

California Air Resources Board

Greenhouse Gas Quantification Methodology for the California Department of Resources Recycling and Recovery Waste Diversion Grant and Loan Program

Greenhouse Gas Reduction Fund Fiscal Year 2015-16 & 2016-17



December 22, 2016

ARB released a final FY 2015-16 quantification methodology in June 2016. ARB staff subsequently corrected a technical error and reposted the quantification methodology, calculator tool, and emission reduction factor worksheet for use in FY 2015-16 and FY 2016-17 in December 2016.

Table of Contents

Section A. Introduction.....	1
Methodology Development.....	1
Tools	1
Major Updates.....	4
Waste Diversion Project Types	5
GHG Emission Reductions Quantification Approach	6
Program Assistance	6
Section B. Quantification Methodology	7
Overview	7
Step 1: Determine the Project Type-Specific Inputs Needed	8
Step 2: Estimate GHG Emission Reductions for the Proposed Project Using the Calculator Tool	11
Section C. Documentation	12
Section D. Reporting After Funding Award	13
Table 1. Required Calculator Inputs for Eligible Project Type(s)	8
Table 2. Quantification and Reporting By Project Phase.....	13
Figure 1. Steps to Estimating GHG Emission Reductions.....	7

Section A. Introduction

The California Air Resources Board (ARB) is responsible for providing the quantification methodology to estimate greenhouse gas (GHG) emission reductions from projects receiving monies from the Greenhouse Gas Reduction Fund (GGRF) for California Climate Investments. For the California Department of Resources Recycling and Recovery's (CalRecycle) Waste Diversion Program, ARB staff developed this GHG quantification methodology and the accompanying calculator tool for applicants to use to estimate the GHG emission reductions from each proposed project. ARB staff will periodically review each quantification methodology to evaluate its effectiveness and update methodologies to make them more robust, user-friendly, and appropriate to the projects being quantified.

This methodology uses calculations to estimate the reduction in GHG emissions associated with the diversion of waste from landfills. These calculations are based on estimates of tonnage of diverted material, composition of feedstock, tonnage of residual material, co-products produced, and emission reduction factors from published sources. This GHG quantification methodology applies to additional material only (i.e., material that would otherwise be sent to a landfill).

Methodology Development

ARB staff followed a set of principles to guide the development of the GHG quantification methodology. These principles ensure that the methodology for Waste Diversion Program projects would:

- Apply at the project-level;
- Align with the project types proposed for funding;
- Provide uniform methods to be applied statewide, and be accessible by all applicants;
- Support the analysis of GHG emission reductions from the proposed projects;
- Use existing and proven tools and methods; and
- Use project-level data for estimated tonnage diverted from landfills.

The methodology fits these objectives and provides a uniform approach to quantify GHG emission reductions in metric tons of carbon dioxide equivalent (MTCO_{2e}). ARB released a draft FY 2015-16 quantification methodology for public comment in April 2016. ARB released a final FY 2015-16 quantification methodology in June 2016. ARB staff subsequently corrected a technical error and reposted the quantification methodology, calculator tool, and emission reduction factor worksheet for use in FY 2015-16 and FY 2016-17 in December 2016.

Tools

Applicants must use this GHG quantification methodology, in conjunction with the accompanying calculator tool, to estimate the GHG emission reductions from their proposed FY 2015-16 and 2016-17 waste diversion projects. The calculator tool can be

downloaded from: www.arb.ca.gov/cci-quantification. Additional documentation on how the emission reduction factors used in the calculator were developed is available from the same website.

Applicants that propose eligible projects that cannot be calculated using the calculator tool, such as projects that utilize a unique digestion or composting technology not included in the calculator, may propose the use of alternative GHG quantification methods. Applicants who intend to use alternative quantification methods must contact CalRecycle via email to describe how the proposed project is outside the scope of the calculator and indicate that they would like to use an alternative GHG methodology. CalRecycle will confer with ARB, and the applicant will be notified within a week whether they have permission to use an alternative method.

The calculator tool adopted methods and emission factors from existing quantification methodologies and published studies that are publicly available, applicable statewide, and subject to regular updates to incorporate new information. The documents are free of charge, available to anyone with internet access, and provide California specific methods for quantifying the impacts of waste diversion projects. These source materials are described below.

Recycling Emission Reduction Factors (RERFs)

The material-specific RERFs were determined using a life-cycle approach to calculate the net avoided emissions from manufacturing using recycled material in place of raw virgin materials. The methods used, results, and discussion of the RERFs are detailed in reports titled *Method for Estimating Greenhouse Gas Emission Reductions from Recycling* (2011),¹ *Draft Estimating Greenhouse Gas Emission Reductions from Recycling Residential and Commercial Carpets* (2016),² *Mattress and Box Spring Case Study* (2012),³ and *Advancing Sustainable Materials Management: Facts and Figures 2013: Assessing Trends in Material Generation, Recycling and Disposal in the United States*.⁴ The RERFs are consistent with GHG accounting practices used in California and can be used to accurately and uniformly quantify GHG emission reductions attributable to the diversion of fiber, plastic, and glass for the purpose of manufacturing recycled-content products.

Compost Emission Reduction Factor (CERF)

The 2016 draft *Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities*⁵ document (CERF) calculates the net avoided emissions from diverting organic waste from landfills to composting facilities. It includes California-specific emission factors for avoided landfill emissions attributable to the diversion of organic waste (i.e., food scraps, yard trimmings, branches, leaves, grass, and organic municipal waste). These emission

¹ http://www.arb.ca.gov/cc/protocols/localgov/pubs/recycling_method.pdf

² <http://www.arb.ca.gov/cc/waste/carpetrerf.pdf>

³ <http://www.calrecycle.ca.gov/publications/Documents/1430/20121430.pdf>

⁴ https://www.epa.gov/sites/production/files/2015-09/documents/2013_advncng_smm_rpt.pdf

⁵ <http://www.arb.ca.gov/cc/waste/cerffinal.pdf>

reduction factors are used consistently across all organic waste diversion projects included in the quantification methodology and calculator. The methods used, assumptions, and results are detailed in the draft ARB CERF report.

Low Carbon Fuel Standard (LCFS) Regulation and Pathways

The LCFS pathways use a well-to-wheels (WTW) life-cycle approach to determine the emissions associated with 27 different transportation fuels taking into consideration the fuel production, transportation, distribution and use. This GHG quantification methodology uses the fuel production rates and GHG emissions from the *Low Carbon Fuel Standard (LCFS) Pathway for the Production of Biomethane from High Solids Anaerobic Digestion (HSAD) of Organic (Food and Green) Wastes (2014)*⁶ and *Low Carbon Fuel Standard (LCFS) Pathway for the Production of Biomethane from the Mesophilic Anaerobic Digestion of Wastewater Sludge at Publicly-Owned Treatment Works (POTW) (2014)*⁷ to accurately and uniformly quantify GHG emission reductions attributable to the diversion of organic waste (i.e., food scraps, yard trimmings, branches, leaves, grass, and organic municipal waste) for the purpose of anaerobic digestion.

Food Rescue Emission Reduction Factor

The GHG emission reduction factor for food rescue is calculated based on GHG emissions from avoidable U.S. food waste as reported in *The Climate Change and Economic Impacts of Food Waste in the United States (2012)*⁸ and published in the International Journal on Food System Dynamics. These factors are also used by institutions such as the U.S. Department of Agriculture (USDA) and Organisation for Economic Co-operation and Development (OECD) to estimate emissions from food waste.

Refrigeration and Freezer Equipment Emissions

The emissions associated with refrigerant leakage from equipment used for food rescue was developed using the inventory from ARB's Refrigerant Management Program as described in *California's High Global Warming Potential Gases Emission Inventory*⁹ (2015). The emissions associated with energy consumption of the refrigeration equipment is calculated based on the energy use requirements set by the California Energy Commission in *2015 Appliance Efficiency Regulations*¹⁰ and the Department of Energy in the *Code of Federal Regulations: 10 CFR 431.66 - Energy conservation standards and their effective dates*.¹¹

Transportation Emissions

Transportation related emissions in this GHG quantification methodology are calculated based on a well-to-wheel (WTW) emission factor derived from carbon intensity data,

⁶ <http://www.arb.ca.gov/fuels/lcfs/121514hsad.pdf>

⁷ <http://www.arb.ca.gov/fuels/lcfs/121514wastewater.pdf>

⁸ <http://www.cleanmetrics.com/pages/ClimateChangeImpactofUSFoodWaste.pdf>

⁹ http://www.arb.ca.gov/cc/inventory/slcp/doc/hfc_inventory_tsd_20160411.pdf

¹⁰ <http://www.energy.ca.gov/2015publications/CEC-400-2015-021/CEC-400-2015-021.pdf>

¹¹ http://www.ecfr.gov/cgi-bin/text-idx?SID=ea9937006535237ca30dfd3e03ebaff2&mc=true&node=se10.3.431_166&rqn=div8

fuel energy density values, and fuel efficiency values. The emission factor was developed using ARB's Low Carbon Fuel Standard,¹² ARB's Mobile Source Emission Factor Model (EMFAC 2014),¹³ California-modified Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (CA-GREET 2.0),¹⁴ and U.S. Department of Transportation mileage assumptions.¹⁵ The WTW method accounts for the emissions associated with the production and distribution of different fuel types as well as any associated exhaust emissions.

Major Updates from FY 2014-15 Quantification Methodology

ARB updated the prior interim quantification methodology to enhance the analysis and provide additional clarity. The major changes include:

- Use of updated LCFS pathways, revised draft CERF, draft carpet RERF and mattress and box spring study;
- Application of standardized emission reduction factors to estimate GHG emission reductions from anaerobic digestion projects;
- Removal of GHG benefits associated with the application of compost to agricultural and working lands from the GHG accounting boundary;¹⁶
- Use of consistent assumptions pertaining to avoided landfill emissions across project types;
- Exclusion of biogenic CO₂ emissions, consistent with ARB GHG inventory methods¹⁷;
- Addition of calculation for food waste prevention source reduction projects;
- Addition of emission reduction factors for anaerobic digestion projects that inject biomethane into a commercial pipeline;
- Addition of emission reduction factors for recycled fiber, plastic, and glass projects that recycle textiles, carpet, and mattress and box springs;
- Details on requirements for reporting after funding award consistent with Funding Guidelines for Agencies that Administer California Climate Investments;¹⁸ and
- Additional definitions and clarity in the calculator tool.

¹² Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed Re-Adoption of the Low Carbon Fuel Standard, December 2014 available at:

<http://www.arb.ca.gov/regact/2015/lcfs2015/lcfs15isor.pdf>

¹³ <http://www.arb.ca.gov/emfac/2014/>

¹⁴ Direct values (without energy efficiency ratio adjustments). Source: California Air Resources Board, CA-GREET 1.8b versus 2.0 CI Comparison Table, April 1, 2015 available at:

http://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/040115_pathway_ci_comparison.pdf

¹⁵ <http://www.fhwa.dot.gov/policyinformation/statistics/2014/vm1.cfm>

¹⁶ ARB continues to work with CalRecycle and CDFA to develop an approach to quantify project-level GHG reductions associated with the application of compost to soils and may expand the GHG accounting boundary to include compost application in a future quantification methodology.

¹⁷ 2016 Edition – California GHG Emission Inventory, June 2016 available at:

https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_trends_00-14_20160617.pdf

¹⁸ California Air Resources Board. Funding Guidelines for Agencies Administering California Climate Investments. December 21, 2015. <http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/arb-fundingguidelines-for-ca-climate-investments.pdf>

Waste Diversion Project Types

CalRecycle developed the GGRF Waste Diversion Grant and Loan Program to reduce GHG emissions by supporting the expansion of the waste management infrastructure such as composting and anaerobic digestion facilities as well as facilities that manufacture recycled materials into beneficial products. Projects result in reduced methane emissions from landfills and GHG reductions in upstream resource management and manufacturing processes. Funded projects will increase the quantity of newly diverted materials from the following categories:

- 1) California-generated green waste, food materials, or alternative daily cover (ADC) to be composted or digested; and
- 2) California-generated fiber (paper, textiles, carpet, or wood), plastic, or glass materials to be used to manufacture products.

This GHG quantification methodology and accompanying calculator tool must be used to estimate the net GHG emission reduction associated with the following measures:

- Manufacturing Value-Added Finished Products using Recycled Fiber, Plastic, and Glass (FPG);
- Composting of Organics;
- Standalone Anaerobic Digestion (AD) of Organics Producing Biofuels or Bioenergy;
- Co-Digestion of Organics at Wastewater Treatment Plants Producing Biofuels or Bioenergy; and
- Food Waste Prevention.

Applicants must use the project type-specific quantification method provided in this GHG quantification methodology and the accompanying calculator. If the applicant is proposing an eligible project that cannot be calculated using the calculator tool, they must contact CalRecycle as described on the previous page.

GHG Emission Reductions Quantification Approach

The following metric will be used for ARB reporting purposes to assess the effectiveness of the project to reduce GHG emissions per dollar of GGRF funds:

$$\frac{\text{Total Project GHG Emission Reductions in Metric Tons of CO}_2\text{e}}{\text{GGRF Funds Requested (\$)}}$$

GGRF Funds Requested is the dollar amount requested through the Waste Diversion Program and any other GGRF programs to which the applicant has or may apply. Section B of this quantification methodology describes the process for estimating the GHG emission reductions for proposed waste diversion projects in FY 2015-16 and 2016-17. Additional documentation and reporting requirements are provided in sections C and D.

Program Assistance

CalRecycle staff will review the quantification portions of the waste diversion project applications to ensure that the methods described in this document were properly applied to estimate the GHG emission reductions for the proposed project. Applicants should use the following resources for additional questions and comments:

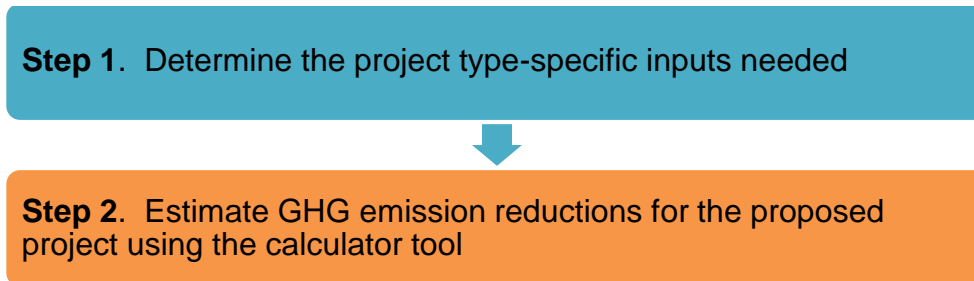
- Questions on this quantification document should be sent to GGRFProgram@arb.ca.gov.
- For more information on ARB's efforts to support implementation of GGRF investments, see: www.arb.ca.gov/auctionproceeds.
- Questions not related to this quantification document but pertaining to the Waste Diversion Program should be sent to GHGReductions@CalRecycle.ca.gov.
- Applicants with project proposals outside of the scope of the calculator tool that warrant project-specific calculations must contact CalRecycle at GHGReductions@CalRecycle.ca.gov.

Section B. Quantification Methodology

Overview

Applicants will follow the steps outlined in Figure 1 to estimate the total GHG emission reductions from the proposed project. Detailed instructions for each step are provided on subsequent pages.

Figure 1. Steps to Estimating GHG Emission Reductions



Step 1: Determine the Project Type-Specific Inputs Needed

The following section describes the data inputs needed to estimate the GHG emission reductions for proposed projects with the calculator tool per project type.

Table 1. Required Calculator Inputs for Eligible Project Type(s)

Manufacturing Value-Added Finished Products using Recycled Fiber, Plastic, and Glass (FPG)
<p>General Information (Read Me worksheet)</p> <ul style="list-style-type: none"> • Project Name; • Grant ID, if applicable; • Contact Name; • Contact Phone Number; • Contact Email; and • Date Completed. • Select Loan Program (FY 2015-16) or Grant Program (FY 2016-17) <p>Greenhouse Gas Quantification Inputs (FPG worksheet)</p> <ul style="list-style-type: none"> • Net tonnage of newly diverted material of each feedstock that will be used in manufacturing of recycled products each year of the proposed project; and • Feedstock categories: Glass, HDPE, PET, Corrugated Cardboard, Magazines/3rd Class Mail, Newspaper, Office Paper, Phone Books, Dimensional Lumber, Textiles, Mattress and Box Spring Sets for Recycling, Mattress and Box Spring Sets for Renovation, Nylon 6 Carpet Engineered Resin, Nylon 6 Carpet Cushion, Nylon 6 Tile Backing, Nylon 6.6 Carpet Engineered Resin, Nylon 6.6 Carpet Cushion, Nylon 6.6 Tile Backing, PET Carpet Cushion, Polypropylene Carpet Engineered Resin, Polypropylene Carpet Cushion, and Polypropylene Extruded Yarn. <p>GHG Emission Reduction/GGRF \$ Requested (GHG Summary worksheet)</p> <ul style="list-style-type: none"> • Total amount of GGRF funds requested to implement the project.
Composting of Organics
<p>General Information (Read Me worksheet)</p> <ul style="list-style-type: none"> • Project Name; • Grant ID, if applicable; • Contact Name; • Contact Phone Number; • Contact Email; and • Date Completed. <p>Greenhouse Gas Quantification Inputs (Compost worksheet)</p> <ul style="list-style-type: none"> • Tonnage of organic material that will be diverted from a landfill for windrow composting each year of the proposed project; and/or • Tonnage of organic material that will be diverted from a landfill for aerated static pile (ASP) composting each year of the proposed project; • Composition of feedstock (i.e., % food waste and % green waste; default values available if unknown, see definitions worksheet in accompanying calculator); and • Tonnage of residual material that will be landfilled or used as alternative daily cover (ADC) each year of the proposed project. <p>GHG Emission Reduction/GGRF \$ Requested (GHG Summary worksheet)</p> <ul style="list-style-type: none"> • Total amount of GGRF funds requested to implement the project.

Standalone Anaerobic Digestion (AD) of Organics Producing Biofuels or Bioenergy

General Information (Read Me worksheet)

- Project Name;
- Grant ID, if applicable;
- Contact Name;
- Contact Phone Number;
- Contact Email; and
- Date Completed.

Greenhouse Gas Quantification Inputs (Standalone AD worksheet)

- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce vehicle fuel and digestate that is landfilled or used as alternative daily cover (ADC) each year of the proposed project;
- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce vehicle fuel and digestate that is composted each year of the proposed project;
- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce electricity and digestate that is landfilled or used as ADC each year of the proposed project; and/or
- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce electricity and digestate that is composted each year of the proposed project.
- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce biomethane for injection into commercial pipeline and digestate that is landfilled or used as ADC each year of the proposed project;
- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce biomethane for injection into commercial pipeline and digestate that is composted each year of the proposed project; and
- Tonnage of residual material that will be landfilled or used as ADC each year of the proposed project.

GHG Emission Reduction/GGRF \$ Requested (GHG Summary worksheet)

- Total amount of GGRF funds requested to implement the project.

Co-Digestion of Organics at Wastewater Treatment Plants Producing Biofuels or Bioenergy

General Information (Read Me worksheet)

- Project Name;
- Grant ID, if applicable;
- Contact Name;
- Contact Phone Number;
- Contact Email; and
- Date Completed.

Greenhouse Gas Quantification Inputs (Co-digestion worksheet)

- Select the size of facility based on the throughput of treated waste (Small-Medium or Medium-Large) and whether the fate of the digestate will go to a landfill/used as ADC or composted each year of the proposed project;
- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce vehicle fuel each year of the proposed project;
- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce electricity each year of the proposed project;
- Tonnage of newly diverted organic material that will be sent to an anaerobic digester to produce biomethane for injection into commercial pipeline each year of the proposed project;
- Tonnage of residual material that will be landfilled or used as ADC each year of the proposed project;

GHG Emission Reduction/GGRF \$ Requested (GHG Summary worksheet)

- Total amount of GGRF funds requested to implement the project.

Food Waste Prevention

General Information (Read Me worksheet)

- Project Name;
- Grant ID, if applicable;
- Contact Name;
- Contact Phone Number;
- Contact Email; and
- Date Completed.

Greenhouse Gas Quantification Inputs (Food Waste worksheet)

- Tonnage of edible food that will be rescued and used to feed people each year of the proposed project.
- Tonnage of food waste that will be prevented from being landfilled as a result of source reduction each year of the proposed project.
- If refrigeration or freezer equipment will be purchased as part of the project:
 - select the type of equipment;.
 - enter the compartment volume of the equipment;
 - enter the refrigerant charge size (default values are available if unknown, see definitions worksheet in accompanying calculator); and
 - select the refrigerant type used in equipment.

GHG Emission Reduction/GGRF \$ Requested (GHG Summary worksheet)

- Total amount of GGRF funds requested to implement the project.

Step 2: Estimate GHG Emission Reductions for the Proposed Project Using the Calculator Tool

Once the applicant has compiled all of the required inputs from Step 1 and downloaded the calculator tool, they will enter project specific data to estimate GHG emission reductions. The calculator tool can be accessed here:

www.arb.ca.gov/cci-quantification.

The calculator allows users to estimate the net GHG benefit from a variety of specific waste diversion activities. Each eligible activity has a worksheet within the calculator. Applicants must input data from Step 1 into the worksheets that apply to the proposed project. The calculator provides fields for users to input project specific information. User input fields are shaded yellow and calculator outputs of GHG emission reduction estimates are shaded grey. After the user inputs are entered for each proposed activity, the GHG summary worksheet displays the annual and total project GHG emission reductions as well as the estimated GHG emission reduction per GGRF dollar requested.

Section C. Documentation

Applicants must report the Total Project GHG Emission Reductions, among other results, estimated in the calculator tool. Applicants are required to provide electronic documentation that is complete and sufficient enough to allow the quantification calculations to be reviewed and replicated. Paper copies of any materials must be available upon request by CalRecycle or ARB staff.

Documentation must include, at a minimum:

- Project application;
- Project description, including excerpts or specific references to the location in the main waste diversion application of the project information necessary to complete the applicable portions of the GHG quantification methodology;
- Populated calculator tool file;
- Project data support, including:
 - Documentation of the project data used as inputs in the calculator;
 - References to public documents that are the source of the project data;
 - Explanation of GHG calculation methods including appropriate citations and calculation worksheets if using an alternative quantification method (only applicable to applicants proposing eligible projects outside of the scope of the calculator tool with approval from CalRecycle);
- Summary page with, at minimum, the following information from the GHG summary worksheet of the calculator:
 - Avoided GHG emission estimates for each year of the proposed project;
 - Estimate of total avoided GHG emissions of the proposed project;
 - GGRF funds requested for the project; and
 - Estimated total avoided GHG emissions per GGRF funds requested.

Section D. Reporting After Funding Award

Accountability and transparency are essential elements for all GGRF California Climate Investment projects. As described in ARB’s Funding Guidelines for Agencies that Administer California Climate Investments (Funding Guidelines),¹⁹ each administering agency is required to track and report on the benefits of the California Climate Investments funded under their program(s). Each project funded by the GGRF is expected to provide a real and quantifiable net GHG benefit. The previous sections of this document provide the methods and tools to estimate the net GHG benefit of a proposed project based on project characteristics and assumptions of expected conditions and activity levels. This section explains the minimum reporting requirements for administering agencies and funding recipients during project implementation, termed Phase 1, and after a project is completed, termed Phase 2. Table 2 below shows the project phases and when reporting is required.

Table 2. Quantification and Reporting By Project Phase

	Timeframe & Reporting Frequency	Quantification Methods
Project Selection	Period from solicitation to selection of projects and funding awards. Applicant submits application to CalRecycle by due date in solicitation materials.	All applicants use methods in ARB’s quantification methodology to estimate the net GHG benefit of the project.
Phase 1	Period from project award date through project completion date. CalRecycle reports to ARB on an annual basis.	All awarded projects use methods in ARB’s quantification methodology to update initial estimate of net GHG benefit, as needed, based on project changes.
Phase 2	Begins after project completion. CalRecycle reports to ARB consistent with the Funding Guidelines.	GHG reduction estimates are updated and reported for a subset of awarded projects.

Funding recipients have the obligation to provide, or provide access to, data and information on project outcomes to CalRecycle. Applicants should familiarize themselves with the requirements below as well as those within the Waste Diversion solicitation materials (e.g., guidelines, applications, etc.) and grant agreement.

It is the responsibility of administering agencies to collect and compile project data from funding recipients, including the net GHG benefit and information on benefits to disadvantaged communities.

Phase 1 reporting is required for all waste diversion funding recipients during project implementation (e.g., initial construction). This quantification methodology provides

¹⁹ California Air Resources Board. Funding Guidelines for Agencies Administering California Climate Investments. (December 21, 2015). www.arb.ca.gov/cci-fundingguidelines

guidance on how to estimate project benefits to satisfy Phase 1 reporting requirements. At a minimum, ARB expects that waste diversion funding recipients will report to CalRecycle once a year during project construction (for projects with a capital component) or during implementation (for projects without a capital component) and once at the end of the project.

Phase 2 reporting is required for only a subset of waste diversion projects and is intended to document actual project benefits achieved after the project becomes operational. Phase 2 data collection and reporting will not be required for every project. CalRecycle will be responsible for identifying the subset of individual projects that must complete Phase 2 reporting, identifying who will be responsible for collecting Phase 2 data, and for reporting the required information to ARB. ARB will work with CalRecycle to address “Phase 2” procedures, including but not limited to:

- The **timelines** for Phase 2 reporting, i.e., when does Phase 2 reporting begin, how long will Phase 2 reporting be needed.
- As applicable, **approaches for determining the subset of projects** that need Phase 2 reporting (i.e., how many **X** projects out of **Y** total projects are required to have Phase 2 reporting).
- **Methods for monitoring or measuring** the necessary data to quantify and document achieved GHG reductions and other select project benefits.
- **Data to be collected**, including data field needed to support quantification of GHG emission benefits.
- Reporting requirements for transmitting the data to ARB or CalRecycle for program transparency and use in reports.

Once the Phase 2 quantification method and data needs are determined, ARB will develop and post the final ARB approved Phase 2 methodology for use in Phase 2 reporting.