estimate deterioration over the entire project life.
Deterioration Product	The result of multiplying the deterioration rate, equipment activity, and the deterioration life for a technology.
Deterioration Rate	Rates that estimate increased air pollutant emissions from engine wear and tear and other variables that increase engine emissions over time. On-road deterioration rates are established by weight class and engine model year, based on values in CARB's on-road emission inventory model. Off-road deterioration rates are established by horsepower and either Tier or model year, based on values in CARB category-specific inventory models.
Energy and Fuel Cost Savings	Changes in energy and fuel costs to the farmer or agricultural operation as a result of the project. Savings may be achieved by changing the quantity of energy or fuel used, conversion to an

Term	Definition
	alternative energy or fuel source/vehicle, or renewable energy or fuel generation to displace existing fuel purchases.
Intended Service Class	The service weight class that the vehicle will be used for. This is often, but not always, the same as the Gross Vehicle Weight Rating.
Key Variable	Project characteristics that contribute to a project's GHG emission reductions and signal an additional benefit (e.g., fossil fuel use reductions).
Load Factor	Average operational level of an engine in a given application as a fraction or percentage of the engine manufacturer's maximum rated horsepower.
Project Life	Number of years that the equipment will provide GHG emission reductions that can reasonably be achieved and assured. Sometimes referred to as "Quantification Period" or "Useful Life."
Project Type	For the purposes of the FARMER Quantification Methodology, eligible projects fall into five project types that meet the objectives program and for which there are methods to quantify GHG emission reductions.
Replacement Equipment	The new or repowered equipment(s) that replaces the use of the baseline equipment(s).
Repower	Replacement of the existing engine with an electric motor or a newer emission-certified engine instead of rebuilding the existing engine to its original specifications.

Section A. Introduction

The California Air Resources Board (CARB) Funding Agricultural Replacement Measures for Emissions Reductions (FARMER) program reduces greenhouse gas (GHG) emissions by replacing older, higher-emitting agricultural equipment/vehicles with newer, more efficient equipment/vehicles. For the FARMER Program, CARB staff developed the FARMER Benefits Calculator Tool and accompanying FARMER Quantification Methodology to provide guidance for estimating the GHG emission reductions and selected co-benefits of each proposed project type. This User Guide provides instructions for using the FARMER Benefits Calculator Tool (Section B) and presents some hypothetical example projects (Section C).

The FARMER Benefits Calculator Tool and supporting FARMER Quantification Methodology are available for download on the California Climate Investments Resources webpage. Methods and equations used in the FARMER Benefits Calculator Tool for estimating GHG emission reductions and air pollutant emission co-benefits are provided in the FARMER Quantification Methodology.

Updates

CARB staff periodically review each quantification methodology and benefits calculator tool to evaluate their effectiveness and update methodologies to make them more robust, user-friendly, and appropriate to the projects being quantified. The current FARMER Benefits Calculator Tool was updated to include:

- Updating air pollutant emission factors, load factors, and cost-effectiveness and funding limits per the 2024 FARMER Program Guidelines.
- Consolidating and aligning the calculations for Moyer and FARMER on-road heavy-duty trucks.
- Consolidating and aligning the calculations for zero-emission off-road, irrigation pumps, and ZEV agricultural UTV with the off-road agricultural equipment category.
- Consolidating and aligning the calculations for zero-emission agricultural equipment, irrigation pump engines, and ZEV agricultural UTV with the off-road agricultural equipment category.
- Consolidating and aligning the calculations for Off-road Ag Equipment: 2 (or more)-for-1 and Irrigation Pump Engines: 2 (or more)-for-1.
- Removing Ag Trade-Up and Infrastructure project types.
- Updating "Equipment Type" options to match new categories in 2024 FARMER Program Guidelines.
- Adding optional efficiency factor input for replacement equipment that can perform additional work per hour.
- Updating fuel carbon intensity values to 2023 volume-weighted averages.
- Updating fuel and energy costs to 2023 averages.

- Removing 'Project Profile' tab inputs for "Carl Moyer Guidelines Version" and "Carl Moyer Mailout or Advisory Date".
- Adding 'Project Profile' tab input for "Implementing Air District".
- Removing 'Quantification Inputs' tab inputs for "Is project eligible for Carl Moyer 2-Step Calculation?", "Number of vehicles in Fleet", "Quantification Period II", and "Baseline Vehicle Odometer Reading".
- Combining inputs for "Annual Miles Traveled" and "Annual average Hours of Operation" into "Annual usage (hrs/yr for off-road, mi/yr for on-road)".
- Removing "Retrofit" as eligible option in "Type of Off-Road Project".
- Renaming "Engine Cycle Type" column to "Engine Cycle/Induction Type".
- Consolidating state and federal funding sources into "Other State/Federal Funding".
- Consolidating interest-based sources into "Interest (FARMER)".
- Removing AQIP, ARFVTF, and Tire Fund funding sources.

Program Assistance

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

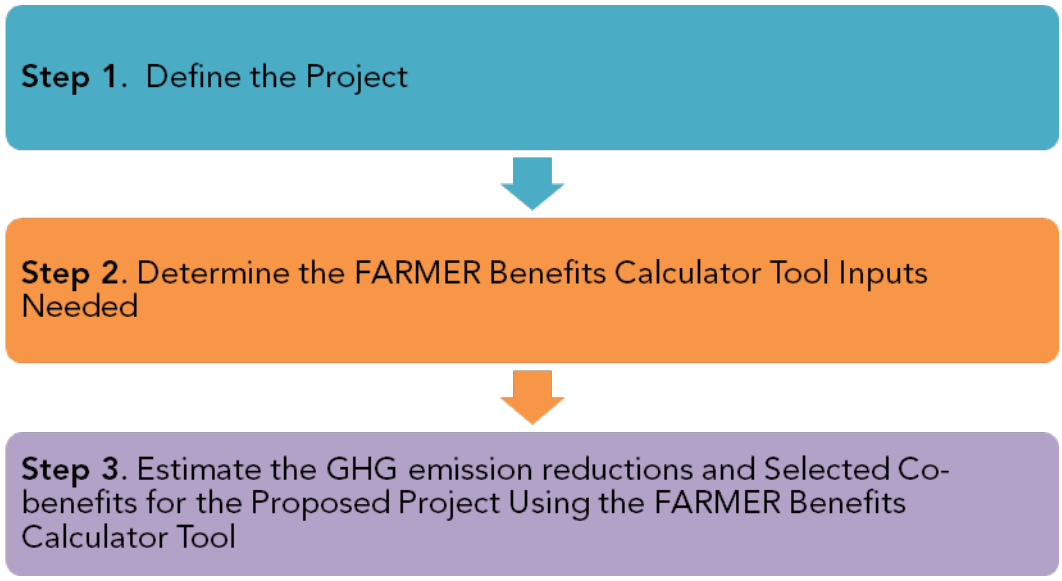
- Questions on this document should be sent to the GGRF program email.
- For more information on CARB's efforts to support implementation of California Climate Investments, see the Auction Proceeds webpage.
- Questions pertaining to the FARMER program should be sent to the FARMER program email.

Section B. Step-by-Step Guide

Overview

Applicants will follow the steps outlined in Figure 1 to estimate the GHG emission reductions and selected co-benefits from the proposed project. Detailed instructions for each step are provided on subsequent pages. Example projects showing how to estimate the GHG emission reductions and selected co-benefits from a given project are included in Section C.

Figure 1. Steps to Estimating GHG Emission Reductions and Selected Co-benefits



Step 1: Define the Project

CARB developed the following project types that meet the objectives of the FARMER Program and for which there are methods to quantify GHG emission reductions:

1. On-road heavy-duty truck replacement and repower projects
    - **Heavy-Duty On-Road Trucks:** One-for-one transaction where a single baseline vehicle is scrapped and a single new or used replacement vehicle is procured
2. Off-road equipment replacement and repower projects
    - **Off-Road Agricultural Equipment:** One-for-one transaction where a single baseline equipment is scrapped and a single new replacement equipment is procured
    - **Used Agricultural Equipment:** One-for-one transaction where a single baseline equipment is scrapped and a single used replacement equipment is procured
    - **Off-Road Agricultural Equipment: 2 (or-more)-for-1**: In some cases, the replacement equipment is no longer available at similar horsepower ratings to the baseline equipment so the procurement of the higher horsepower equipment is allowed (additionally, multiple pieces of equipment may be scrapped to make the project more cost-effective,– also referred to as "2 (or more)-for-1")
3. Zero-emission utility terrain vehicles
    - **Zero-Emission Ag UTV:** Rebates for the purchase of zero-emission utility terrain vehicles (UTV)
4. Demonstration Category

For each single project, users must define it in the FARMER Benefits Calculator tool by identifying its applicable, eligible Project Type. Users can use the tool to estimate the GHG emission reductions and selected co-benefits for many projects spanning the myriad of eligible project types.

Moreover, when a project has associated infrastructure, users can select the "Infrastructure (tied to project directly above):" option. See the Example Projects section for an example of a project with infrastructure.

The option to select "Demonstration Category" in the FARMER Benefits Calculator tool as a project type is primarily for administrative purposes. Should an applicant and an air district seek to fund such a project, CARB will release a forthcoming quantification methodology along with a corresponding separate form. This form will collect parameters and inputs related to the methodology. These parameters and

inputs are essential to the quantification of GHG reduction benefits and related co-benefits.

Step 2: Determine the FARMER Program Benefits Calculator Tool Inputs Needed

Table 1 identifies the required data inputs needed to estimate the GHG emission reductions and selected co-benefits for the proposed project with the FARMER Benefits Calculator Tool by project type. **Users should input data within the tool from Left-to-Right as well as Top-to-Bottom.**

Table 1. Required FARMER Benefits Calculator Tool General Information and Priority Population Benefits Inputs for Eligible Project Types (All Projects)

ALL PROJECTS

General Information (Air District Info tab)
• Air District Name;
• Contact Name;
• Contact Phone Number;
• Contact Email;
• Date of Submission;
• Report Covers Data Through;
• Work expected to be completed by next progress report;
• Any problems or issues encountered during quarter? (If so, please provide information on how this may impact the project(s)' outcome); and
• If project(s) are behind the schedule of the grant agreement, please explain any reasons for delay and how the schedule will be resumed.
 	
Basic Project Information and Information Regarding Priority Populations (Project Profile tab)
• Project Type;
• Implementing Air District;
• District Supplied Project ID;
• # of baseline equipment being scrapped for 2 (or more)-for-1;
• Project mailing address data;
• Project latitude/longitude data;
• Project milestones;
  o Contract Execution Date
  o Post-Inspection Date
  o Date of Payment
• Percent of Operation in District;
• Percent of Operation in California;
• Farm Size;
• Would replacement have occurred without FARMER funding?;

ALL PROJECTS
• Questions regarding project benefits to a Priority Population (disadvantaged community, low-income community or household, or low-income community within ½-mile of a disadvantaged community) based on Assembly Bill 1550 (users can check if their project is located within a Priority Population using the map found on the California Climate Investments resource portal); • Community needs met by the project (select from one of the Step 2 options on the Transportation and Equipment Benefit Assessment Tool), if any; • Written description of community needs that the project meets; • Community benefits provided by the project (select from one of the Step 3 options on the Transportation and Equipment Benefit Assessment Tool), if any; • Written description of the benefits that the project provides; and • Indicate Project Status • Indicate Project Status: detailed description, etc.

In addition to quantitative project inputs that enable districts to determine incentive amounts, GHG emissions, and co-benefits, the FARMER Benefits Calculator Tool also collects information regarding project benefits to Priority Populations. Priority Populations are defined in CARB's Funding Guidelines as disadvantaged communities, low-income communities, and/or low-income households. To provide information regarding benefits to Priority Populations, users only need to answer three questions and provide two written descriptions. They can fill out the answers for each project line item using the drop-down lists in the "Priority Population" columns as shown in Figure 2.

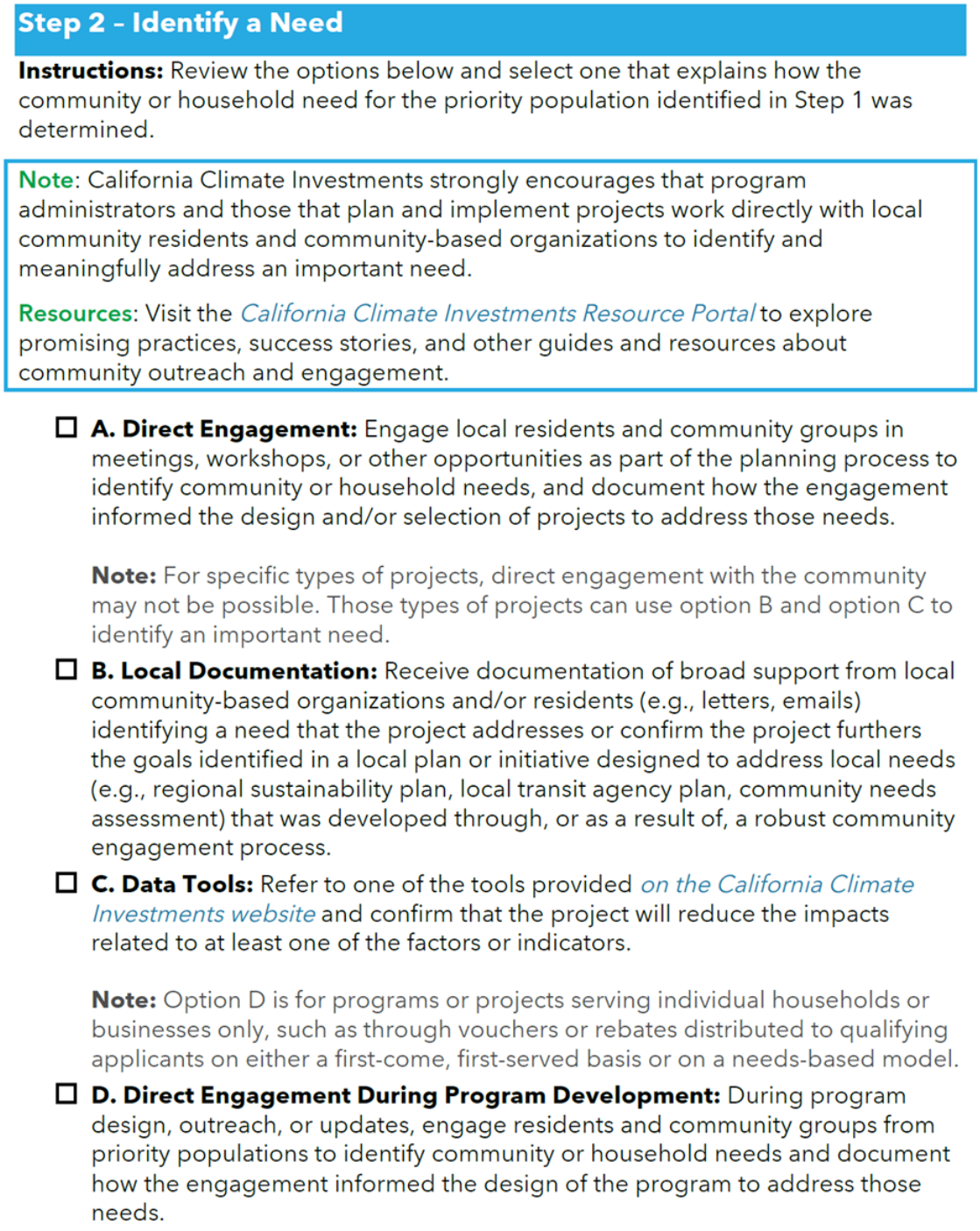
Figure 2: Screenshot of columns in the Quantification Inputs tab related to Priority Population benefits

Project Located Within:						
Disadvantaged Community?	Low-income Community or Low-income Household?	1/2-mile Low-income Buffer Region?	Community Need Addressed	Written description of the identified community or household need	Benefit Criteria Met	Written description of the benefits to priority populations

1. Is the project located within a disadvantaged community, low-income community or household, or within a low-income community or low-income household that is within ½-mile of a disadvantaged community (Yes/No).

2. Does the project address a community need? Please refer to Step 2 of the Transportation and Equipment Benefit Assessment Tool shown in Figure 3 to determine which criteria is most applicable to your project and select from the drop down list. Please also provide a written description of the identified community or household need.

Figure 3: Step 2 in the Transportation and Equipment Benefit Assessment Tool



Step 2 – Identify a Need

Instructions: Review the options below and select one that explains how the community or household need for the priority population identified in Step 1 was determined.

Note: California Climate Investments strongly encourages that program administrators and those that plan and implement projects work directly with local community residents and community-based organizations to identify and meaningfully address an important need.

Resources: Visit the *California Climate Investments Resource Portal* to explore promising practices, success stories, and other guides and resources about community outreach and engagement.

☐ **A. Direct Engagement:** Engage local residents and community groups in meetings, workshops, or other opportunities as part of the planning process to identify community or household needs, and document how the engagement informed the design and/or selection of projects to address those needs.

Note: For specific types of projects, direct engagement with the community may not be possible. Those types of projects can use option B and option C to identify an important need.

☐ **B. Local Documentation:** Receive documentation of broad support from local community-based organizations and/or residents (e.g., letters, emails) identifying a need that the project addresses or confirm the project furthers the goals identified in a local plan or initiative designed to address local needs (e.g., regional sustainability plan, local transit agency plan, community needs assessment) that was developed through, or as a result of, a robust community engagement process.

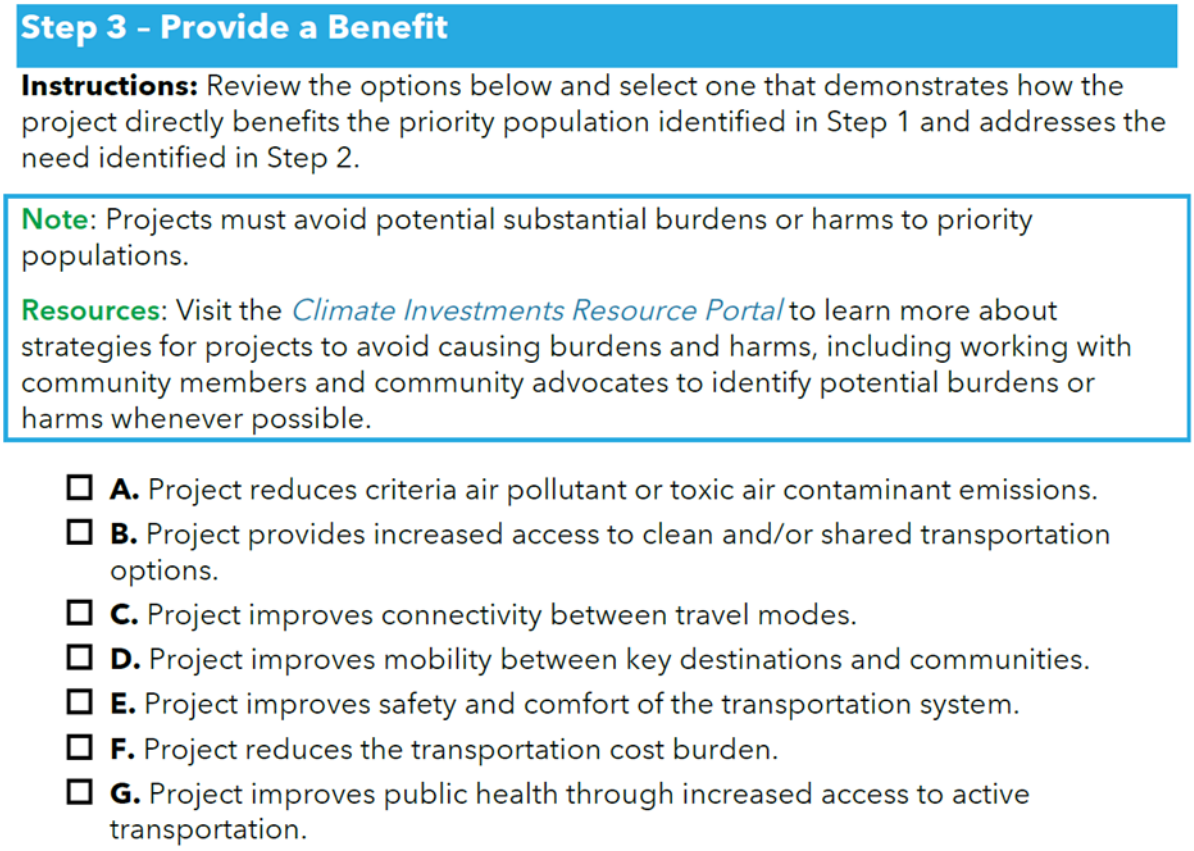
☐ **C. Data Tools:** Refer to one of the tools provided *on the California Climate Investments website* and confirm that the project will reduce the impacts related to at least one of the factors or indicators.

Note: Option D is for programs or projects serving individual households or businesses only, such as through vouchers or rebates distributed to qualifying applicants on either a first-come, first-served basis or on a needs-based model.

☐ **D. Direct Engagement During Program Development:** During program design, outreach, or updates, engage residents and community groups from priority populations to identify community or household needs and document how the engagement informed the design of the program to address those needs.

3. Does the project provide a benefit? Please refer to Step 3 of the Transportation and Equipment Benefit Assessment Tool shown in Figure 4 to determine which criteria is most applicable to your project and select from the drop down list. Please also provide a written description of the benefits to the Priority Populations. Note: in the FARMER Benefits Calculator tool, the drop-down for this step is limited to criteria "A" since that is the only criteria applicable to the project types in the FARMER program.

Figure 4: Step 3 in the Transportation and Equipment Benefit Assessment Tool



Step 3 – Provide a Benefit

Instructions: Review the options below and select one that demonstrates how the project directly benefits the priority population identified in Step 1 and addresses the need identified in Step 2.

Note: Projects must avoid potential substantial burdens or harms to priority populations.

Resources: Visit the *Climate Investments Resource Portal* to learn more about strategies for projects to avoid causing burdens and harms, including working with community members and community advocates to identify potential burdens or harms whenever possible.

- ☐ **A.** Project reduces criteria air pollutant or toxic air contaminant emissions.
- ☐ **B.** Project provides increased access to clean and/or shared transportation options.
- ☐ **C.** Project improves connectivity between travel modes.
- ☐ **D.** Project improves mobility between key destinations and communities.
- ☐ **E.** Project improves safety and comfort of the transportation system.
- ☐ **F.** Project reduces the transportation cost burden.
- ☐ **G.** Project improves public health through increased access to active transportation.

Table 2: Required FARMER Benefits Calculator Tool Quantification Inputs for On-Road Heavy-Duty Truck Replacement and Repower Projects

On-Road Heavy-Duty Truck Replacement and Repower Projects
Quantification Inputs (Quantification Inputs tab) Basic Information, Baseline and Replacement Equipment/Vehicle: • Expected First Year of Operation (i.e., implementation year); • Project Life; • Annual Usage; • Engine Model Year; • Vehicle Model Year; • Replacement Vehicle Odometer Reading (only for replacement vehicle, if it is used); • Fuel Type; • Vehicle Manufacturer; • Vehicle Model; • Vehicle Serial Number; • Engine Serial Number; • Engine Family Name; • Engine Displacement (liters); • Engine Standard (may/may not be applicable depending on engine model year); • Gross Vehicle Weight Rating; • Intended service Class; and • Other Installed Emissions Controls (only for baseline vehicle).

Table 3: Required FARMER Benefits Calculator Tool Quantification Inputs for Off-Road Ag Equipment Replacement and Repower Projects

Off-Road Ag Equipment Replacement and Repower Projects
Quantification Inputs (Quantification Inputs tab) <u>Basic Information, Baseline and Replacement Equipment/Vehicle:</u> • Expected First Year of Operation (i.e., implementation year); • Project Life; • Annual Usage; • Efficiency Factor; • Type of Off-Road Project; • Engine Model Year; • Vehicle Model Year; • Fuel Type; • Vehicle Manufacturer; • Vehicle Model; • Vehicle Serial Number; • Engine Serial Number; • Engine Family Name; • Engine Displacement (liters); • Equipment Type; • Horsepower; • Tier (only for diesel engines); and • Engine Cycle/Induction Type (only for gasoline and alternative fuel engines).

Table 4: Required FARMER Benefits Calculator Tool Quantification Inputs for Zero-Emission Agricultural UTV Projects

Zero-Emission Agricultural UTVs
Quantification Inputs (Quantification Inputs tab) Basic Information, Baseline and Replacement Vehicle: • Expected First Year of Operation (i.e., implementation year); • Project Life; • Annual Usage; • Efficiency Factor; • Type of Off-Road Project; • Engine Model Year; • Equipment/Vehicle Model Year; • Fuel Type; • Vehicle Manufacturer; • Vehicle Model; • Vehicle Serial Number; • Engine Serial Number; • Engine Family Name (only for baseline equipment; not applicable to ZEV UTV); • Engine Displacement (only for baseline equipment; not applicable to ZEV UTV); • Equipment Type; • Horsepower; • Tier (only for diesel engines); and • Engine Cycle/Induction Type (only for gasoline and alternative fuel engines).

Table 5: Required FARMER Benefits Calculator Tool Quantification Inputs for Off-road Equipment Replacement and Repower Projects: 2 (or more)-for-1

Off-road equipment replacement and repower projects: 2 (or more)-for-1
Quantification Inputs (Quantification Inputs tab) Basic Information, Baseline and Replacement Equipment: • Expected First Year of Operation (i.e., implementation year); • Project Life; • Annual Usage; • Efficiency Factor; • Type of Off-Road Project; • Engine Model Year; • Vehicle Model Year; • Fuel Type; • Vehicle Manufacturer; • Vehicle Model; • Vehicle Serial Number; • Engine Serial Number; • Engine Family Name; • Engine Displacement (liters); • Equipment Type; • Horsepower; • Engine Tier (only for diesel engines); and • Engine Cycle/Induction Type (only for gasoline and alternative fuel engines).

Table 6: Required FARMER Benefits Calculator Tool Funding Incentive Inputs for All Projects

ALL PROJECTS

Basic Information on Funding Sources and Incentive Amount Calculations (Funding Inputs-Incentive Calcs tab)
• New Vehicle/Equipment Cost;
• Project Funding Sources (#1 – 3);
  ○ Funding Source;
  ○ Funding Amount;
  ○ Fiscal Year of Funding Sources;
• User defined cost-effectiveness limit;
• User Defined Incentive Amount; and
• Notes (Optional)

Since the initial release of the FARMER Benefits tool, feedback from users continues to help shape the design and functionality of the tool. The addition of the "Project Implementation Costs" tab was meant to help users report on the associated costs with implementing the FARMER program and awarding grants. Users can specify

whether an implementation cost is associated with staffing/jobs, travel, outreach, or other. Users then proceed to provide extra information regarding the types of and quality of jobs funded as well as hourly wages, fringe costs, among others. Total salary costs are calculated for the user based on the inputs.

In addition to the "Project Implementation Costs" tab, the FARMER Benefits tool now also features a "Fiscal Reporting Summary" tab. Based on the dates that users specify in the "Project Profile" tab as well as the funding source and fiscal year information inputted in the "Funding Inputs-Incentive Calcs" tab, the "Fiscal Reporting Summary" tab is meant to help users by tracking and automatically calculating the amount of funding they have under contract, have expended, and so forth. Note that if a user denotes a project as being "cancelled" in the Project Profile tab, the project is removed from the fiscal and emission reductions calculations.

For questions on the "Project Implementation Costs" tab or the "Fiscal Reporting Summary" tab, please direct them to the FARMER program email.

Step 3: Estimate GHG Emission Reductions and Selected Co-Benefits for the Proposed Project Using the FARMER Benefits Calculator Tool

Users must use the FARMER Benefits Calculator Tool to complete this step. The FARMER Benefits Calculator Tool can be downloaded from the California Climate Investments Resources webpage.

Users will follow the steps outlined in Figure 5 to input information into the FARMER Benefits Calculator Tool's various tabs. Users should begin with the **Air District Info** tab, which contains general information about the Benefits Calculator Tool. Key terms used throughout the FARMER Benefits Calculator Tool are defined in the **Definitions** tab.

The **Project Profile** tab prompts users to enter general project information.

The **Quantification Inputs** tab identifies inputs required by the user, generally requiring project-specific data or assumptions. Input and output fields are color coded:

- Green fields indicate direct user input is required.
- Blue fields are optional and user input is not required.
- Grey fields indicate output or calculation fields that are automatically populated based on user entries and the calculation methods.
- Yellow fields offer helpful hints or important tips to the user.
- Black (Black) fields are not applicable and no user input is necessary.

The **GHG & Co-Ben Aggregate** tab displays the estimated:

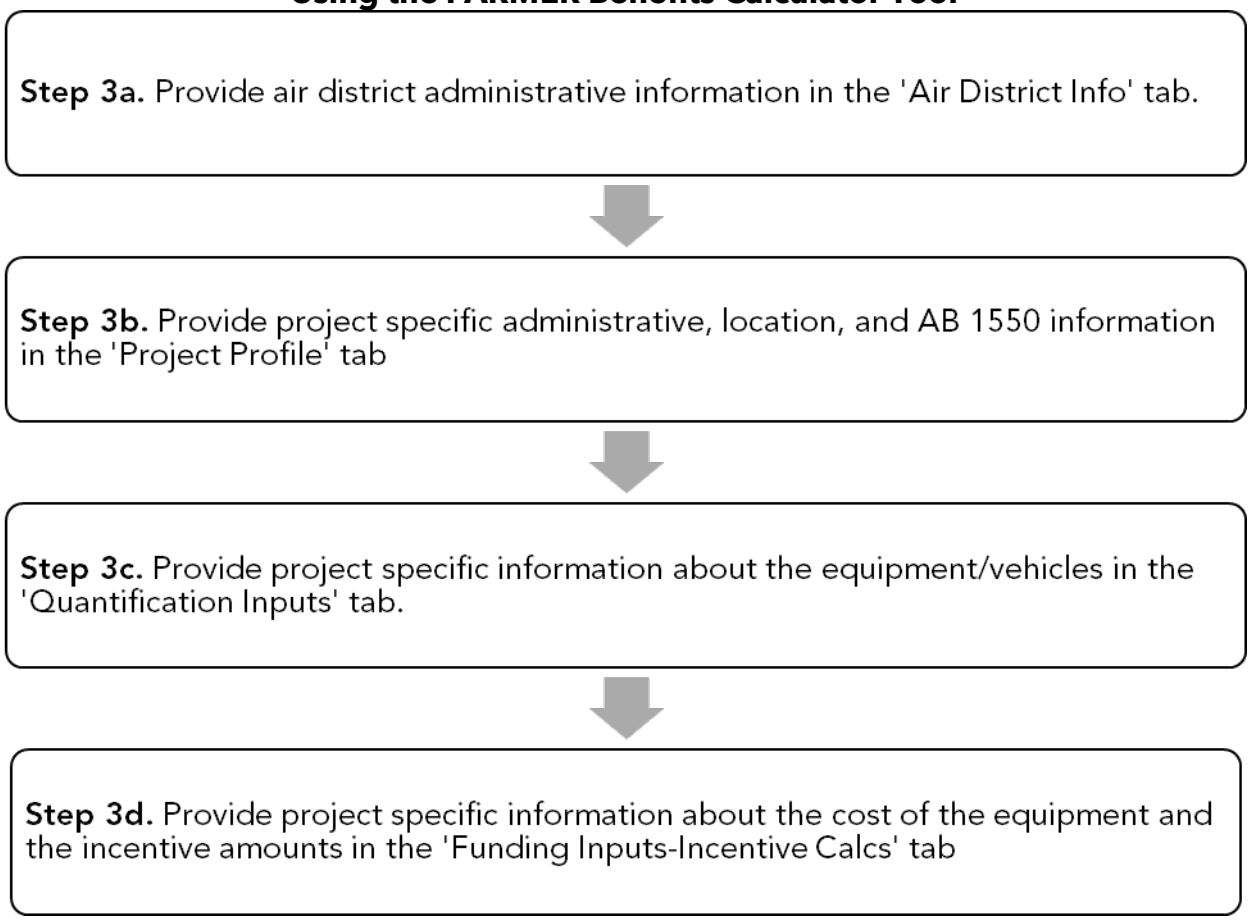
- Total GHG emission reductions by project type (metric tons of carbon dioxide equivalent ($MTCO_2e$))
    - This is the portion of GHG emission reductions attributable to funding from the FARMER Program; GHG emission reductions are prorated according to the level of program funding contributed from the FARMER Program and other California Climate Investments programs funded with GGRF, as applicable. The results in the Co-benefits Summary tab are prorated using the same approach, as applicable.
- Total Particulate Matter $(PM)_{2.5}$ emission reductions by project type (US tons/yr, pounds(lbs)/yr) [$PM_{2.5}$ refers to particulate matter at 2.5 microns or less.];
- Total Nitrogen Oxides (NO_x) emission reductions by project type (US tons/yr, lbs/yr);
- Total ROG (reactive organic gas) emission reductions by project type (US tons/yr, lbs/yr);
- Total Diesel PM emission reductions by project type (US tons/yr, lbs/yr);
- Total Fuel Reduction by project type (diesel gallon equivalent);

- Total Fuel Savings by project type – based on Diesel Gallon Equivalent ($); and
- Total Fossil Fuel Energy Use Reductions (kilowatt-hours (kWh)).

In the Calculator tool, US tons/yr is denoted as "tpy".

The tabs corresponding to GHG and Co-benefits present the results in total, but also prorated based on funding source that the FARMER Program is utilizing – e.g., prorated based on funding that comes from the Greenhouse Gas Reduction Fund (GGRF), funding that comes from other GGRF programs, funding that comes from other sources such as the Air Pollution Control Fund (APCF), General Fund (GF); funding generated from the interest gained on these funds; among other sources.

Figure 5: Work Flow for Step 3 to Estimate the GHG Emission Reductions, Selected Co-Benefits, and Recommended Incentive Amounts for the Proposed Using the FARMER Benefits Calculator Tool



The **GHG Summary** tab displays the estimated:

- FARMER GHG emission reductions ($MTCO_2e$);
- GHG emission reductions ($MTCO_2e$);

The **Co-benefits Summary** tab displays the estimated:

- $PM_{2.5}$ emission reductions (US tons/yr; lbs/yr);
- NO_x emission reductions (US tons/yr; lbs/yr);
- ROG emission reductions (US tons/yr; lbs/yr);
- Diesel PM emission reductions (US tons/yr; lbs/yr);
- Fuel Reduction (Diesel Gallon Equivalent);
- Fuel Savings – based on Diesel Gallon Equivalent ($); and
- Fossil Fuel Energy Use Reductions (kWh).

The **Funding Inputs-Incentive Calcs** tab displays the estimated:

- Cost-effectiveness in terms of public dollars invested per ton of weighted criteria emission reductions ($/ton);
- GHG emission reductions per FARMER GGRF funds ($MTCO_2e$/$); and
- Maximum Eligible Incentive Amount ($).

The FARMER GHG emission reductions are the portion of GHG emission reductions attributable to funding from the FARMER Program; GHG emission reductions are prorated according to the level of program funding contributed from the FARMER Program and other California Climate Investments programs funded with GGRF, as applicable. The results in the Co benefits Summary tab are prorated using the same approach, as applicable.

Section C. Example Projects

Introduction

The following are hypothetical projects to demonstrate how the FARMER Benefits Calculator Tool would be applied. These hypothetical projects do not provide examples of the supporting documentation that is required of actual project applicants. Note that the hypothetical project has not undergone verification of any FARMER Program requirements; all assumptions about location type and project features are for FARMER Benefits Calculator Tool demonstration purposes only.

Example Project I

Overview of the proposed project

The proposed project is a Heavy-Duty On-Road Truck project with the following features:

- New electric HHD truck being purchased by farmer to replace an older HHD truck.

The proposed project is located in San Joaquin County with the following project characteristics:

- Farmer registers and domiciles his/her truck within a Disadvantaged community.

Methods to apply

Step 1: Define the Project

Define the Project in the "Project Profile" Tab

Farmer buying a new electric heavy heavy-duty (HHD) truck to replace his/her existing diesel HHD truck:

Table 7: Heavy-Duty On-Road Trucks – Project Profile

FARMER Benefits Calculator Tool Headings: "Project Profile" Tab	User-Defined Inputs
Project Type	Heavy-Duty On-Road Trucks
Implementing Ai District	Not Applicable
District Supplied Project ID	1
# of Baseline Equipment being scrapped for 2 (or more)-for-1	Not Applicable
Mailing Address: Street Name	123 ABC Road
Mailing Address: City	TestCity
Mailing Address: State	CA
Mailing Address: Zip Code	12345
Vehicle/Equipment Latitude (degrees)	37.726039
Vehicle/Equipment Longitude (degrees)	-121.229604
Contract Execution Date	1/1/2025
Post-Inspection Date	2/1/2025
Date of Payment	3/1/2025
Percent of Operation in District	100%
Percent of Operation in California	100%
Farm Size	≤100 acres
Would replacement have occurred without FARMER funding?	No
Project Located Within Disadvantaged Community?	Yes
Project Located Within Low-income Community or Low-income Household?	No

FARMER Benefits Calculator Tool Headings: "Project Profile" Tab	User-Defined Inputs
Project Located Within 1/2-mile Low-income Buffer Region?	No
Community Need Addressed	D. CARB Funding Guidelines Table 5
Written description of the identified community or household need	This is an example of a written description: Air District held several community meetings and received letters of support for funding truck replacements. The communities covered by the program are heavily impacted by poor air quality.
Benefit Criteria Met	A. Project reduces criteria air pollutant/toxic air contaminant emissions
Written description of the benefits to priority populations	This is an example of a written description: Incentives for truck replacements make it easier for farmers to receive newer equipment. This more reliable equipment reduces maintenance costs to farmers and increases farm productivity. Moreover, the cleaner equipment will reduce greenhouse gas and criteria pollutant emissions.
Written description of any project co-benefits	This is an example of a written description: brand new GPS technology in newer equipment reduces row overlap.
Indicate Project Status	In-Progress
Indicate Project Status: detailed description, date of cancellation, etc.	[optional – fill out as needed]

Figure 6 – Figure 10 shows how the project profile information from Table 7 is inputted into the tool.

Figure 6: Screenshot of Project Profile Tab – Location Information

*Project Type	Implementing Air District	*District Supplied Project ID (must be filled out for proper calculations)	*# of Baseline Equipment being scrapped for 2 (or more)-for-1	Mailing Address: Street Number and Name	Mailing Address: City
Heavy-Duty On-Road Trucks		1		123 ABC Road	TestCity

Figure 7: Screenshot of Project Profile Tab – Location Information (cont.)

Mailing Address: State	Mailing Address: Zip Code	Vehicle/Equipment Latitude (degrees)	Vehicle/Equipment Longitude (degrees)
CA	12345	37.726039	-121.229604

Figure 8: Screenshot of Project Profile Tab – Dates, and Percent Operation

Contract Execution Date	Post-Inspection Date	Date of Payment	Percent of Operation in District	*Percent of Operation in California	Farm Size	Would replacement have occurred without FARMER funding?
1/1/2025	2/1/2025	3/1/2025	100%	100%	≤100 acres	No

Figure 9: Screenshot of Project Profile Tab – Columns regarding benefits to Priority Populations

Project Located Within:			Community Need Addressed
Disadvantaged Community?	Low-income Community or Low-income Household?	1/2-mile Low-income Buffer Region?	
Yes	No	No	D. CARB Funding Guidelines Table 5

Figure 10: Screenshot of Project Profile Tab – Columns regarding benefits to Priority Populations (cont.)

**Written description of the identified community or household need	Benefit Criteria Met	**Written description of the benefits to priority populations	**Written description of any Project Co-benefits
This is an example of a written description: Air District held several community meetings and received letters of support for funding truck replacements. The communities covered by the program are heavily impacted by poor air quality.	A. Project reduces criteria air pollutant/toxic air contaminant emissions	This is an example of a written description: Incentives for truck replacements make it easier for farmers to receive newer equipment. This more reliable equipment reduces maintenance costs to farmers and increases farm productivity. Moreover, the cleaner equipment will reduce greenhouse gas and criteria pollutant emissions.	This is an example of a written description: brand new GPS technology in newer equipment reduces row overlap.

Figure 11 shows four columns that are related to tracking project status. The two columns pertaining to Average Annual Use During Project Life are not activated until the project has been marked as "Completed" by the user in the "Indicate Project Status" column. The "Indicate Project Status" column is a new feature that enables users to denote whether a project is: in-progress, completed, cancelled, non-performing, or other. The fiscal information and emission reductions results are zeroed out in their respective summary tabs when a project is marked as "cancelled". Users are highly encouraged to provide information detailing why a project was cancelled or is non-performing in the last column, "Indicate Project Status: detailed description, date of cancellation, etc." When a project is finished and the user indicates "completed", the user must report on the average annual usage (in miles, hrs, or kWh) for the particular piece of equipment/vehicle.

Figure 11: Project Status

Indicate Project Status	Indicate Project Status: detailed description, date of cancellation, etc.
In-Progress	

Step 2: Determine the FARMER Benefits Calculator Tool Inputs Needed

Inputs for the Baseline and Replacement Equipment/Vehicles in the "Quantification Inputs" Tab

Information on the "Project Type" and "District Supplied Project ID" will auto-populate based upon inputs in the "Project Profile" tab.

Farmer buying a new electric heavy heavy-duty truck to replace his/her existing diesel truck:

Table 8: Heavy-Duty On-Road Trucks – Quantification Inputs

FARMER Benefits Calculator Tool Headings: "Quantification Inputs" Tab	FARMER Benefits Calculator Tool Subheadings: "Quantification Inputs" Tab	User-Defined Inputs
Basic Information	**Expected First Year of Operation**	2025
	Project Life (yrs)	10
	Annual Usage (hrs/yr for off-road, mi/yr for on-road)	12,000
	Efficiency Factor	Not Applicable
	Type of Off-Road Project	Not Applicable
Current (Baseline) Vehicle/Equipment	**Engine Model Year**	2010
	Vehicle Model Year	2010
	Fuel Type	Diesel
	Vehicle Manufacturer	Manufacturer ABC
	Vehicle Model	Model ABC
	Vehicle Serial Number	1111
	Engine Serial Number	
	Engine Family Name	
	Engine Displacement (liters)	Not Applicable
	Emission Standard	
	Equipment Type	Not Applicable
	Gross Vehicle Weight Rating	HHD (GVWR > 33,000 lbs)
	Intended Service Class	HHD
	Horsepower	Not Applicable

FARMER Benefits Calculator Tool Headings: "Quantification Inputs" Tab	FARMER Benefits Calculator Tool Subheadings: "Quantification Inputs" Tab	User-Defined Inputs
	Tier	Not Applicable
	Other Installed Emissions Controls?	No Filter
	Engine Cycle/Induction Type	Not Applicable
New (Replacement) Vehicle/Equipment	**Engine Model Year**	2025
	Vehicle Model Year	2025
	Replacement Vehicle Odometer/Hour Reading (mile for on-road, hour for off-road)	
	Fuel Type	Electric
	Vehicle Manufacturer	Manufacturer XYZ
	Vehicle Model	Model XYZ
	Vehicle Serial Number	3333
	Engine Serial Number	
	Engine Family Name	
	Engine Displacement (liters)	Not Applicable
	Emission Standard	Not Applicable
	Equipment Type	Not Applicable
	Gross Vehicle Weight Rating	HHD (GVWR > 33,000 lbs)
	Intended Service Class	HHD
	Horsepower	Not Applicable
	Tier	Not Applicable
	Engine Cycle/Induction Type	Not Applicable

Figure 12: Screenshot of basic information – Quantification Inputs Tab

Project Type	District Supplied Project ID	*Expected First Year of Operation	*Project Life (yrs)	*Annual Usage (hrs/yr for off-road, mi/yr for on-road)	Efficiency Factor	Adjusted Annual Activity (hrs/yr)	*Type of Off-Road Project
Heavy-Duty On-Road Trucks	1	2025	10	12000			

Figure 13: Screenshot of information for Heavy-Duty On-Road Trucks Baseline Vehicles/Equipment – Quantification Inputs Tab

*Engine Model Year	Vehicle Model Year	*Fuel Type	Vehicle Manufacturer	Vehicle Model	Vehicle Serial Number	Engine Serial Number	Engine Family Name	Engine Displacement (liters)
2010	2010	Diesel	Manufacturer ABC	Model ABC	1111			

Figure 14: Screenshot of information for Heavy-Duty On-Road Trucks Baseline Vehicles/Equipment – Quantification Inputs Tab (cont.)

*Emission Standard	*Equipment Type	*Gross Vehicle Weight Rating	*Intended Service Class	*Horsepower	*Tier	*Other installed emissions controls?	*Engine Cycle/Induction Type
		HHD (GVWR > 33,000 lbs)	HHD			No Filter	

Figure 15: Screenshot of information for Heavy-Duty On-Road Trucks Replacement Vehicle/Equipment – Quantification Inputs Tab

*Engine Model Year	Vehicle Model Year	Replacement Vehicle Odometer/Hour Reading (mile for on-road, hour for off-road)	*Fuel Type	Vehicle Manufacturer	Vehicle Model	Vehicle Serial Number	Engine Serial Number	Engine Family Name	Engine Displacement (liters)
2025	2025		Electric	Manufacturer XYZ	Model XYZ	3333	4444		

Figure 16: Screenshot of information for Heavy-Duty On-Road Trucks Replacement Vehicle/Equipment – Quantification Inputs Tab (cont.)

*Emission Standard	*Equipment Type	*Gross Vehicle Weight Rating	*Intended Service Class	*Horsepower	*Tier	*Engine Cycle/Induction Type
		HHD (GVWR > 33,000 lbs)	HHD			

Funding Inputs in the "Funding Inputs-Incentive Calcs" Tab

Information on the "Project Type" and "District Supplied Project ID" will auto-populate based upon inputs in the "Project Profile" tab. Criteria Pollutants, GHG Cost-Effectiveness, and Maximum Eligible Incentive Amount values will also be calculated and auto-populate based on the project Quantification Inputs. It should be noted that the User Defined Incentive Amount cannot exceed the Maximum Eligible Incentive Amount.

Farmer buying a new electric heavy heavy-duty truck to replace his/her existing diesel truck:

Table 9: Heavy-Duty On-Road Trucks – Funding Inputs and Incentives Calcs

FARMER Benefits Calculator Tool Headings: "Funding Inputs-Incentive Calcs" Tab	**User-Defined Inputs**
New Vehicle/Equipment Cost ($)	500,000
Funding Source #1 – Source	GGRF (FARMER)
Funding Source #1 – Amount ($)	150,000
FARMER allocation Fiscal Year	FY 2023-2024
Funding Source #2 – Source	APCF (FARMER)
Funding Source #2 – Amount ($)	25,000
FARMER allocation Fiscal Year	FY 2022-2023
Funding Source #3 – Source	
Funding Source #3 – Amount ($)	
FARMER allocation Fiscal Year	
User defined cost-effectiveness limit ($/ton) [optional]	
User Defined Incentive Amount ($)	

Figure 17 – Figure 19 shows how the inputs from Table 9 are inputted into the tool.

Figure 17: Screenshots of Funding Inputs and Incentive Calculations tab

Project Type	District Supplied Project ID	*New Vehicle/ Equipment Cost ($)	Funding Source #1		
			*Source	Amount ($)	FARMER allocation Fiscal Year
Heavy-Duty On-Road Trucks	1	500,000.00	GGRF (FARMER)	150,000.00	FY 2023-2024

Figure 18: Screenshots of Funding Inputs and Incentive Calculations tab

Funding Source #2			Funding Source #3		
*Source	Amount ($)	FARMER allocation Fiscal Year	*Source	Amount ($)	FARMER allocation Fiscal Year
APCF (FARMER)	50,000.00	FY 2022-2023			

Figure 19: Screenshots of Funding Inputs and Incentive Calculations tab (cont.)

Max allowable incentive amount ($)	Cost-effectiveness at max incentive ($/ton)	Incentive amount based on user defined cost-effectiveness ($)	User defined cost-effectiveness limit ($/ton)	User defined incentive amount ($)	Cost-effectiveness based on user defined incentive amount ($/ton)	GHG Cost-Effectiveness (MTCO2e/$)	Notes (Optional)
325,000.00	4,482,140.39	-			4,482,140.39	0.00	

Step 3: Estimate GHG Emission Reductions and Selected Co-benefits for the Proposed Project Using the FARMER Benefits Calculator Tool

As shown in Figure 20 – Figure 22, the GHG & Co-Ben Aggregate tab displays GHG reductions (or an increase) and Co-Benefit reductions for each of the 8 project types aggregated.

Figure 20: Screenshots of results shown in GHG and Co-Ben Aggregate Tab

Project Type	GHG Reductions (MTCO2e)	PM2.5 Reductions		NOx Reductions	
		(tpy)	(lbs)	(tpy)	(lbs)
Heavy-Duty On-Road Trucks	344.31	0.00	3.40	0.07	1,332.60
Off-Road Agricultural Equipment	-	-	-	-	-
Zero-Emission Ag UTV	-	-	-	-	-
Used Agricultural Equipment	-	-	-	-	-
Off-Road Ag Equipment: 2 (or more)-for-1	-	-	-	-	-

Figure 21: Screenshots of results shown in GHG and Co-Ben Aggregate Tab (cont.)

Reactive Organic Gas Reductions		Diesel PM (PM10) Reductions	
(tpy)	(lbs)	(tpy)	(lbs)
0.00	45.60	0.00	3.60
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Figure 22: Screenshots of results shown in GHG and Co-Ben Aggregate Tab (cont.)

Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)
30,138.31	-	117,191.26	(21,663.11)
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

The **GHG Summary tab** displays GHG reductions (or an increase) for each line item project. It also prorates the emissions by funding source as shown in Figure 23 – Figure 24.

Figure 23: Screenshot of results shown in GHG Summary Tab

By project line item		Not Prorated	FARMER Program	CCI GGRF	FARMER GGRF Prorated	APCF Prorated
Project Type	District Supplied Project ID	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)
Heavy-Duty On-Road Trucks	1	344.31	344.31	344.31	258.23	86.08

Figure 24: Screenshot of results shown in GHG Summary Tab (cont.)

General Fund Prorated	GGRF (other) Prorated	Interest (FARMER) Prorated	Local Funding Prorated	Other State/Federal Funding Prorated
GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)
-	-	-	-	-

The **Co-Benefits Summary** tab displays changes in criteria pollutants, co-benefits, and key variables. Similar to the **GHG Summary** tab, prorated values for the aforementioned criteria pollutants, co-benefits, and key variables are also calculated as shown in Figure 25 – Figure 29.

Figure 25: Screenshot of results shown Co-Benefits Summary Tab

Total					
Project Type	**District Supplied Project ID**	**Fuel Reduction (gal)**	**Fuel Reduction (scf)**	**Fuel Savings ($)**	**Fossil Fuel Energy Use Reductions (kWh)**
Heavy-Duty On-Road Trucks	1	30,138.31	-	117,191.26	(21,663.11)

Figure 26: Screenshot of results shown Co-Benefits Summary Tab (cont.)

Total			
$PM_{2.5}$ Reductions (tpy)	**NOx Reductions (tpy)**	**Reactive Organic Gas Reductions (tpy)**	**Diesel PM (PM10) Reductions (tpy)**
0.00	0.07	0.00	0.00

Figure 27: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions due to FARMER Program

FARMER Program							
Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
30,138.31	-	117,191.26	(21,663.11)	0.00	0.07	0.00	0.00

Figure 28: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions due to GGRF

CCI GGRF							
Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
30,138.31	-	117,191.26	(21,663.11)	0.00	0.07	0.00	0.00

Figure 29: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions due to FARMER GGRF Prorated

FARMER GGRF Prorated							
Fuel Reduction (Gallons)	Fuel Reduction (scf)	Fuel savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
22,603.73	-	87,893.45	(16,247.34)	0.00	0.05	0.00	0.00

Figure 30: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions due to FARMER APCF Prorated

FARMER GGRF Prorated							
Fuel Reduction (Gallons)	Fuel Reduction (scf)	Fuel savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
7,534.58	-	29,297.82	(5,415.78)	0.00	0.02	0.00	0.00

Administrative Step: Fiscal Reporting

Based on the dates entered in the "Project Profile" tab and on the funding amounts entered in the "Funding Inputs-Incentive Calcs" tab, users can track their fiscal spending based on funding source and fiscal year within a given quarter. Note: for the "Fiscal Reporting Summary" tab to work properly, air districts must fill out the required input fields as well as specify the applicable quarterly reporting period in the "Air District Info" tab.

Figure 31: Screenshot of Fiscal Reporting Summary tab

	Funding Source	Fiscal Year	Share of Project Implementation Funding (%)	Total Project Funding	Total Project Implementation Funding	Total Funding Allocation		Total Interest and Revenue Earned ($)	
	GGRF	FY 2023-2024				$ -			
	APCF	FY 2022-2023				$ -			

Figure 32: Screenshot of Fiscal Reporting Summary tab (cont.)

Total project funding under contracts	Percent project funding under contract or obligated	Remaining project funding available		Total project funding expended or liquidated	Percent project funding expended or liquidated	Project funding available for expenditure/ liquidation
$ 150,000.00		$ 155,000.00)		$ 150,000.00		$ (150,000.00)
$ 50,000.00		$ (50,000.00)		$ 50,000.00		$ (50,000.00)

Figure 33: Screenshot of Fiscal Reporting Summary tab (cont.)

Project implementation funds expended	Implementation costs not captured in the "Project Implementation Costs" tab	Percent project implementation funding expended	Remaining balance of project implementation funds		Recaptured Funds
$ -			$ -		
$ -			$ -		

Example Project II

Overview of the proposed project

The proposed project is a 2 (or more)-for-1 involving off-road agricultural equipment:

- The applicant will be scrapping two combines and will be purchasing a single newer combine with a max rated horsepower rating higher than any of the two combines that are being scrapped.

The proposed project is located in San Joaquin County with the following project characteristics:

- The applicant primarily operates his/her tractor within a community that is characterized as disadvantaged and low-income.

Methods to apply

Step 1: Define the Project

Define the Project in the "Project Profile" Tab

Table 10: Off-Road Agricultural Equipment: 2 (or more)-for-1

FARMER Benefits Calculator Tool Headings: "Project Profile" Tab	User-Defined Inputs
Project Type	Off-Road Ag Equipment: 2 (or more)-for-1
District Supplied Project ID	112233
# of Baseline Equipment being scrapped for 2 (or more)-for-1	2
Mailing Address: Street Name	123 ABC Road
Mailing Address: City	TestCity
Mailing Address: State	CA
Mailing Address: Zip Code	98765
Vehicle/Equipment Latitude (degrees)	37.726039
Vehicle/Equipment Longitude (degrees)	-121.229604
Contract Execution Date	1/1/2025
Post-Inspection Date	2/1/2025
Date of Payment	3/1/2025
Percent of Operation in District	100%
Percent of Operation in California	100%
Farm Size	>100 acres
Would replacement have occurred without FARMER funding?	No
Project Located Within Disadvantaged Community?	Yes
Project Located Within Low-income Community or Low-income Household?	Yes
Project Located Within 1/2-mile Low-income Buffer Region?	No
Community Need Addressed	D. Direct Engagement During Program Development

FARMER Benefits Calculator Tool Headings: "Project Profile" Tab	User-Defined Inputs
Written description of the identified community or household need	This is an example of a written description: Air District held several community meetings and received letters of support for funding tractor replacements. The communities covered by the program are heavily impacted by poor air quality.
Benefit Criteria Met	A. Project reduces criteria air pollutant or toxic air contaminant emissions
Written description of the benefits to priority populations	This is an example of a written description: Incentives for tractor replacements make it easier for farmers to receive newer equipment. This more reliable equipment reduces maintenance costs to farmers and increases farm productivity. Moreover, the cleaner equipment will reduce greenhouse gas and criteria pollutant emissions.
Written description of any project co-benefits	This is an example of a written description: brand new GPS technology in newer equipment reduces row overlap.
Indicate Project Status	In-Progress
Indicate Project Status: detailed description, date of cancellation, etc.	[optional – fill out as needed]

Figure 34 – Figure 38 shows how the project profile information from Table 10 is inputted into the tool. The tool is designed such that if the user selects a 2 (or more)-for-1 project type, he/she is prompted to input the number of baseline equipment he/she will be scrapping. This quantity then determines the number of subsequent rows in the various tool tabs that will be reserved for this single project.

Figure 34: Screenshot of Project Profile Tab – Location Information

*Project Type	*Implementing Air District	*District Supplied Project ID (must be filled out for proper calculations)	*# of Baseline Equipment being scrapped for 2 (or more)-for-1	Mailing Address: Street Number and Name	Mailing Address: City
Off-Road Ag Equipment: 2 (or more)-for-1		112233	2	123 ABC Road	Test City
Off-Road Ag Equipment: 2 (or more)-for-1					

Figure 35: Screenshot of Project Profile Tab – Location Information (cont.)

Mailing Address: State	Mailing Address: Zip Code	Vehicle/Equipment Latitude (degrees)	Vehicle/Equipment Longitude (degrees)
CA	98765	37.726039	-121.229604

Figure 36: Screenshot of Project Profile Tab – Dates, and Percent Operation

Contract Execution Date	Post-Inspection Date	Date of Payment	Percent of Operation in District	*Percent of Operation in California	Farm Size	Would replacement have occurred without FARMER funding?
1/1/2025	2/1/2025	3/1/2025	100%	100%	>100 acres	No
[redacted]						

Figure 37: Screenshot of Project Profile Tab – Columns regarding benefits to Priority Populations

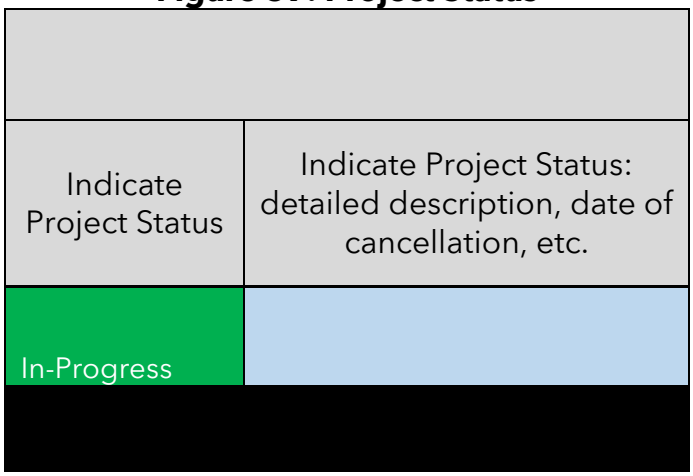
Project Located Within:			Community Need Addressed
Disadvantaged Community?	Low-income Community or Low-income Household?	1/2-mile Low-income Buffer Region?	
Yes	Yes	No	D. Direct Engagement During Program Development
[redacted]			

Figure 38: Screenshot of Project Profile Tab – Columns regarding benefits to Priority Populations (cont.)

**Written description of the identified community or household need	Benefit Criteria Met	**Written description of the benefits to priority populations	**Written description of any Project Co-benefits
This is an example of a written description: Air District held several community meetings and received letters of support for funding tractor replacements. The communities covered by the program are heavily impacted by poor air quality.	A. Project reduces criteria air pollutant or toxic air contaminant emissions	This is an example of a written description: Incentives for tractor replacements make it easier for farmers to receive newer equipment. This more reliable equipment reduces maintenance costs to farmers and increases farm productivity. Moreover, the cleaner equipment will reduce greenhouse gas and criteria pollutant emissions.	This is an example of a written description: brand new GPS technology in newer equipment reduces row overlap.
[redacted]			

Figure 39 shows four columns that are related to tracking project status. The two columns pertaining to Average Annual Use During Project Life are not activated until the project has been marked as "Completed" by the user in the "Indicate Project Status" column. The "Indicate Project Status" column is a new feature that enables users to denote whether a project is: in-progress, completed, cancelled, non-performing, or other. The fiscal information and emission reductions results are zeroed out in their respective summary tabs when a project is marked as "cancelled". Users are highly encouraged to provide information detailing why a project was cancelled or is non-performing in the last column, "Indicate Project Status: detailed description, date of cancellation, etc." When a project is finished and the user indicates "completed", the user must report on the average annual usage (in miles, hrs, or kWh) for the particular piece of equipment/vehicle.

Figure 39: Project Status



Step 2: Determine the FARMER Benefits Calculator Tool Inputs Needed

Inputs for the Baseline and Replacement Equipment/Vehicles in the "Quantification Inputs" Tab

Information on the "Project Type" and "District Supplied Project ID" will auto-populate based upon inputs in the "Project Profile" tab.

Table 11: First row inputs for 2 (or more)-for-1 Off-Road project. User puts inputs for first baseline vehicle and the replacement vehicle

FARMER Benefits Calculator Tool Headings: "Quantification Inputs" Tab	FARMER Benefits Calculator Tool Subheadings: "Quantification Inputs" Tab	User-Defined Inputs
Basic Information	Expected First Year of Operation	2025
	Project Life (yrs)	Not Applicable
	Annual Usage (hrs/yr for off-road, mi/yr for on-road)	500
	Efficiency Factor	1.5
	Type of Off-Road Project	Replacement
Baseline Vehicle/Equipment	Engine Model Year	1992
	Vehicle Model Year	1992
	Fuel Type	Diesel
	Vehicle Manufacturer	Manufacturer ABC
	Vehicle Model	Model ABC
	Vehicle Serial Number	1111
	Engine Serial Number	2222
	Engine Family Name	Test
	Engine Displacement (liters)	7.6
	Emission Standard	Not Applicable
	Equipment Type	Combine Harvesters
	Gross Vehicle Weight Rating	Not Applicable
	Intended Service Class	Not Applicable
	Horsepower	260
	Tier	Tier 0
	Other Installed Emissions Controls?	Not Applicable
	Engine Cycle/Induction Type	Not Applicable
Replacement Vehicle/Equipment	Engine Model Year	2025
	Vehicle Model Year	2025
	Replacement Vehicle Odometer/Hour Reading (mile for on-road, hour for off-road)	Not Applicable
	Fuel Type	Diesel
	Vehicle Manufacturer	Manufacturer JKL
	Vehicle Model	Model JKL
	Vehicle Serial Number	7777
	Engine Serial Number	8888
	Engine Family Name	Test
	Engine Displacement (liters)	12.9
	Emission Standard	Not Applicable

FARMER Benefits Calculator Tool Headings: "Quantification Inputs" Tab	FARMER Benefits Calculator Tool Subheadings: "Quantification Inputs" Tab	User-Defined Inputs
	Equipment Type	Combine Harvesters
	Gross Vehicle Weight Rating	Not Applicable
	Intended Service Class	Not Applicable
	Horsepower	480
	Tier	Tier 4 Final
	Engine Cycle/Induction Type	Not Applicable

Table 12: Second row inputs for 2 (or more)-for-1 Off-Road project. User puts inputs for second baseline vehicle while the inputs for the replacement vehicle are not used.

FARMER Benefits Calculator Tool Headings: "Quantification Inputs" Tab	FARMER Benefits Calculator Tool Subheadings: "Quantification Inputs" Tab	User-Defined Inputs
Basic Information	**Expected First Year of Operation**	Not Applicable
	Project Life (yrs)	Not Applicable
	Annual Usage (hrs/yr for off-road, mi/yr for on-road)	500
	Efficiency Factor	Not Applicable
	Type of Off-Road Project	Not Applicable
Baseline Vehicle/Equipment	**Engine Model Year**	1998
	Vehicle Model Year	1998
	Fuel Type	Diesel
	Vehicle Manufacturer	Manufacturer XYZ
	Vehicle Model	Model XYZ
	Vehicle Serial Number	3333
	Engine Serial Number	4444
	Engine Family Name	Test
	Engine Displacement (liters)	7.6
	Emission Standard	Not Applicable
	Equipment Type	Combine Harvesters
	Gross Vehicle Weight Rating	Not Applicable
	Intended Service Class	Not Applicable
	Horsepower	300
	Tier	Tier 1
	Other Installed Emissions Controls?	Not Applicable

FARMER Benefits Calculator Tool Headings: "Quantification Inputs" Tab	FARMER Benefits Calculator Tool Subheadings: "Quantification Inputs" Tab	User-Defined Inputs
Replacement Vehicle/Equipment	Engine Cycle/Induction Type	Not Applicable
	Engine Model Year	Not Applicable
	Vehicle Model Year	Not Applicable
	Replacement Vehicle Odometer/Hour Reading (mile for on-road, hour for off-road)	Not Applicable
	Fuel Type	Not Applicable
	Vehicle Serial Number	Not Applicable
	Engine Serial Number	Not Applicable
	Engine Family Name	Not Applicable
	Engine Displacement (liters)	Not Applicable
	Emission Standard	Not Applicable
	Equipment Type	Not Applicable
	Gross Vehicle Weight Rating	Not Applicable
	Intended Service Class	Not Applicable
	Horsepower	Not Applicable
	Tier	Not Applicable
	Engine Cycle/Induction Type	Not Applicable

Figure 40 – Figure 44 shows how the inputs in Table 11 – Table 12 are inputted into the tool. It is noteworthy to point out that all rows are used to ascertain the parameters pertaining the 2 baselines (along with their usage – i.e., Annual Average hours of operation). However, only the first row is needed to capture the inputs for the single replacement equipment.

Figure 40: Screenshot of basic information – Quantification Inputs Tab

Project Type	District Supplied Project ID	*Expected First Year of Operation	* Project Life (yrs)	*Annual Usage (hrs/yr for off-road, mi/yr for on-road)	Efficiency Factor	Adjusted Annual Activity (hrs/yr)	*Type of Off-Road Project
Off-Road Ag Equipment: 2 (or more)-for-1	112233	2025		500	1.5	667	Replacement
Off-Road Ag Equipment: 2 (or more)-for-1				500			

Figure 41: Screenshot of inputs for 2 baseline equipment being scrapped for 1 replacement

*Engine Model Year	Vehicle Model Year	*Fuel Type	Vehicle Manufacturer	Vehicle Model	Vehicle Serial Number	Engine Serial Number	Engine Family Name	Engine Displacement (liters)
1992	1992	Diesel	Manufacturer ABC	Model ABC	1111	2222	Test	7.6
1998	1998	Diesel	Manufacturer XYZ	Model XYZ	3333	4444	Test	7.6

Figure 42: Screenshot of inputs for 2 baseline equipment being scrapped for 1 replacement (cont.)

*Emission Standard	*Equipment Type	*Gross Vehicle Weight Rating	*Intended Service Class	*Horsepower	*Tier	*Other Installed Emissions Controls?	*Engine Cycle/Induction Type
	Combine Harvesters			260	Tier 0		
	Combine Harvesters			300	Tier 1		

Figure 43: Screenshot of inputs for replacement equipment

*Engine Model Year	Vehicle Model Year	*Replacement Vehicle Odometer/Hour Reading (mile for on-road, hour for off-road)	*Fuel Type	Vehicle Manufacturer	Vehicle Model	Vehicle Serial Number	Engine Serial Number	Engine Family Name	Engine Displacement (liters)
2025	2025		Diesel	Manufacturer JKL	Model JKL	7777	8888	Test	12.9

Figure 44: Screenshot of inputs for replacement equipment (cont.)

*Emission Standard	*Equipment Type	*Gross Vehicle Weight Rating	*Intended Service Class	*Horsepower	*Tier	*Engine Cycle/Induction Type
	Combine Harvesters			480	Tier 4 Final	

Funding Inputs in the "Funding Inputs-Incentive Calcs" Tab

Information on the "Project Type" and "District Supplied Project ID" will auto-populate based upon inputs in the "Project Profile" tab. Criteria Pollutants, GHG Cost-Effectiveness, and Maximum Eligible Incentive Amount values will also be calculated and auto-populate based on the project Quantification Inputs. It should be noted that the User Defined Incentive Amount cannot exceed the Maximum Eligible Incentive Amount.

Table 13: Funding Inputs and Incentives Calcs

FARMER Benefits Calculator Tool Headings: "Funding Inputs-Incentive Calcs" Tab	**User-Defined Inputs**
New Vehicle/Equipment Cost ($)	570,000
Funding Source #1 – Source	GGRF (FARMER)
Funding Source #1 – Amount ($)	456,000
FARMER allocation Fiscal Year	FY 2018-2019
Funding Source #2 – Source	
Funding Source #2 – Amount ($)	
FARMER allocation Fiscal Year	
Funding Source #3 – Source	
Funding Source #3 – Amount ($)	
FARMER allocation Fiscal Year	
User Defined Cost-Effectiveness Limit ($/ton)	
User Defined Incentive Amount ($)	

Figure 45 – Figure 47 show how the inputs from Table 13 are inputted into the tool.

Figure 45: Screenshots of Funding Inputs and Incentive Calculations tab

Project Type	District Supplied Project ID	*New Vehicle/ Equipment Cost ($)	Funding Source #1		
			*Source	Amount ($)	FARMER allocation Fiscal Year
Off-Road Ag Equipment: 2 (or more)-for-1	112233	570,000.00	GGRF (FARMER)	456,000.00	FY 2018-2019
Off-Road Ag Equipment: 2 (or more)-for-1					

Figure 46: Screenshots of Funding Inputs and Incentive Calculations tab

Funding Source #2			Funding Source #3		
*Source	Amount ($)	FARMER allocation Fiscal Year	Source	Amount ($)	FARMER allocation Fiscal Year

Figure 47: Screenshots of Funding Inputs and Incentive Calculations tab (cont.)

Max allowable incentive amount ($)	Cost-effectiveness at max incentive ($/ton)	Incentive amount based on user defined cost-effectiveness ($)	User defined cost-effectiveness limit ($/ton)	User defined incentive amount ($)	Cost-effectiveness based on user defined incentive amount ($/ton)	GHG Cost-Effectiveness (MTCO2e/$)
456,000.00	26,121.64	-			26,121.64	0.00

Step 3: Estimate GHG Emission Reductions and Selected Co-benefits for the Proposed Project Using the FARMER Benefits Calculator Tool

As shown in Figure 48 – Figure 50, the GHG & Co-Ben Aggregate tab displays GHG reductions (or an increase) and Co-Benefit reductions (or an increase) for each of the 8 project types aggregated.

Figure 48: Screenshots of results shown in GHG and Co-Ben Aggregate Tab

Project Type	GHG Reductions (MTCO2e)	PM2.5 Reductions		NOx Reductions	
		(tpy)	(lbs)	(tpy)	(lbs)
Heavy-Duty On-Road Trucks	-	-	-	-	-
Off-Road Agricultural Equipment	-	-	-	-	-
Zero-Emission Ag UTV	-	-	-	-	-
Used Agricultural Equipment	-	-	-	-	-
Off-Road Ag Equipment: 2 (or more)-for-1	34.49	0.03	691.20	1.01	20,246.80

Figure 49: Screenshots of results shown in GHG and Co-Ben Aggregate Tab (cont.)

Reactive Organic Gas Reductions		Diesel PM (PM10) Reductions	
(tpy)	(lbs)	(tpy)	(lbs)
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
0.09	1,737.60	0.04	751.20

Figure 50: Screenshots of results shown in GHG and Co-Ben Aggregate Tab (cont.)

Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
2,553.34	-	12,307.08	-

The **GHG Summary tab** displays GHG reductions (or an increase) for each line item project. It also prorates the emissions by funding source as shown in Figure 51 – Figure 52.

Figure 51: Screenshot of results shown in GHG Summary Tab

By project line item:		Not Prorated	FARMER Program	CCI GGRF	FARMER GGRF Prorated	APCF Prorated
Project Type	District Supplied Project ID	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)
Off-Road Ag Equipment: 2 (or more)-for-1	112233	34.49	34.49	34.49	34.49	-
Off-Road Ag Equipment: 2 (or more)-for-1						

Figure 52: Screenshot of results shown in GHG Summary Tab (cont.)

General Fund Prorated	GGRF (other) Prorated	Interest (FARMER) Prorated	Local Funding Prorated	Other State/Federal Funding Prorated
GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)
-	-	-	-	-

The **Co-Benefits Summary** tab displays reductions (or an increase) for criteria pollutants, co-benefits, and key variables. Similar to the **GHG Summary** tab, prorated values for the aforementioned criteria pollutants, co-benefits, and key variables are also calculated as shown in Figure 53 - Figure 57.

Figure 53: Screenshot of results shown in Co-Benefits Summary Tab

Total					
Project Type	**District Supplied Project ID**	**Fuel Reduction (gal)**	**Fuel Reduction (scf)**	**Fuel Savings ($)**	**Fossil Fuel Energy Use Reductions (kWh)**
Off-Road Ag Equipment: 2 (or more)-for-1	112233	2,553.34	-	12,307.08	-
Off-Road Ag Equipment: 2 (or more)-for-1					

Figure 54: Screenshot of results shown in Co-Benefits Summary Tab (cont.)

Total			
$PM_{2.5}$ Reductions (tpy)	**NOx Reductions (tpy)**	**Reactive Organic Gas Reductions (tpy)**	**Diesel PM (PM10) Reductions (tpy)**
0.03	1.01	0.09	0.04

Figure 55: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions due to FARMER Program

FARMER Program							
Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
2,553.34	-	12,307.08	-	0.03	1.01	0.09	0.04

Figure 56: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions due to GGRF

CCI GGRF							
Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
2,553.34	-	12,307.08	-	0.03	1.01	0.09	0.04

Figure 57: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions due to FARMER GGRF Prorated

FARMER GGRF Prorated							
Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
2,553.34	-	12,307.08	-	0.03	1.01	0.09	0.04

Administrative Step: Fiscal Reporting

Based on the dates entered in the "Project Profile" tab and on the funding amounts entered in the "Funding Inputs-Incentive Calcs" tab, users can track their fiscal spending based on funding source and fiscal year within a given quarter. Note: for the "Fiscal Reporting Summary" tab to work properly, air districts must fill out the required input fields as well as specify the applicable quarterly reporting period in the "Air District Info" tab.

Figure 58: Screenshot of Fiscal Reporting Summary tab

Funding Source	Fiscal Year	Share of Project Implementation Funding (%)	Total Project Funding	Total Project Implementation Funding	Total Funding Allocation	Total Interest and Revenue Earned ($)
GGRF	FY 2018-2019				$ -	

Figure 59: Screenshot of Fiscal Reporting Summary tab (cont.)

Total project funding under contracts	Percent project funding under contract or obligated	Remaining project funding available		Total project funding expended or liquidated	Percent project funding expended or liquidated	Project funding available for expenditure/ liquidation
$ 456,000.00		$ (456,000.00)		$ 456,000.00		$ (456,000.00)

Figure 60: Screenshot of Fiscal Reporting Summary tab (cont.)

Project implementation funds expended	Implementation costs not captured in the "Project Implementation Costs" tab	Percent project implementation funding expended	Remaining balance of project implementation funds		Recaptured Funds
$ -			$ -		

Example Project III

Overview of the proposed project

The proposed project is a Zero-Emission Ag UTV project with the following features:

- The applicant will be scrapping a Tier 0, diesel UTV and replacing it with an electric UTV.

The proposed project is located in Amador County with the following project characteristics:

- The applicant primarily operates his/her UTV within a community that is characterized as disadvantaged.

Methods to apply

Step 1: Define the Project

Define the Project in the "Project Profile" Tab

Table 14: Zero-Emission Ag UTV

FARMER Benefits Calculator Tool Headings: "Project Profile" Tab	User-Defined Inputs
Project Type	Zero-Emission Ag UTV
Implementing Air District	Amador County APCD
District Supplied Project ID	13579
# of Baseline Equipment being scrapped for 2 (or more)-for-1	Not Applicable
Mailing Address: Street Name	123 ABC Road
Mailing Address: City	TestCity
Mailing Address: State	CA
Mailing Address: Zip Code	98765
Vehicle/Equipment Latitude (degrees)	37.726039
Vehicle/Equipment Longitude (degrees)	-121.229604
Contract Execution Date	1/1/2025
Post-Inspection Date	2/1/2025
Date of Payment	3/1/2025
Percent of Operation in District	100%
Percent of Operation in California	100%
Farm Size	≤100 acres
Would replacement have occurred without FARMER funding?	Yes
Project Located Within Disadvantaged Community?	Yes
Project Located Within Low-income Community or Low-income Household?	No
Project Located Within 1/2-mile Low-income Buffer Region?	No

FARMER Benefits Calculator Tool Headings: "Project Profile" Tab	User-Defined Inputs
Community Need Addressed	D. Direct Engagement During Program Development
Written description of the identified community or household need	This is an example of a written description: Air District held several community meetings and received letters of support for funding ag UTV replacements. The communities covered by the program are heavily impacted by poor air quality.
Benefit Criteria Met	A. Project reduces criteria air pollutant or toxic air contaminant emissions
Written description of the benefits to priority populations	This is an example of a written description: Incentives for ag UTV replacements make it easier for farmers to receive newer equipment. This more reliable equipment reduces maintenance costs to farmers and increases farm productivity. Moreover, the cleaner equipment will reduce greenhouse gas and criteria pollutant emissions.
Written description of any project co-benefits	This is an example of a written description: Newer pumps reduce maintenance costs.
Indicate Project Status	In-Progress
Indicate Project Status: detailed description, date of cancellation, etc.	[optional – fill out as needed]

Figure 61 – Figure 65 shows how the project profile information from Table 14 is inputted into the tool.

Figure 61: Screenshot of Project Profile Tab – Location Information

*Project Type	*Implementing Air District	*District Supplied Project ID (must be filled out for proper calculations)	*# of Baseline Equipment being scrapped for 2 (or more)-for-1	Mailing Address: Street Number and Name	Mailing Address: City
Zero-Emission Ag UTV	Amador County APCD	13579		123 ABC Road	TestCity

Figure 62: Screenshot of Project Profile Tab – Location Information (cont.)

Mailing Address: State	Mailing Address: Zip Code	Vehicle/Equipment Latitude (degrees)	Vehicle/Equipment Longitude (degrees)
CA	98765	37.726039	-121.229604

Figure 63: Screenshot of Project Profile Tab – Dates, and Percent Operation

Contract Execution Date	Post-Inspection Date	Date of Payment	Percent of Operation in District	*Percent of Operation in California	Farm Size	Would replacement have occurred without FARMER funding?
1/1/2019	2/1/2019	3/1/2019	100%	100%	≤100 acres	Yes

Figure 64: Screenshot of Project Profile Tab – Columns regarding benefits to Priority Populations

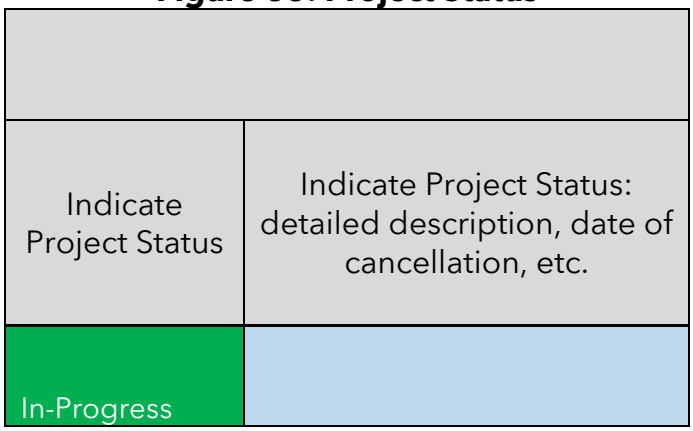
Project Located Within:			Community Need Addressed
Disadvantaged Community?	Low-income Community or Low-income Household?	1/2-mile Low-income Buffer Region?	
Yes	No	No	D. Direct Engagement During Program Development

Figure 65: Screenshot of Project Profile Tab – Columns regarding benefits to Priority Populations (cont.)

**Written description of the identified community or household need	Benefit Criteria Met	**Written description of the benefits to priority populations	**Written description of any Project Co-benefits
This is an example of a written description: Air District held several community meetings and received letters of support for funding ag UTV replacements. The communities covered by the program are heavily impacted by poor air quality.	A. Project reduces criteria air pollutant or toxic air contaminant emissions	This is an example of a written description: Incentives for ag UTV replacements make it easier for farmers to receive newer equipment. This more reliable equipment reduces maintenance costs to farmers and increases farm productivity. Moreover, the cleaner equipment will reduce greenhouse gas and criteria pollutant emissions.	This is an example of a written description: Newer pumps reduce maintenance costs.

Figure 66 shows four columns that are related to tracking project status. The two columns pertaining to Average Annual Use During Project Life are not activated until the project has been marked as "Completed" by the user in the "Indicate Project Status" column. The "Indicate Project Status" column is a new feature that enables users to denote whether a project is: in-progress, completed, cancelled, non-performing, or other. The fiscal information and emission reductions results are zeroed out in their respective summary tabs when a project is marked as "cancelled". Users are highly encouraged to provide information detailing why a project was cancelled or is non-performing in the last column, "Indicate Project Status: detailed description, date of cancellation, etc." When a project is finished and the user indicates "completed", the user must report on the average annual usage (in miles, hrs, or kWh) for the particular piece of equipment/vehicle.

Figure 66: Project Status



Step 2: Determine the FARMER Benefits Calculator Tool Inputs Needed

Inputs for the Baseline and Replacement Equipment/Vehicles in the "Quantification Inputs" Tab

Information on the "Project Type" and "District Supplied Project ID" will auto-populate based upon inputs in the "Project Profile" tab.

Table 15: First row inputs for Zero-Emission Ag UTV project

FARMER Benefits Calculator Tool Headings: "Quantification Inputs" Tab	FARMER Benefits Calculator Tool Subheadings: "Quantification Inputs" Tab	User-Defined Inputs
Basic Information	**Expected First Year of Operation**	2025
	Project Life (yrs)	10
	Annual Usage (hrs/yr for off-road, mi/yr for on-road)	1200
	Efficiency Factor	
	Type of Off-Road Project	Replacement
Baseline Vehicle/Equipment	**Engine Model Year**	2009
	Vehicle Model Year	Not Applicable
	Fuel Type	Diesel
	Vehicle Manufacturer	Manufacturer JKL
	Vehicle Model	Model JKL
	Vehicle Serial Number	Not Applicable
	Engine Serial Number	1111
	Engine Family Name	Test
	Engine Displacement (liters)	10
	Emission Standard	Not Applicable
	Equipment Type	Agricultural UTVs
	Gross Vehicle Weight Rating	Not Applicable
	Intended Service Class	Not Applicable
	Horsepower	22.8
	Tier	Tier 0
	Other Installed Emissions Controls?	Not Applicable
	Engine Cycle/Induction Type	Not Applicable
Replacement Vehicle/Equipment	**Engine Model Year**	2025
	Vehicle Model Year	Not Applicable
	Fuel Type	Electric
	Vehicle Manufacturer	Manufacturer DEF
	Vehicle Model	Model DEF
	Vehicle Serial Number	Not Applicable
	Engine Serial Number	2222
	Engine Family Name	Test
	Engine Displacement (liters)	10
	Emission Standard	Not Applicable
	Equipment Type	Agricultural UTVs
	Gross Vehicle Weight Rating	Not Applicable
	Intended Service Class	Not Applicable
	Horsepower	Not Applicable

FARMER Benefits Calculator Tool Headings: "Quantification Inputs" Tab	FARMER Benefits Calculator Tool Subheadings: "Quantification Inputs" Tab	User-Defined Inputs
	Tier	Not Applicable
	Engine Cycle/Induction Type	Not Applicable

Figure 67 – Figure 71 shows how the inputs in Table 15 are inputted into the tool.

Figure 67: Screenshot of basic information – Quantification Inputs Tab

Project Type	District Supplied Project ID	*Expected First Year of Operation	* Project Life (yrs)	*Annual Usage (hrs/yr for off-road, mi/yr for on-road)	Efficiency Factor	Adjusted Annual Activity (hrs/yr)	*Type of Off-Road Project
Zero-Emission Ag UTV	13579	2025	10	1200			Replacement

Figure 68: Screenshot of inputs for baseline agricultural UTV

*Engine Model Year	Vehicle Model Year	*Fuel Type	Vehicle Manufacturer	Vehicle Model	Vehicle Serial Number	Engine Serial Number	Engine Family Name	Engine Displacement (liters)
2009		Diesel	Manufacturer JKL	Model JKL		1111	Test	10

Figure 69: Screenshot of inputs for baseline agricultural UTV (cont.)

*Emission Standard	*Equipment Type	*Gross Vehicle Weight Rating	*Intended Service Class	*Horsepower	*Tier	*Other Installed Emissions Controls?	*Engine Cycle/Induction Type
	Agricultural UTVs			22.8	Tier 0		

Figure 70: Screenshot of inputs for replacement agricultural UTV

*Engine Model Year	Vehicle Model Year	*Replacement Vehicle Odometer/Hour Reading (mile for on-road, hour for off-road)	*Fuel Type	Vehicle Manufacturer	Vehicle Model	Vehicle Serial Number	Engine Serial Number	Engine Family Name	Engine Displacement (liters)
2025			Electric	Manufacturer DEF	Model DEF		2222	Test	10

Figure 71: Screenshot of inputs for replacement agricultural UTV (cont.)

*Emission Standard	*Equipment Type	*Gross Vehicle Weight Rating	*Intended Service Class	*Horsepower	*Tier	*Engine Cycle/Induction Type
	Agricultural UTVs					

Funding Inputs in the "Funding Inputs-Incentive Calcs" Tab

Information on the "Project Type" and "District Supplied Project ID" will auto-populate based upon inputs in the "Project Profile" tab. Criteria Pollutants, GHG Cost-Effectiveness, and Maximum Eligible Incentive Amount values will also be calculated and auto-populate based on the project Quantification Inputs. It should be noted that the User Defined Incentive Amount cannot exceed the Maximum Eligible Incentive Amount.

Table 16: Funding Inputs and Incentives Calcs for Agricultural UTVs

FARMER Benefits Calculator Tool Headings: "Funding Inputs-Incentive Calcs" Tab	User-Defined Inputs
New Vehicle/Equipment Cost ($)	10,000
Funding Source #1 – Source	GGRF (FARMER)
Funding Source #1 – Amount ($)	7,000
FARMER allocation Fiscal Year	FY 2024-2025
Funding Source #2 – Source	
Funding Source #2 – Amount ($)	
FARMER allocation Fiscal Year	
Funding Source #3 – Source	
Funding Source #3 – Amount ($)	
FARMER allocation Fiscal Year	
User Defined Cost-Effectiveness Limit ($/ton)	
User Defined Incentive Amount ($)	7,000

Figure 72 –
Figure 74 show how the inputs from Table 16 are inputted into the tool.

Figure 72: Screenshots of Funding Inputs and Incentive Calculations tab

Project Type	District Supplied Project ID	*New Vehicle/ Equipment Cost ($)	Funding Source #1		
			*Source	Amount ($)	FARMER allocation Fiscal Year
Zero-Emission Ag UTV	13579	10,000.00	GGRF (FARMER)	7,000.00	FY 2018-2019

Figure 73: Screenshots of Funding Inputs and Incentive Calculations tab

Funding Source #2			Funding Source #3		
*Source	Amount ($)	FARMER allocation Fiscal Year	Source	Amount ($)	FARMER allocation Fiscal Year

Figure 74: Screenshots of Funding Inputs and Incentive Calculations tab

Max allowable incentive amount ($)	Cost-effectiveness at max incentive ($/ton)	Incentive amount based on user defined cost-effectiveness ($)	User defined cost-effectiveness limit ($/ton)	User defined incentive amount ($)	Cost-effectiveness based on user defined incentive amount ($/ton)	GHG Cost-Effectiveness (MTCO2e/$)	Notes (Optional)
7,500.00	3,005.87	-		7,000.00	2,805.47	0.01	

Step 3: Estimate GHG Emission Reductions and Selected Co-benefits for the Proposed Project Using the FARMER Benefits Calculator Tool

As shown in Figure 75 – Figure 77, the GHG & Co-Ben Aggregate tab displays GHG reductions (or an increase) and Co-Benefit reductions for each of the 8 project types aggregated.

Figure 75: Screenshots of results shown in GHG and Co-Ben Aggregate Tab

Project Type	GHG Reductions (MTCO2e)	PM2.5 Reductions		NOx Reductions	
		(tpy)	(lbs)	(tpy)	(lbs)
Heavy-Duty On-Road Trucks	-	-	-	-	-
Off-Road Agricultural Equipment	-	-	-	-	-
Zero-Emission Ag UTV	60.73	0.01	119.80	0.08	1,570.60
Used Agricultural Equipment	-	-	-	-	-
Off-Road Ag Equipment: 2 (or more)-for-1	-	-	-	-	-

Figure 76: Screenshots of results shown in GHG and Co-Ben Aggregate Tab (cont.)

Reactive Organic Gas Reductions		Diesel PM (PM10) Reductions	
(tpy)	(lbs)	(tpy)	(lbs)
-	-	-	-
-	-	-	-
0.10	1,963.40	0.01	130.20
-	-	-	-
-	-	-	-

Figure 77: Screenshots of results shown in GHG and Co-Ben Aggregate Tab (cont.)

Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)
-	-	-	-
-	-	-	-
6,395.23	-	19,357.95	(8,848.06)
-	-	-	-
-	-	-	-

The GHG Summary tab displays GHG reductions (or an increase) for each line item project. It also prorates the emissions by funding source as shown in Figure 78 – Figure 79.

Figure 78: Screenshot of results shown in GHG Summary Tab

By project line item:		Not Prorated	FARMER Program	CCI GGRF	FARMER GGRF Prorated	APCF Prorated	General Fund Prorated
Project Type	District Supplied Project ID	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)
Zero-Emission Ag UTV	13579	60.73	60.73	60.73	60.73	-	-

Figure 79: Screenshot of results shown in GHG Summary Tab (cont.)

GGRF (other) Prorated	Interest (FARMER) Prorated	Local Funding Prorated	Other State/Federal Funding Prorated
GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)	GHG Reductions (MTCO2e)
-	-	-	-

The Co-Benefits Summary tab displays changes in criteria pollutants, co-benefits, and key variables. Similar to the GHG Summary tab, prorated values for the aforementioned criteria pollutants, co-benefits, and key variables are also calculated as shown in Figure 80 - Figure 84.

Figure 80: Screenshot of results shown in Co-Benefits Summary Tab

Total					
Project Type	District Supplied Project ID	Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)
Zero-Emission Ag UTV	13579	6,395.23	-	19,357.95	(8,848.06)

Figure 81: Screenshot of results shown in Co-Benefits Summary Tab (cont.)

Total			
$PM_{2.5}$ Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
0.08	0.10	0.10	0.01

Figure 82: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions due to FARMER Program

FARMER Program							
Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
6,395.23	-	19,357.95	(8,848.06)	0.08	0.10	0.10	0.01

Figure 83: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions prorated just to GGRF

CCI GGRF							
Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
6,395.23	-	19,357.95	(8,848.06)	0.08	0.10	0.10	0.01

Figure 84: Screenshot of results shown Co-Benefits Summary Tab (cont.) – Emissions reductions prorated just to FARMER GGRF Prorated

FARMER GGRF Prorated							
Fuel Reduction (gal)	Fuel Reduction (scf)	Fuel Savings ($)	Fossil Fuel Energy Use Reductions (kWh)	PM2.5 Reductions (tpy)	NOx Reductions (tpy)	Reactive Organic Gas Reductions (tpy)	Diesel PM (PM10) Reductions (tpy)
6,395.23	-	19,357.95	(8,848.06)	0.08	0.10	0.10	0.01

Administrative Step: Fiscal Reporting

Based on the dates entered in the "Project Profile" tab and on the funding amounts entered in the "Funding Inputs-Incentive Calcs" tab, air districts can track their fiscal spending based on funding source and fiscal year within a given quarter. Note: for the "Fiscal Reporting Summary" tab to work properly, air districts must fill out the required input fields as well as specify the applicable quarterly reporting period in the "Air District Info" tab.

Figure 85: Screenshot of Fiscal Reporting Summary tab

	Funding Source	Fiscal Year	Share of Project Implementation Funding (%)	Total Project Funding	Total Project Implementation Funding	Total Funding Allocation		Total Interest and Revenue Earned ($)	
	GGRF	FY 2024-2025				$ -			

Figure 86: Screenshot of Fiscal Reporting Summary tab (cont.)

Total project funding under contracts	Percent project funding under contract or obligated	Remaining project funding available		Total project funding expended or liquidated	Percent project funding expended or liquidated	Project funding available for expenditure/ liquidation
$ 7,000.00		$ (7,000.00)		$ 7,000.00		$ (7,000.00)

Figure 87: Screenshot of Fiscal Reporting Summary tab (cont.)

Project implementation funds expended	Implementation costs not captured in the "Project Implementation Costs" tab	Percent project implementation funding expended	Remaining balance of project implementation funds		Recaptured Funds
$ -			$ -		

Example: Project Implementation Costs

Within the FARMER Benefits tool, the air districts can report on costs associated with implementing the program/project. For example, staff may have to travel to conduct outreach regarding the funding opportunities. Table 17 – Table 18 lists an example of how such project implementation related information should be entered into the Project Implementation Costs tab (Figure 88 – Figure 91).

Table 17: Project Implementation Costs

FARMER Benefits Calculator Tool Headings: "Project Implementation Costs" Tab	User-Defined Inputs
Air District Name	Amador County APCD
Implementation Cost Category	Staff/Jobs
Semi-Annual Reporting Period	October 2025 - March 2026
Funding Source	GGRF
Fiscal Year	FY 2024-2025
Title, Job Classification, or Trades (e.g., air quality specialists, accountants, field assistants, and staff technicians)	Air Pollution Specialist
Minimum Education Required for Position	4-Year College Completed
Minimum Job Experience Required for Position	<1 year
Total Funded Staff Hours (hrs)	160
Average Hourly Wage ($/hr)	30
Hourly Fringe Costs ($/hr)	10
Hourly Indirect Costs ($/hr)	5
Salary Costs ($/job)	32,000
Other Implementation Costs ($)	
Employer-Paid Health Insurance	Yes
Paid Leave	Yes
Retirement Plan	Yes
Description/Justification	This is an example of a written description: Staff were needed for one month to administer the program.

Table 18: Project Implementation Costs

FARMER Benefits Calculator Tool Headings: "Project Implementation Costs" Tab	User-Defined Inputs
Air District Name	Amador County APCD
Implementation Cost Category	Travel
Semi-Annual Reporting Period	October 2025 - March 2026
Funding Source	GGRF
Fiscal Year	FY 2024-2025
Title, Job Classification, or Trades (e.g., air quality specialists, accountants, field assistants, and staff technicians)	Not Applicable
Total Funded Staff Hours (hrs)	Not Applicable
Average Hourly Wage ($/hr)	Not Applicable
Hourly Fringe Costs ($/hr)	Not Applicable
Hourly Indirect Costs ($/hr)	Not Applicable
Salary Costs ($/job)	Not Applicable
Other Implementation Cost ($)	1,000
Employer-Paid Health Insurance	Not Applicable
Paid Leave	Not Applicable
Retirement Plan	Not Applicable
Description/Justification	This is an example of a written description: staff had to travel to public workshops and conducted outreach on the funding opportunities.

Figure 88: Screenshot of Project Implementation Costs tab filled in with inputs – Cost Category, Time Period, Funding Source, and Fiscal Year

Air District Name	Implementation Cost Category	Semi-Annual Reporting Period	Funding Source	Fiscal Year
Amador County APCD	Staff/Jobs	October 2025 - March 2026	GGRF	FY 2024-2025
Amador County APCD	Travel	October 2025 - March 2026	GGRF	FY 2024-2025

Figure 89: Screenshot of Project Implementation Costs tab filled in with inputs – Qualification Requirements and Costs

Title, Job Classification, or Trades (e.g., air quality specialists, accountants, field assistants, and staff technicians)	Minimum Education Required for Position	Minimum Job Experience Required for Position	Total Funded Staff Hours (hrs)
Air Pollution Specialist	4-Year College Completed	<1 year	160

Figure 90: Screenshot of Project Implementation Costs tab filled in with inputs – Qualification Requirements and Costs (cont.)

Average Hourly Wage ($/hr)	Hourly Fringe Costs ($/hr)	Hourly Indirect Costs ($/hr)	Salary Costs ($/job)	Other Implementation Costs ($)
$ 30.00	$ 10.00	$ 5.00	$ 7,200.00	
				$ 1,000.00

Figure 91: Screenshot of Project Implementation Costs tab filled in with inputs – Benefits

Employer-Paid Health Insurance	Paid Leave	Retirement Plan	Description/Justification
Yes	Yes	Yes	This is an example of a written description: Staff were needed for one month to administer the program.
			This is an example of a written description: staff had to travel to public workshops and conducted outreach on the funding opportunities.