

**California Department of Resources Recycling and Recovery
and California Air Resources Board**

**Greenhouse Gas Interim Quantification Methodology for the
California Department of Resources Recycling and Recovery
Waste Diversion Grant and Loan Program
Greenhouse Gas Reduction Fund
Fiscal Year 2014-15**

A. Introduction

The California Air Resources Board (ARB) is required to develop quantification methods for agencies receiving Greenhouse Gas Reduction Fund (GGRF) appropriations per SB 862 (Senate Budget and Fiscal Review Committee, Chapter 36, statutes of 2014).

Some administering agencies receiving appropriations of Fiscal Year (FY) 2014-15 GGRF funds developed interim quantification methodologies in consultation with ARB. For FY 2015-16 and future years, ARB will continue to develop or update quantification methodologies for GGRF funded programs.

B. Quantification Methodology

The California Department of Resources Recycling and Recovery (CalRecycle) developed the GGRF Waste Diversion Grant and Loan Program to lower overall greenhouse gas (GHG) emissions by expanding existing capacity or establishing new facilities in California to process greater amounts of recycled materials. Funded projects will 1) reduce the amount of California-generated green materials, food materials, or alternative daily cover (ADC) being sent to landfills and 2) use California-generated postconsumer recycled fiber (paper, textiles, carpet, or wood), plastic, or glass to manufacture products.

CalRecycle, in consultation with ARB, developed a methodology for use in estimating the net GHG benefit from waste diversion projects funded with FY 2014-15 GGRF monies. ARB produced a calculator for the interim quantification methodology that may be used to estimate the net GHG emission reduction associated with the following measures:

- Manufacturing products from recycled materials;
- Composting;
- Anaerobic Digestion; and
- Food Rescue.

The calculator tool can be accessed here:

<http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/calrecyclecalculator.xlsx>

The waste diversion grant calculator allows users to estimate the net GHG benefit from a variety of specific waste diversion activities using a life-cycle approach. Each eligible activity has a worksheet within the calculator. The calculator provides fields for users to input a range of applicable project specific assumptions such as tons of additional material diverted from landfills, pre- and post-project ton-miles traveled, composition of feedstock, electrical demand and estimated operating time of equipment, biogas yield, and co-products produced. User input fields are shaded in yellow, constant emission reduction factors are in white cells, and emission reduction factors that are calculated from user inputs and calculated GHG emission reduction estimates are in grey cells. After the user inputs are entered for each proposed activity, the summary worksheet displays the annual and lifetime project GHG emission reductions as well as the estimated GHG emission reduction per GGRF dollar requested.

The calculator utilizes emission factors from the following sources:

- ARB's published Methods for Estimating Greenhouse Gas Emission Reductions from Recycling (2011);¹
- ARB's published Methods for Estimating Greenhouse Gas Emission Reductions from Composting of Commercial Organic Waste (2011);²
- ARB's Low Carbon Fuel Standard (LCFS) Pathway for the Production of Biomethane from High Solids Anaerobic Digestion (HSAD) of Organic (Food and Green) Wastes (2012);³
- ARB's LCFS Pathway for the Production of Biomethane from the Mesophilic Anaerobic Digestion of Wastewater Sludge at Publicly-Owned Treatment Works (POTW) (2014);⁴ and
- U.S. EPA's AP-42, Compilation of Air Pollutant Emission Factors.⁵

C. Next Steps

ARB will continue to evaluate and update the GHG emission reduction quantification methodologies as necessary for future FY GGRF appropriations. Quantification methods are posted on ARB's auction proceeds webpage at:

<http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/quantification.htm>

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

² http://www.arb.ca.gov/cc/protocols/localgov/pubs/compost_method.pdf

³ <http://www.arb.ca.gov/fuels/lcfs/2a2b/internal/hsad-rng-rpt-062812.pdf>

⁴ <http://www.arb.ca.gov/fuels/lcfs/2a2b/apps/wws2bm-rpt-082514.pdf>

⁵ <http://www.epa.gov/ttnchie1/ap42/>