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CLIMATE LEADERS

PRACTICAL STEPS TO REDUCE YOUR ORGANIZATION'S GREENHOUSE GAS EMISSIONS



Guide to Greenhouse Gas Management for Small Business & Low Emitters



This technical guide is for companies that wish to begin managing their greenhouse gas (GHG) emissions using these simplified tools from EPA.

Guide to Greenhouse Gas Management for Small Business & Low Emitters

INTRODUCTION

Businesses can take a leading role in helping the United States reduce the impacts of climate change by implementing actions that save money, improve productivity, and lower greenhouse gas (GHG) emissions.

This document is a guide to estimating and reducing a company's GHG emissions. It was developed under the Environmental Protection Agency's (EPA's) Climate Leaders program, which completed its phase down in September 2011. The accompanying Calculator for Low Emitters (Calculator) and Inventory Management Plan (IMP) for Low Emitters are available for download at

<http://www.epa.gov/climateleaders/smallbiz/footprint.html> to create a comprehensive climate change management strategy.

Using these tools will enable small businesses and low emitters to:

- Create a comprehensive inventory of all GHG emissions;
- Develop an IMP for data consistency over time; and
- Set a GHG reduction goal and track progress.

From 2002 to 2011, the EPA Climate Leaders program provided guidance and recognition to leading companies across many industries, from manufacturers and utilities to financial institutions and retailers, to help them develop and implement long-term comprehensive climate-change strategies. Building upon this experience, EPA developed these tools for low emitters and small businesses to use in managing their emissions.

THIS GUIDE

This guide walks the user through the following four key steps, including the use of newly developed tools designed to assist the low emitter.

All low emitter tools are available at www.epa.gov/climateleaders/smallbiz/footprint.html.

Additional technical resources for managing GHG inventories are available at www.epa.gov/climateleaders/resources/index.html.

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- Principles of Greenhouse Gas Accounting
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Get Started



Step 1 - Get Started

A. GREENHOUSE GAS INVENTORIES DEFINED

Many organizations are developing GHG inventories. An inventory is a list of emission sources and the associated emissions quantified using standardized methods. EPA inventory guidance is based on the World Resources Institute/ World Business Council for Sustainable Development (WRI/ WBCSD) GHG Protocol Corporate Accounting and Reporting Standard (GHG Protocol), which has become the global standard for calculating GHG emissions.

Calculating GHG emissions involves the following process which is explained in this guide:

- Choose a base year for the emissions inventory, against which future emissions will be tracked.
- Identify the facilities to include in the inventory (organizational boundaries).
- Identify the sources within the facilities to include in the inventory (operational boundaries).
- Follow a standardized and accepted methodology to calculate the GHG emissions from each identified source.
- Include each of the six major GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O),

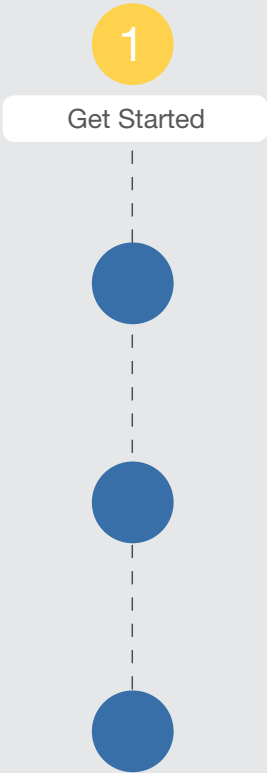
hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

B. PRINCIPLES OF GREENHOUSE GAS ACCOUNTING

The GHG Protocol is based on five principles. When in doubt regarding the application of the tools explained in this guide to ambiguous issues or situations, refer back to these principles to ensure the creation of a high-quality credible inventory:

The GHG Protocol is based on five principles. When in doubt regarding the application of the tools explained in this guide to ambiguous issues or situations, refer back to these principles to ensure the creation of a high-quality credible inventory:

1. **Relevance:** Ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users- both internal and external to the company.
2. **Completeness:** Account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusions.



3. Consistency: Use consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.
4. Transparency: Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.
5. Accuracy: Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.

C. CHOOSING A BASE YEAR

For the inventory, collect data for a full year of operating activities, on a calendar year basis. The emissions calculated from this data will then serve as the base year data, against which emissions will be compared over time. The base year data should be high quality in order to provide a meaningful

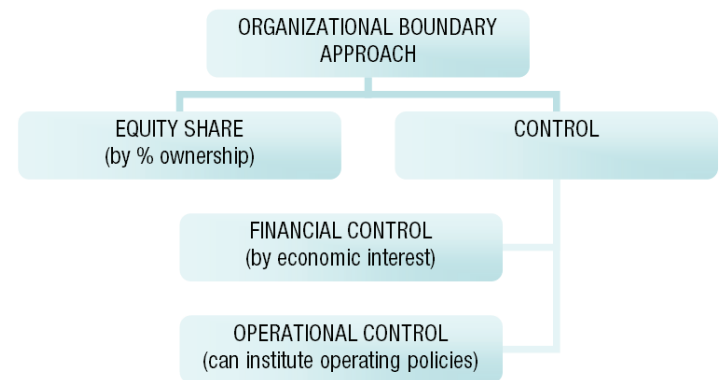
LEASES: A company’s organizational boundary approach will help determine which operations to include that are not fully owned and operated, such as leased office space or vehicles. When using an operational control approach, a general rule of thumb for leases suggests that if the company has access to the data (i.e., pays the utility bills or purchases gasoline), those operations are under its control and should be included in the inventory. Companies that do not have access to the data but still wish to include those operations in their inventory can use estimates derived from national data, such as the Commercial Buildings Energy Consumption Survey, available at <http://www.eia.doe.gov/emeu/cbecs/>. See more information on the General Help sheet in the Calculator.

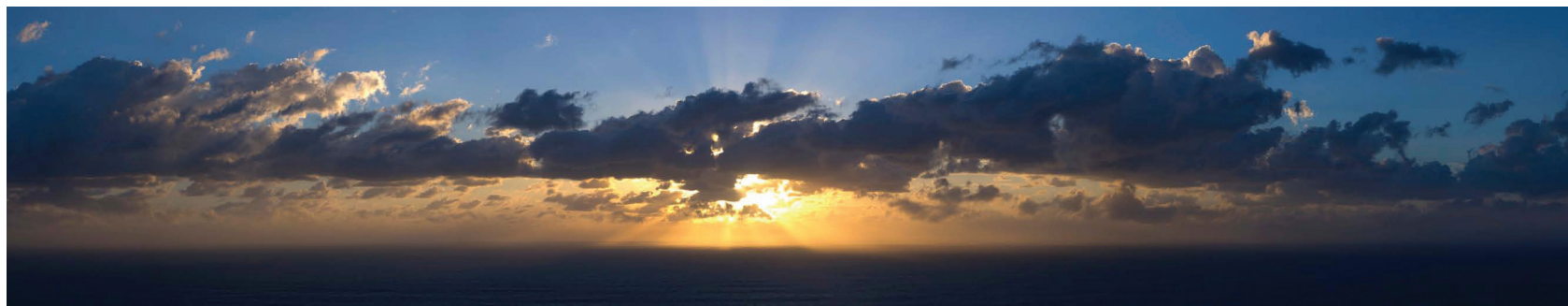
comparison; therefore, choose a recent year. For example, for a company starting this process in 2008, collecting data for a base year of 2007 will likely provide the most robust data for its inventory.

D. IDENTIFYING ORGANIZATIONAL BOUNDARIES

An organizational boundary is used to determine which facilities or operations will be included in the GHG emissions inventory. Two approaches may be used in determining an organizational boundary, an equity share or a control approach:

- Using an equity share approach, account for GHG emissions based on the company’s share of equity (typically by percentage ownership) in a facility or operation.
- A control approach is divided into either financial or operational control:
 - Under financial control, include operations for which the company has the ability to direct financial and operating policies with a view to gaining economic benefits from those activities.
 - Under operational control, include operations for which the company has full authority to implement operating policies.





Step 2 - Calculate Greenhouse Gas Emissions



Calculate Greenhouse Gas Emissions



A. SOURCES COVERED BY THE INVENTORY CALCULATOR FOR LOW EMITTERS

Emission sources of all six major GHGs are accounted for in the inventory: CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆.

Based on key characteristics of emissions sources, such as the control the organization has to affect them, the GHG Protocol organizes sources into the following three categories, or scopes:

- Scope 1: Emissions from sources that the company owns or controls, like natural gas-fired boilers or vehicle fleets. These are also called direct emissions.
- Scope 2: Emissions that are a consequence of the operations of the company, but occur at sources owned or controlled by another company, most typically electricity, heat, or steam. These are also called indirect emissions.
- Scope 3: Indirect emissions that are not covered in Scope 2, such as employee travel and product transport. For the Calculator, these are considered optional emissions. Guidance on identifying and quantifying Scope 3

emissions and identifying possible advantages of reporting them, is provided.

The Calculator allows the user to estimate GHG emissions from Scope 1, Scope 2, and Scope 3 sources. Companies using this guide will likely find that most of their emissions come from building heating and cooling, fleet vehicles, electricity use, and employee travel.

Some industrial sectors, such as pulp and paper, cement, chemicals, and iron and steel, may have sector-specific emission sources that are not covered by the Calculator. To quantify these emissions, refer to sector-specific guidance developed by EPA at www.epa.gov/climateleaders/resources/sector-specific.html. Other organizations, such as WRI/WBCSD, have a full list of sectors with sector-specific emissions and guidance on calculating emissions from industrial processes.

B. USING THE INVENTORY CALCULATOR FOR LOW EMITTERS

The Calculator is a Microsoft Excel workbook separated into the following sections:

- Introduction to the Calculator
- Boundary Questions
- Summary of Company Total Emissions
- Data Entry and Calculation for Direct Emissions Sources
 - Stationary Combustion
 - Mobile Sources
 - Refrigeration and Air Conditioning Leakage
 - Fire Suppression Systems
 - Purchased Gases
 - Waste Gases
- Data Entry and Calculation for Indirect Emissions Sources
 - Purchases of Electricity
 - Purchases of Steam
- Data Entry and Calculation for Optional Emissions Sources
 - Employee Business Travel
 - Employee Commuting
 - Product Transport
 - Purchase of Renewable Energy Credits (RECs) / Green Power
 - Purchased Offsets
- Unit Conversions
- Heat Content
- Emission Factors
- Help Sheets

How to Use the Calculator and Guide

Data collected by the company for each emission source can be entered into the orange boxes within the Calculator. The Calculator uses Climate Leaders emission factors to automatically calculate GHG emissions totals in the blue and

Reminder: It is important to pay attention to units (e.g., cubic feet, gallons). The units from the data collected must match the units in the Calculator for that particular data requirement. For example, fuel usage for vehicles must be entered into the Calculator in gallons. For situations where the data collected does not match the units in the Calculator, please refer to the Conversion Factors section in the Calculator to locate a factor to convert the data to the appropriate units.

green colored boxes within the workbook. Blue and green summary boxes represent the required and optional emission portions of the company GHG inventory, respectively. Totals are calculated in metric tons of CO₂ equivalent (CO₂e), which is the standard unit for comparing the degree of potential climate impact caused by emissions of different GHGs. The total CO₂e emissions are summarized for all sources at the company on the Summary sheet in the workbook.

Each emission source type described in this section of the guide is divided into three headings to assist the company in collecting data and calculating the emissions from that source. These headings are:

- **DEFINITION:** Under this heading, the user will find the definition of the emission source.
- **COLLECT:** Here the user will find information on the data needed to collect for the emission source.
- **QUANTIFY:** Here the user will find the information needed to enter the data into the Calculator in order to calculate emissions from the emission source. Entries are made into the orange colored boxes in the Calculator.

For some sources, the Calculator provides several options for calculating emissions, based on data availability. Make sure to read the instructions at the top of each section in the Calculator before entering the data. Remember to enter data covering a full calendar year.



Calculate Greenhouse Gas Emissions



C. IDENTIFYING EMISSION SOURCE TYPES (OPERATIONAL BOUNDARIES) AND QUANTIFYING EMISSIONS

Direct Emissions

Direct GHG emissions occur from sources that are owned or controlled by the company. Examples include boilers used to heat buildings, refrigerant leakage from air conditioners, or travel in a company-owned car. Direct emission sources may also include leased vehicles or equipment for which the company pays the fuel bills or can access the fuel use data.

Within the Calculator, sources are categorized into six types of direct sources: stationary combustion, mobile sources, refrigeration and air conditioning equipment, fire suppression equipment, purchased gases and waste gases. While most companies will have at least some direct sources, it is possible for an office-based organization to have few or no direct emission sources.

Stationary Combustion

DEFINITION: Combustion emission sources are stationary sources that combust fuel, like a natural gas hot water heater for an office building or an oil burning boiler. Emissions result from the actual combustion of the fuels to produce useful products, like heat and hot water.

COLLECT: To account for these sources, collect information about the type of fuel used and the quantity of fuel combusted at each facility. Sources of data can vary, but the data are often provided by the utility company that supplies the fuel to the company. A monthly natural gas bill, for example, can be used to provide information regarding how much natural gas was purchased for the previous billing cycle.

QUANTIFY: After the data has been collected, it should be entered into the appropriate orange colored boxes of the Calculator section titled Stationary Combustion. The fuel type can be selected from the form. After the data are entered into the Calculator, the CO₂e emissions are displayed in the blue colored box.

Mobile Source Emissions

DEFINITION: Mobile sources, like company owned cars and heavy duty vehicles, generate emissions by burning fuel. The fuel usage for any vehicle that is under the company's operational control should be reported in this section as a direction emission.

COLLECT: Determine the types of vehicles, types and amount of fuel, and the miles driven for each vehicle or vehicle type. Data sources vary but fuel usage is often determined from fuel receipts or purchase records, and mileage from vehicle records. Mileage or fuel use can also be estimated based on vehicle fuel economy from the manufacturer or www.fueleconomy.gov if the other data sources are not readily available.

QUANTIFY: Enter the data into the appropriate orange colored boxes of the Calculator section titled Mobile Sources. If the company owns or leases biofuel or ethanol vehicles, the percentage of biologically based fuel should be entered into the boxes provided; default values are available if needed. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the blue colored box. Biomass emissions are calculated and summarized in the green colored box, and are typically not summed into the company's total GHG emissions because they are considered to be a net zero emission source.



Calculate Greenhouse Gas Emissions



Refrigeration and Air Conditioning Leakage

DEFINITION: Refrigeration and Air Conditioning (AC) Equipment sources can vary in size based on the type of organization. Emissions from refrigeration and AC devices in facilities or vehicles are caused by the leakage of chemicals with global warming impact during use, maintenance and/or disposal of the device. They are often small sources for office-based organizations. For example, a small office building may have one rooftop air conditioning unit while a grocery store chain may have several rooftop air conditioning units per store as well as a multitude of other refrigeration equipment.

COLLECT: Choose one of three different calculation methods available in the Refrigeration and AC section of the Calculator. The types of refrigerants along with the data needs for each method are listed in the Calculator. Data for these sources are often collected from maintenance and inspection records, work orders, or invoices from contractors that service this equipment. Refrigerants not included on the list may be chemicals that do not need to be included in the inventory. For example, ozone depleting substances, such as chlorofluorocarbons (CFCs) or freon and hydrochlorofluorocarbons (HCFCs), are regulated internationally and are typically excluded from a GHG inventory or reported as a memo item.

QUANTIFY: Enter the data into the appropriate orange colored boxes of the Calculator section titled Refrigeration and AC. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the blue colored box.

Fire Suppression Systems

DEFINITION: Fire Suppression emission sources can range in scale from a small portable fire extinguisher to a large scale fire suppression system for an office building or warehouse.

The emissions are caused by chemicals (e.g., HFCs or CO₂) emitted from fire suppression devices during use, maintenance, and disposal.

COLLECT: Choose one of three different calculation methods available in the Fire Suppression section of the Calculator. In each method, choose the types of fire suppression gases used and then gather the corresponding emissions data. Data for these sources are often collected from maintenance and inspection records, work orders, or invoices from contractors that service this equipment.

QUANTIFY: Enter the data into the appropriate orange colored boxes of the Calculator section titled Fire Suppression. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the blue colored box.

Purchased Gases

DEFINITION: Industrial gases are sometimes used in processes such as manufacturing, testing, or laboratory uses. For example, CO₂ gas is often used in welding operations. These gases are typically released to the atmosphere after use. Any releases of the six major GHGs (CO₂, CH₄, N₂O, PFCs, HFCs, and SF₆) must be included in the GHG inventory. Ozone depleting substances, such as CFCs and HCFCs, are regulated internationally and are typically excluded from a GHG inventory or reported as a memo item.

COLLECT: Determine if CO₂, CH₄, N₂O, PFCs, HFCs, or SF₆ are used in processes such as those mentioned above. If so, collect the mass of gas purchased. If data are not available in mass units, the user may need to convert from volume to mass using the density of the specific gas.

QUANTIFY: Enter the data into the appropriate orange colored boxes of the Calculator section titled Gas. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the blue colored box.



Calculate Greenhouse Gas Emissions



Waste Gases

DEFINITION: Some operations, such as printing operations or paint booths, emit organic compounds. In some cases these waste gas streams are combusted with a flare or thermal oxidizer. This combustion results in CO₂ emissions that should be included in GHG inventories. These are uncommon sources for most office-based organizations.

COLLECT: Collect information about the volume of waste gas that was combusted. Because of the variable composition of waste gas streams, the user will also need to find out what chemicals are present in the waste gas stream, and the quantity of each chemical. Please note that two other data needs, oxidation factor and gas density, should be also collected if practicable; however, default values can be used if needed. The oxidation factor accounts for the amount of carbon in the fuel that is converted to CO₂ during combustion.

QUANTIFY: Enter the data into the appropriate orange colored boxes of the Calculator section titled Waste Gases. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the blue colored box.

Indirect Emissions

Indirect emissions are emissions from energy consumed in owned or controlled equipment or operations but generated by another company. For example, although the company may own equipment that runs off of electricity, like office computers and copy machines, a power plant is burning the fuel to generate the electricity it is using. Therefore, the power plant is the direct source of GHG emissions.

For many companies, purchased electricity is the largest source of GHG emissions and the most significant opportunity to reduce those emissions. The Calculator section on indirect emissions separates indirect emissions into two types: purchases of electricity and purchases of steam.

Purchases of Electricity

DEFINITION: GHGs are emitted when fossil fuels are combusted to generate electricity. Companies account for their responsibility for these emissions by reporting them as indirect emissions.

COLLECT: Collect electricity purchase information in units of kWh for each facility. The company's best data source is typically its electricity bill or invoice.

In the Calculator, there is a map at the bottom of the Electricity section which divides the United States into subregions based on the electric grid. Select the subregion(s) in which the company's facilities are located to determine the correct CO₂ emissions factor to use, since different parts of the country use different fuels to generate electricity. Multiple facility locations can be entered as separate line items in the Calculator. If a facility is on the border of a subregion, enter the zip code into EPA's Power Profiler (www.epa.gov/powerprofiler) to find the correct subregion.

QUANTIFY: Enter the data into the appropriate orange colored boxes (Table 1) of the Calculator section titled Electricity. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the blue colored box (Table 2).



Calculate Greenhouse Gas Emissions





Calculate Greenhouse Gas Emissions



Purchases of Steam

DEFINITION: Similar to electricity production, GHGs are emitted when fossil fuels are combusted to generate heat or steam. If the company purchases heat or steam, the emissions are accounted for as indirect emissions.

COLLECT: Determine the amount of steam purchased, boiler efficiency, and either the emission factors provided by the steam supplier or the types of fuel that the steam supplier uses to generate the steam. If values for boiler efficiency are unavailable, a default of 80% is provided in the Calculator.

QUANTIFY: Enter the data into the appropriate orange colored boxes (Table 1) of the Calculator section titled Steam. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the blue colored box.

Optional Sources

Optional emissions are a consequence of the activities of a company but are not owned or controlled by the company. Companies may choose to report optional emissions sources, which include indirect sources such as employee commuting or transporting products to market using contract carriers. While not all companies choose to include optional emission sources, estimating optional emissions can provide a more complete picture of the company's climate change impact and offer the company more opportunities to reduce emissions. For example, if employee commuting emissions are included, it may also be beneficial to report the emission reductions from implementing a teleworker or employee carpool program.

In the Calculator, sources are categorized into three types of traditional optional sources most commonly reported: employee business travel, employee commuting, and product transport. Additionally, the Calculator has space to report purchased Green Power / Renewable Energy Certificates (REC's) and Offsets if either of these are applicable to your business.

Employee Business Travel

DEFINITION: Optional employee business travel emissions differ from the required mobile source emission reporting in that they account for employee business travel in vehicles not owned or leased by the company, such as taxis, trains, commercial airplanes, and personal vehicles used for sales.

COLLECT: Collect information about employees' business travel method. For travelers that use a personal vehicle, choose the vehicle type from the Calculator and collect data for the vehicle miles during the reporting period. For rail, bus, and air travel, the mode of travel should be selected from the Calculator options and an estimate of the passenger mileage data provided for each.

QUANTIFY: Enter the data into the appropriate orange colored boxes (Tables 1-3) of the Calculator section titled Business Travel. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the green colored box.

Employee Commuting

DEFINITION: Employee commuting emissions differ from the required mobile source emission reporting in that they account for employee travel to and from work in vehicles not owned or leased by the company, including personal vehicles, buses, and trains.

COLLECT: Collect information about each employee's commuting method. For commuters that use a personal vehicle, the appropriate vehicle type should be selected from the Calculator and data collected for the vehicle miles during the reporting period. For rail, bus, and air travel, the mode of transport should be selected from the Calculator options and an estimate of the passenger mileage data provided for each.

QUANTIFY: After the data has been collected, enter the data into the appropriate orange colored boxes (Tables 1-2) of the



Calculate Greenhouse Gas Emissions



Calculator section titled Employee Commuting. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the green colored box.

Product Transport

DEFINITION: Optional emissions from product transport include product and material shipments by vehicles not owned or leased by the company. For example, the company could hire another company to transport product from the manufacturing location to distribution centers or final markets. (Note: if a company owns or leases the trucks or other transport vehicles, these would be part of its direct mobile source emissions). Another example of optional product transport is paying a courier to transport documents from one office to another.

COLLECT: Collect information about shipment methods (on-road vehicle, waterborne craft, freight rail, or aircraft). For road shipments, the user may enter data based on vehicle mileage or ton-miles of product transported. If the vehicle mileage option is chosen, then the company should select the type of vehicle and enter the total mileage for that vehicle type. The ton-miles option is only applicable for heavy duty trucks and the company need only enter the total ton-miles traveled. For product transport via Freight Rail, waterborne, or air transport, the company should enter the total ton-miles data.

QUANTIFY: Enter the data into the appropriate orange colored boxes (Tables 1-2) of the Calculator section titled Product Transport. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the green colored box.

Purchase of Renewable Energy Certificates and Green Power

DEFINITION: EPA defines green power as renewable electricity

produced from solar, wind, geothermal, biogas, biomass, and low impact small hydroelectric sources. Green power sources produce electricity with an environmental profile superior to conventional power technologies and produce no anthropogenic (human-caused) GHG emissions. The most common ways a company can buy green power are through RECs or utility green power products. A company can purchase RECs or green power to reduce the emissions associated with its electricity use.

COLLECT: Collect RECs or green power purchase information in units of kWh. If possible, also determine the location(s) of the renewable energy projects from which the RECs and green power are purchased.

QUANTIFY: Enter the data into the appropriate orange colored boxes (Table 1) of the Calculator section titled RECs-Green Power. Once the data are entered into the Calculator, the CO₂e emissions are calculated and summarized in the green colored box.

Purchased Offsets

DEFINITION: Offsets are project-based emission reductions and/or removals that occur outside the organizational boundary of the reporting company. Offsets can be purchased by a company to offset emissions from direct, other indirect and optional emissions sources.

COLLECT: Quantity of offsets purchased in metric tons CO₂e for each offset project.

QUANTIFY: Enter the data into the appropriate orange colored boxes (Table 1) of the Calculator section titled Offsets. Once the data are entered into the Calculator, the CO₂e emissions are summarized in the green colored box.

USING PORTFOLIO MANAGER WITH THE INVENTORY CALCULATOR FOR LOW EMITTERS

ENERGY STAR Portfolio Manager is an interactive energy management tool that allows an organization to track and assess energy consumption across its entire portfolio of buildings in a secure online environment. Companies can transfer their Portfolio Manager data into the Calculator to help calculate their company-wide GHG emissions.

To transfer the correct data from Portfolio Manager to the Calculator, the company should log in to Portfolio Manager and request an Energy Performance Report. The report should include Summary Site Electric and Site Natural Gas Use data for the reporting calendar year. All facilities in the portfolio that fall under the company's organizational boundary should be included. The report is automatically generated and sent to the email address specified in Portfolio Manager.

Once the report is received, the company should input the data into the Calculator as follows:

For natural gas usage,

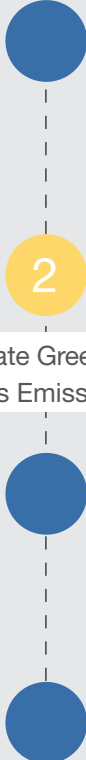
1. Open the Stationary Combustion section of the Calculator.

2. Enter a Source ID number.
3. Under Source Description, enter "Portfolio Manager Energy Performance Report."
4. Under Fuel Combusted, select "Natural Gas."
5. Convert the Total Site Natural Gas Use from the Energy Performance Report from therms to standard cubic feet (scf) using the conversion from the heat content sheet, 1 therm = 97.18 scf.
6. Input the Total Site Natural Gas Use, in scf, under Quantity Combusted.

For electricity usage,

7. Open the Electricity section of the Calculator.
8. For each building to be reported, enter a Source ID and Source Description.
9. Determine the building's eGRID subregion using the map in the Calculator or from the facility's summary page in Portfolio Manager.
10. Input each building's site electricity use in kWh from the Energy Performance Report under Electricity Purchased.

Companies can then add data from sources not included in Portfolio Manager, such as vehicle fleets, to the Calculator and complete their company-wide GHG inventory.



Calculate Greenhouse
Gas Emissions



Step 3 - Create an Inventory Management Plan

A. DOCUMENTING INVENTORY PROCEDURES

An IMP is a useful tool for accurately documenting the processes used to collect the inventory data, so that a high quality inventory can be completed year after year. An IMP documents the answers to questions like, “What facilities did we include in the inventory? Which sources are included? Who in the company collects the utility bill information? How do we account for new facilities or acquisitions?”

Companies develop and maintain an IMP that describes their process for completing a high-quality, corporate-wide inventory. The IMP is a protocol developed by each company which addresses their unique procedures for creating a credible corporate-wide GHG emissions inventory on an annual basis.

B. INVENTORY MANAGEMENT PLAN FOR LOW EMITTERS

EPA’s IMP for Low Emitters tool is available for companies using the Calculator to determine their GHG emissions. The Simplified IMP for Low Emitters is presented in a basic format and some items in the form have been pre-populated with

default responses consistent with the use of the Calculator. The company should fill out the applicable table entries in the form. The Simplified IMP is available at <http://www.epa.gov/climateleaders/smallbiz/footprint.html>, (under Step 3).

The seven major components of an IMP are:

- General Information: Company name, address, and inventory contact information.
- Boundary Conditions: Organizational and operational boundary descriptions.
- Emissions Quantification: Quantification methodologies and emissions factors.
- Data Management: Data sources, collection process, and quality assurance.
- Base Year Adjustments: Adjustments for structural and methodology changes.
- Management Tools: Roles and responsibilities, training, and file maintenance.
- Auditing & Verification: Auditing, management review, and corrective action.



Create an Inventory Management Plan



To help the user develop a complete IMP, each of the above components are described in more detail below. Additional instructions for completing these components are provided in the IMP for Low Emitters tool.

General Information

This section provides organizational information such as, company name, corporate address, inventory contact and inventory contact information.

Boundary Conditions

Emission sources to be included in a GHG inventory depend greatly on the boundary conditions selected by an organization. A company can use either an equity share approach or a control approach to define its organizational boundaries (see Step 1 of this guide for more information on identifying organizational boundaries).

This section of the IMP should also include a list of operations or facilities in the inventory based on the chosen organizational boundary, as well as procedures used to identify each operation or facility. Finally, a list of the type of GHGs emitted from each operation or facility should be included in this section.

Emissions Quantification

This section provides the specific methodologies and emission factors used to estimate all of the company's GHG emissions. A credible GHG inventory requires accurate data and verifiable quality assurance procedures. EPA, through its Climate Leaders program, instituted inventory protocols which were based on the GHG Protocol and default emissions factors based on U.S. and international standards. These protocols require the collection and reporting of the six major GHG emissions. All emissions are reported as CO₂e based on the global warming potential (GWP) value of each gas.

Data Management

A description for each data source should be included in the IMP which also contains information on how data are gathered from that data source, and where the data are maintained. The data sources may be specific operations or may be emission categories (i.e. mobile sources, refrigerants, electrical usage, etc.). Details on any normalization factors used and quality assurance procedures, as well as information on data security and storage procedures should also be included for each data source.

Base Year Adjustments

A company will choose a base calendar year for their emissions inventory, reflecting the most recent year that data are available when the company joins the program. When a significant change occurs that might confound the tracking of emissions over time or progress towards goal achievement, then the company may retroactively recalculate their base year emissions. This recalculation may be done for significant changes to the data, inventory boundary, methods, or any other relevant factors. The company's best judgment is used to define the significance of any changes that might trigger a base year adjustment. Significant changes that may trigger a base year recalculation include:

- Structural changes to ownership or control (e.g. mergers, acquisition, divestiture, and outsourcing and in-sourcing of emitting activities);
- Changes in status of leased assets (ending leases or obtaining new leases);
- Changes in calculation methodology or improvement in the accuracy of emission factors or activity data; and
- Discovery of significant errors.

Base year emissions are not recalculated if the company makes an acquisition or divestiture of operations that did not exist in its base year, though historic data after the base year



Create an Inventory Management Plan



should be adjusted. Base year emissions and any historic data in general are not recalculated for organic growth or decline. The specific corporate policies for base year adjustments due to structural or methodology changes should be outlined in this section of the IMP.

Management Tools

The management tools serve to identify the roles and responsibilities, training procedures and file maintenance procedures of the company.

Auditing and Verification

Identifies procedures for auditing (internal and external), management review, and how corrective actions are taken.

C. ADDITIONAL INVENTORY MANAGEMENT PLAN TOOLS

EPA also offers other tools for IMP development, which include an IMP Checklist and sample IMPs which were developed by Climate Leaders Partners. All of these tools are available on the EPA website at <http://www.epa.gov/climateleaders/reporting/index.html>.



Create an Inventory Management Plan





Step 4 - Set a Goal and Track Progress

This section provides an introduction to topics on how to reduce GHG emissions. This section can help answer questions like, “Now that I’ve calculated my GHG emissions, how do I track these emissions from year to year?” or “How do I set a goal to reduce my GHG emissions?”

A. ANNUAL GREENHOUSE GAS INVENTORY SUMMARY AND GOAL TRACKING FORM

Companies can track GHG emissions annually by completing the Annual GHG Inventory Summary and Goal Tracking Form available at <http://www.epa.gov/climateleaders/reporting/index.html>. The data from the Calculator Summary section shows your company’s GHG emissions in metric tons of CO₂e, which can be entered from the Calculator Summary into the Annual Reporting Form without any further conversions or calculations.

B. SETTING A GREENHOUSE GAS REDUCTION GOAL

Setting a goal is a tangible action that communicates to stakeholders a company’s climate strategy and commitment.

Having a target can motivate staff, help drive long-term strategies, and save money for the company through energy efficiency projects. A credible goal should meet the following criteria:

1. Corporate-wide: Including at least all U.S. operations.
2. Forward-looking: Based on the most recent base year for which data are available.
3. Long-term: Achieved over 5 to 10 years. Shorter goals may be necessary for some organizations.
4. Reduction from baseline emissions: Expressed as an absolute GHG reduction, a decrease in GHG intensity, or as a goal to be carbon neutral. Absolute goals are EPA’s preference.
5. Aggressive: In comparison to the projected GHG performance for the company’s sector.

EPA’s Annual Inventory and Goal Tracking Form can contain the company’s historical data and help track progress towards meeting an absolute, intensity-based, or carbon neutral GHG reduction goal.



Set a Goal & Track Progress



Set a Goal & Track Progress

C. DETERMINING THE TYPE OF GOAL

EPA allows goals to be expressed as an absolute GHG emissions reduction or as a decrease in GHG intensity. Absolute GHG reduction goals compare total GHG emissions in the goal year to those in a base year. GHG intensity goals allow a company to account for increases or decreases in production over time. The ratio of GHG emissions to an appropriate normalizing factor becomes the company's key performance indicator for measuring GHG intensity. Companies with emissions primarily from office space should use square footage of space as their normalizing factor. Companies may choose to use number of employees if employee business travel is a large percentage of their total emissions.

D. GOING CARBON NEUTRAL

In addition to absolute and intensity-based GHG reduction goals, some companies set a goal to be carbon neutral, which is a commitment to achieve and maintain net zero GHG emissions in a company's operations (rather than, e.g., products or events). A carbon neutral goal should include the following:

1. Have a robust, transparent GHG inventory and IMP in place and include at least one significant optional emissions source to capture the full climate change impact of the company's operations.
2. Look for opportunities to reduce the company's internal emissions - for example, through energy efficiency, installing onsite renewable energy, or setting up employee commuting programs. Set an absolute or intensity-based internal reduction goal to motivate the company to implement these changes.

3. Purchase Green Power, RECs, and/or Offsets for the part of the inventory not reduced through internal projects. The company can purchase Green Power or RECs to reduce the emissions associated with its electricity use. It can then purchase project-based reductions (offsets) to offset the remaining emissions from direct, other indirect and optional emissions sources. The Annual Inventory and Goal Tracking Form can track these external reductions by making an adjustment to its total emissions. For more information on purchasing credible RECs and offsets, visit www.epa.gov/climateleaders/resources/optional-module.html.

E. EPA RESOURCES FOR REDUCING GREENHOUSE GAS EMISSIONS

The following resources include tools, technologies, and case studies to help companies meet their GHG reduction goals:

- Climate Leaders:
 - Goal-setting overview
 - Program information and detailed technical guidance
 - Case studies
- Energy Efficiency Resources:
 - ENERGY STAR Products and Services
 - ENERGY STAR Portfolio Manager for Buildings
 - ENERGY STAR Guide for Small Business
- Renewable Resources:
 - EPA Green Power Partnership
- Transportation:
 - SmartWay Transport Partnership
- More EPA Partnerships:
 - A Business Guide to EPA Climate Partnership Programs

Conclusion

Congratulations! Your company has calculated its GHG emissions, determined how to manage them year after year, and developed a plan to reduce them. Thank you for reducing your company's carbon footprint.



Their footprint is getting smaller.
Yours can too.

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