



Instructions for the Biomethane Pipeline Interconnection GHG Benefits Estimation Tool

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Introduction

The Biomethane Pipeline Interconnection GHG Benefits Estimation Tool (Tool) is a Microsoft Excel workbook that may be used by natural gas suppliers (NGS) to estimate and report greenhouse gas (GHG) emission reduction benefits from applicable uses of allowance value allocated under the Cap-and-Trade Program (Program). Appropriate and complete use of the Tool complies with the requirements of section 95893(e)(4)(B) of the [Cap-and-Trade Regulation](#) (effective April 1, 2019) (Regulation). Use of the Tool to fulfill the requirements of the Regulation is optional. The sole purpose of the Tool is to estimate expected GHG emission reductions from applicable uses of allocated allowance value. The Tool is not designed for any other purpose and should not be applied to any other purpose.

This Tool is designed to estimate GHG emission reductions for biomethane pipeline interconnection incentives funded with NGS allocated allowance auction proceeds under the Program and distributed pursuant to California Public Utilities Commission (CPUC) [Decision D.20-12-031](#). California Air Resources Board (CARB) staff is available to provide technical support for estimating GHG emission reduction benefits associated with these incentives. Use of the Tool should also correspond with reporting on the nature, purpose, and monetary value of these incentives as described in box 13 of the [NGS Use of Allowance Value Form](#) and as required by the Regulation. A copy of the completed Tool (as applicable) should be included with the submission of the Use of Allocated Allowance Value Form to CARB. If you choose to use a different method to estimate GHG emission reduction benefits, the alternate method must comply with the requirements of the Regulation, including section 95893(e)(4)(B). Please include any alternate calculations with the Use of Allocated Allowance Value report submission along with an explanation of how the alternate method complies with the requirements of the Regulation.

General Instructions

In the Tool, **green cells** accept user input.

The GHG emission reduction benefits for each incentive project should be calculated with a separate entry in the Tool. For each project, the estimated lifetime GHG emission reductions (in MTCO_{2e}) are calculated automatically in the **pink output cells** in the Tool. When selected, pink output cells display a message indicating that the sum of GHG benefits for the biomethane pipeline interconnection incentives should be reported in **box 13f** of the Use of Allowance Value Form. Gray or pink cells should not be modified by users.

When calculating the percentage of project costs funded with allocated allowance auction proceeds, compare the auction proceeds spent in the Data Year to the anticipated lifetime costs associated with the project, regardless of funding source. Lifetime project costs include any costs for design, construction, operation, implementation, administration, and outreach, as applicable. For biomethane pipeline interconnection projects, project costs are associated with components such as biogas collection and gathering lines, biogas conditioning and upgrading facilities, gas pipeline laterals and compression, pipeline interconnection, and pipeline extension. However, project costs do not include any costs associated with the initial biogas collection mechanism (such as a dairy digester) or the ultimate biomethane combustion mechanism by end-users, which are considered outside of the biomethane pipeline interconnection project boundary to mitigate the risk of attributing GHG reductions associated with those activities to the biomethane pipeline interconnection project and thereby potentially double-counting those GHG reductions.

For example, if the total cost of a biomethane interconnection project over its lifetime is expected to be \$1,000,000 and \$500,000 of auction proceeds were spent on the project during the Data Year, then 50 percent would be input into the "Percentage of Project Costs Funded with Auction Proceeds" column.

Data inputs for the Tool should incorporate the best available information at the time of reporting. GHG estimates from prior years may be updated if projected lifetime costs or lifetime estimated GHG benefits change from one year to the next. For more information on updating an estimates from a prior year, see the "Revising Prior Submissions" section of the [Instructions for Use of Allocated Allowance Value Forms](#).

CARB staff is available to provide technical assistance. Please email any questions to ngs-allocation@arb.ca.gov.

GHG Benefits Estimation Tool

Instructions

GHG Benefits Sheet

This sheet includes the primary data inputs needed to generate an estimate of the lifetime GHG emission reductions attributable to biomethane pipeline interconnection incentives distributed in the Data Year.

1. Under "Project Name," enter a project name that clearly corresponds to the appropriate entry in box 13 on the NGS Use of Allocated Allowance Value form.
2. Under "Project Description," enter a brief description that corresponds to the appropriate entry in box 13e on the NGS Use of Allocated Allowance Value Form.
3. Under "Date Operational," enter the actual or anticipated date (in MM/DD/YY format) that the project went into or will go into service.
4. Under "Percentage of Project Costs Funded with Auction Proceeds," enter the percentage of total estimated lifetime project costs that were funded with auction proceeds during the Data Year, as described above.
5. Under "Expected Project Lifetime," input the number of years that GHG benefits are expected to accrue for this project.
6. Under "Annual Biogas Volume (scf)," enter the anticipated annual volume of biogas collected and upgraded for pipeline injection, measured in standard cubic feet (scf). The Tool applies standard conversion factors to calculate the heat content of the biogas (in MMBtu).
7. Under "Biogas Baseline Use Before Project," select the appropriate baseline scenario from the drop-down menu. Descriptions for each option are included on the "Drop Down Menus" sheet in the Tool.
8. Under "Biomethane End Use After Project," select the appropriate end-use scenario from the drop-down menu. Descriptions for each option are included on the "Drop Down Menus" sheet in the Tool. Note that biomethane injected into the pipeline for electricity generation, such as for retail electricity customers or for electric vehicle charging, should be considered "Natural Gas Displacement" for the purposes of this calculation.
9. The pink output cell, "Estimated Lifetime GHG Emission Reductions Attributable to Proceeds Use in Data Year (MTCO₂e)" is automatically calculated when all green input cells in a given row are completed. In the row labelled "Total," the pink output cell represents the sum of estimated lifetime GHG emission reductions attributable to each biomethane pipeline interconnection incentive distributed in the Data Year. This value

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should be reported for the corresponding entry in **box 13f** of the NGS Use of Allowance Value Form.

Optional User Inputs Sheet

The data inputs in this sheet allow the user to optionally provide project-specific values to override certain default variables. If a field in the “Optional User Inputs” sheet is left blank, the Tool will automatically use the applicable default value.

1. The values for “Project Name” and “Annual Biogas Volume (scf)” will automatically populate based on the user inputs provided in the “GHG Benefits” sheet.
2. The “Annual Biomethane Heat Content (MMBtu)” field allows the user to input the actual heat content produced by each biomethane project during the Data Year. If this field is left blank, the Tool will automatically use default assumptions to calculate this value from the biogas volume (scf) provided in the “GHG Benefits” sheet.
3. The “Baseline Annual Waste Heat Used for On-Site Thermal Needs (MMBtu)” field allows the user to account for any waste heat from on-site biogas combustion used for facility thermal needs in the baseline scenario, if applicable. The default value for this variable is zero MMBtu.
4. The “Annual Volume of Biogas Flared During Processing System Downtime (scf)” box allows the user to account for the emissions from any volume of biogas that is flared due to equipment downtime for maintenance or other purposes rather than processed and upgraded to biomethane for pipeline injection. The default value for this variable is zero scf.

Any optional user inputs must include supporting calculations, reasoning, and documentation, as needed, to justify their incorporation into the GHG emission reduction calculations. The “Optional User Inputs” sheet includes a box for providing this information, however the user may use additional space in the Tool or submit additional attachments with the Tool as needed.

GHG Calculation Framework

Consistent with the requirements of sections 95893(d)(5) and 95893(e)(4)(B) of the Regulation, the Tool applies the following principles:

1. GHG benefits are estimated by comparing the anticipated emissions attributable to the use of auction proceeds in the Data Year to the anticipated emissions in the absence of the use of the auction proceeds.
2. The GHG benefits are estimated for the entire expected project lifetime.
3. The emission factors in the “Emission Factors” tab of the Tool are consistent with the emission factor requirements of the Regulation.

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4. The GHG benefits attributable to the use of auction proceeds are prorated to the percentage of total expected lifetime project costs that are covered by auction proceeds in the Data Year, including auction proceeds used in the Data Year for administration and outreach for the project.

In order to determine the GHG benefits of a biomethane pipeline interconnection project in comparison to what would have occurred in the absence of the project, CARB staff developed the following framework, as reflected in the automatic calculations in the grey columns of the "GHG Benefits" sheet:

$$\text{Avoided GHGs} = \text{Baseline GHGs} - \text{Project GHGs} + \text{Displaced GHGs} - \text{Induced GHGs}$$

Where:

"*Baseline GHGs*" are the annual GHG emissions under the baseline scenario for current facility biogas management practices, if any, prior to changing the biogas end-use to pipeline injection;

"*Project GHGs*" are the annual GHG emissions, including both (1) biomethane combustion emissions by end-users, and (2) the emissions associated with upgrading biogas to biomethane after the biogas end-use has changed to pipeline injection;

"*Displaced GHGs*" are the annual GHG emissions from fossil fuel combustion by end-users that is replaced by biomethane combustion after pipeline interconnection; and

"*Induced GHGs*" are the annual GHG emissions that result from a facility using a replacement energy source for on-site processes that were formerly powered by the biogas that is being injected into the pipeline under the project.

Based on user input, the Tool automatically applies the method listed above (including the project lifetime, emission factors, and cost proportionality) to convert the Avoided GHGs for the project into an appropriate estimate of the lifetime GHG benefits attributable to the use of the proceeds in the Data Year.