

## Learner's Guide

### Federal Greenhouse Gas: Accounting and Reporting

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## Federal Greenhouse Gas: Accounting and Reporting

### Background on the FEMP First Thursday Seminars

The First Thursday seminars are designed for Federal Energy Managers but are open to anyone whose scope of responsibility involves influencing decisions to increase energy efficiency, conserve water resources, and meet other Federal sustainability goals.

There are three ways to participate in the seminars.

1. Live streaming video available on the day of the event over the internet to a desktop computer or via a projection system in a conference room;
2. Digital and Analog Satellite downlink technology for group showings; and,
3. Archived streaming video available after the event over the internet on a desktop computer or via a projection system in a conference room.

To learn more about accessing specific seminars, access <http://www.femp.energy.gov/training>.

### Introduction to the Seminar “Federal Greenhouse Gas: Accounting and Reporting”

The seminar **Federal Greenhouse Gas: Accounting and Reporting** is being offered live on Thursday, May 6, 2010 at 1:30 p.m. Eastern Time. For access and other course information, access: <http://www.femp.energy.gov/training>.

### Course Description

This course will provide up-to-date information on:

- an overview of Greenhouse Gases (GHG) and climate change
- Federal sources of GHG and definition of Scope 1-3
- Overview of EO 13514 as it applies to GHG
- Existing protocols for GHG accounting
- Issues in GHG Accounting and Reporting
- Case Studies in collecting information on GHG emissions
- Process for approaching GHG emissions reduction process
- Resources to assist you

The seminar will last 90 minutes.

### Audience

**Federal Greenhouse Gas: Accounting and Reporting** is designed for federal energy, fleet, and environmental managers, and other energy and environmental professionals, who want to know more about the emerging framework for measuring Federal greenhouse gas emissions.

### Learner Objectives

After completing this seminar, you will be able to:

1. explain common greenhouse gases and their effect on climate
2. discuss federal sources of greenhouse gas emissions
3. identify scope 1, 2, and 3 emissions and give examples
4. access existing greenhouse gas accounting protocols
5. describe a process for managing greenhouse gas emission reductions
6. locate resources to assist you in greenhouse gas emissions accounting and reporting

## Resources

### Climate Change Resources

The Environmental Protection Agency's Climate Change Indicators in the United States (PDF) (80 pp, 13.2MB) report helps readers interpret a set of important indicators to better understand climate change. The report presents 24 indicators, each describing trends related to the causes and effects of climate change. It focuses primarily on the United States, but in some cases global trends are presented to provide context or a basis for comparison. EPA uses these indicators to collect data and generate analyses to:

- Monitor the effects/impacts of climate change in the United States
- Assist decision-makers on how to best use policymaking and program resources to respond to climate change
- Assist EPA and its constituents in evaluating the success of their climate change efforts

### Key Provisions in Executive Order 13514 Related to Greenhouse Gas Reporting

#### Section 1. Policy

- Federal agencies shall... measure, report, and reduce their GHG emissions from direct and indirect activities
- Agencies' efforts and outcomes in implementing this order shall be transparent and agencies shall publicly disclose results.

#### Section 2a. Goals for Agencies (Scope 1 and 2 Emissions)

- Establish and report... a percentage reduction target for reducing agency-wide scope 1 and 2 GHG emissions in absolute terms by FY 2020, relative to a FY 2008 baseline of agency's scope 1 and 2 GHG emissions
- Where appropriate, the target shall exclude direct emissions from excluded vehicles and equipment and from electric power produced and sold commercially to other parties in the course of regular business.

#### Section 2b. Goals for Agencies (Scope 3 Emissions)

- Establish and report... a percentage reduction target for reducing agency-wide scope 3 GHG emissions in absolute terms by FY 2020, relative to a FY 2008 baseline of agency scope 3 emissions.
- Agency head shall consider reductions associated with: (i) pursuing opportunities with vendors and contractors to address and incorporate incentives to reduce GHG emissions; (ii) implementing strategies and accommodations for transit, travel, training, and conferencing that actively support lower-carbon commuting and travel by agency staff; (iii) GHG emission reductions associated with pursuing other relevant goals in this section; and (iv) developing and implementing innovative policies and practices to address scope 3 GHG emissions unique to agency operations.

#### Section 2c. Goals for Agencies (comprehensive inventory)

- Establish and report... a comprehensive inventory of absolute greenhouse gas emissions, including scope 1, scope 2, and specified scope 3 emissions (i) within 15 months of the date of this order for FY 2010; and (ii) thereafter, annually at the end of January, for the preceding FY.

#### Section 8. Agency Strategic Sustainability Plan

- Each agency shall develop, implement, and annually update an integrated Strategic Sustainability Performance Plan that will prioritize agency actions based on life-cycle return on investment.

#### Section 9a. Recommendations for GHG Accounting and Reporting

- The DOE, through its Federal Energy Management Program, and in coordination with EPA, DoD, GSA, DOI, DOC, and other agencies as appropriate, shall: (a) within 180 days develop and provide recommended Federal GHG reporting and accounting procedures for agencies to use in carrying out their obligations under subsections 2(a), (b), and (c) of this order, including procedures that will ensure that agencies:
  - o (i) accurately and consistently quantify and account for GHG emissions from all scope 1, 2, and 3 sources,

- using accepted GHG accounting and reporting principles, and identify appropriate opportunities to revise the FY 2008 baseline to address significant changes in factors affecting agency emissions such as reorganization and improvements in accuracy of data collection and estimation procedures or other major changes that would otherwise render the initial baseline information unsuitable;
- o (ii) consider past Federal agency efforts to reduce GHG emissions; and
  - o (iii) consider and account for sequestration and emissions of GHGs resulting from Federal land management practices

**Section 9b. Recommendations for GHG Accounting and Reporting**

- The DOE, through FEMP, and in coordination with EPA, DoD, GSA, DOI, DOC, and other agencies as appropriate, shall: (b) within 1 year, to ensure consistent and accurate reporting, provide electronic accounting and reporting capability for the Federal GHG reporting procedures developed under subsection (a) of this section, and to ensure compatibility between this capability and existing Federal agency reporting systems.

**Section 9c. Recommendations for GHG Accounting and Reporting**

- The DOE, through its Federal Energy Management Program, and in coordination with EPA, DoD, GSA, DOI, DOC, and other agencies as appropriate, shall: (c) every 3 years from the date of issuance of the initial version of the reporting guidance, and as otherwise necessary, develop and provide recommendations for revised Federal GHG reporting procedures use in implementing subsections 2(a), (b), and (c) of this order.

**Section 13. Recommendations for Vendor and Contractor Emissions**

- Within 180 days, GSA in coordination with DoD, EPA, and other agencies as appropriate, shall review and provide recommendations... regarding the feasibility of working with the Federal vendor and contractor community to provide information that will assist Federal agencies in tracking and reducing scope 3 GHG emissions related to the supply of products and services to the Government.

**Section 17. Limitations**

- This order shall apply to an agency with respect to the activities, personnel, resources, and facilities of the agency that are located within the United States. The head of an agency may provide that this order shall apply in whole or in part with respect to the activities, personnel, resources, and facilities of the agency that are not located within the United States...

**Section 18. Exemption Authority**

- The Director of National Intelligence may exempt an intelligence activity of the United States, and related personnel, resources, and facilities
- Authorizes heads of agencies to exempt certain activities, facilities, equipment, and vehicles (e.g., intelligence, law enforcement, protective emergency response, military tactical fleets, and national security interests) from the provision of the order (other than Sections 18 and 20).
- The head of an agency may exempt law enforcement activities of that agency, and related personnel, resources, and facilities...

**Section 19. Definitions**

- • E.O. 13514 includes definitions

## Definitions Used in Executive Order 13514 Related to Greenhouse Gas Emissions

**Greenhouse Gases:** Are defined to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

**Scope 1 Emissions:** Includes direct greenhouse gas emissions from sources that are owned or controlled by a Federal agency.

**Scope 2 Emissions:** Includes direct greenhouse gas emissions resulting from the generation of electricity, heat, or steam purchased by a Federal agency.

**Scope 3 Emissions:** Includes greenhouse gas emissions from sources not owned or directly controlled by a Federal agency but related to agency activities, such as vendor supply chains, delivery services, and employee travel and commuting.

**Absolute Greenhouse Gas Emissions:** Total greenhouse gas emissions without normalization for activity levels (see Energy Intensity) but including any allowable consideration for sequestration.

**Renewable Energy:** Energy produced by solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project.

**Energy Intensity:** Energy consumption per square foot of building space, including industrial or laboratory facilities.

**Excluded Vehicles and Equipment:** Any vehicle, vessel, aircraft, or non-road equipment owned or operated by an agency of the Federal Government that is used in combat service or support, tactical or relief operations or training, Federal law enforcement, emergency response, or space flight vehicles.

**Alternative Fuel Vehicles:** Vehicles defined by Section 301 of the Energy Policy Act of 1992 as amended (42 USC 13211) and otherwise including electric-fueled and/or hybrid electric vehicles, plug-in hybrid electric vehicles, dedicated alternative fueled vehicles, dual-fueled alternative fueled vehicles, qualified fuel cell vehicles, advanced lean burn technology motor vehicles, self-propelled vehicles such as bicycles, and any other alternative fueled vehicles that are defined by statute.

## Current Greenhouse Gases - Current Protocols

Greenhouse gas protocols describe methods used in performing inventories and reporting requirements. A Greenhouse Gas inventory applies accounting methods to quantify emissions of greenhouse gases with the goal of identifying economical approaches to emission reductions.

The World Business Council for Sustainable Development (WBCSD) and the World Research Institute (WRI) developed the [Greenhouse Gas Protocol Corporate Standard](#) that now serves as one of the most widely used in international GHG accounting. Several protocols are based on this standard, including:

- **Environmental Protection Agency (EPA) Climate Leaders:** EPA industry-government partnership to develop comprehensive climate change strategies.

- **Public Sector Protocol:** Currently under review, this standard will be road tested at many Federal agencies. Lessons learned from the road test will help inform the Federal greenhouse gas guidance referenced above.

## Other Links

Federal agency Web sites provide information and background to help greenhouse gas initiatives:

- **Climate Neutral Research Campuses:** National Renewable Energy Laboratory (NREL) process to create climate action plans that follow a logical hierarchy of actions to reach climate neutrality.  
Climate Registry: <http://www.theclimateregistry.org/resources/protocols/>
- **FedCenter Greenhouse Gases:** Overview of greenhouse gases as well as related resources, requirements, and guidance presented specifically for Federal agencies.  
Global Change Research Program for general information: <http://www.globalchange.gov/>
- **Office of the Federal Environmental Executive (OFEE) Executive Orders:** Information and resources related to Executive Order 13514.
- **Environmental Protection Agency (EPA):** Comprehensive information on climate change issues and initiatives across the Federal, private industry, and consumer sectors.
- **EPA Mandatory GHG Reporting Rule:** Rule mandating the reporting of greenhouse gas emissions from large sources in the U.S. written in response to the Consolidated Appropriations Act (H.R. 2764: Public Law 110-161) in fiscal year 2008.
- **Energy Information Administration (EIA):** Compiles emissions data at the Federal, state, and local level, as well as internationally.  
IPCC has a comprehensive analysis of Greenhouse Gases: <http://www.ipcc.ch/>
- **National Oceanic and Atmospheric Administration (NOAA):** Charged with helping society understand, plan for, and respond to climate variability and change.
- **EPA Climate Change Links Directory:** Links related to greenhouse gases.

## Overview of Regulations and Executive Orders

### National

#### **Executive Order 13514**

#### **Federal Leadership in Environmental, Energy, and Economic Performance**

*5 October 2009*

This EO sets sustainability goals for Federal agencies and focuses on making improvements in their environmental, energy and economic performance. The Executive Order requires Federal agencies to set a 2020 greenhouse gas emissions reduction target within 90 days; increase energy efficiency; reduce fleet petroleum consumption; conserve water; reduce waste; support sustainable communities; and leverage Federal purchasing power to promote environmentally-responsible products and technologies.

#### **Energy Policy Act of 2005**

This act was signed into law on August 8, 2005. The Act contains a multitude of provisions covering energy production, distribution, storage, efficiency, conservation, and research. Title XVI of the act addresses climate change.

### **EPA Climate Leaders Design Principles**

The Design Principles Guidance includes overall guidance on defining inventory boundaries, identifying greenhouse gas (GHG) emission sources, and defining and adjusting a base year. The Design Principles Guidance also defines the minimum level of data a Partner reports under Climate Leaders and various optional emission and reduction sources that a Partner can elect to report.

### **Mandatory Reporting of Greenhouse Gases Rule**

Suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to EPA. The gases covered by the proposed rule are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF<sub>6</sub>), and other fluorinated gases including nitrogen trifluoride (NF<sub>3</sub>) and hydrofluorinated ethers (HFE). The final rule was signed by the EPA Administrator on September 22, 2009.

### **Mandatory Reporting of Greenhouse Gases Rule: Information Sheets and Checklists**

This is a series of information sheets intended to assist potential reporters and others to understand key provisions of the Mandatory Reporting of Greenhouse Gases Rule. The “General Provisions” information sheet provides an overview of the source categories covered under this rule. The source-specific information sheets and checklists highlight key information on each specific emission category. The monitoring checklist identifies the data needed to monitor starting 1 January 2010.

### **Voluntary Reporting of Greenhouse Gases (1605(b)) Program**

These guidelines, updated in January 2007 by the DOE’s Office of Policy and International Affairs, are divided into General Guidelines and Technical Guidelines. The purpose of the General Guidelines is to establish the procedures and requirements for filing voluntary reports. The purpose of the Technical Guidelines is to define permissible methods of calculating reportable emissions and reductions.

## **International**

### **International Local Government GHG Emissions Analysis Protocol, Release Version 1.0**

Issued by ICLE – Local Governments for Sustainability, the protocol consists of the general principles and philosophy that any local government, regardless of location, should adhere to when inventorying GHGs from its internal operations and community as a whole. The emission sources that should be included in a GHG inventory and the methods used to quantify these sources are generally consistent between local governments, but are unique when compared with any other type of entity.

### **ISO 14064-1: 2006, Greenhouse Gases (Principles and Requirements at the Organization Level)**

This standard specifies principles and requirements at the organization level for quantification and reporting of greenhouse gas (GHG) emissions and removals. It includes requirements for the design, development, management, reporting and verification of an organization’s GHG inventory.

### **ISO 14064-2: 2006, Greenhouse Gases (Principles and Requirements at the Project Level)**

This standard specifies principles and requirements and provides guidance at the project level for quantification, monitoring and reporting of activities intended to cause greenhouse gas (GHG) emission reductions or removal enhancements. It includes requirements for planning a GHG project, identifying and selecting GHG sources, sinks and reservoirs relevant to the project and baseline scenario, monitoring, quantifying, documenting and reporting GHG project performance and managing data quality.

**ISO 14064-3: 2006, Greenhouse Gases (Validation and/or Verification of GHG Assertions)**

This standard specifies principles and requirements and provides guidance for those conducting or managing the validation and/or verification of greenhouse gas (GHG) assertions. It can be applied to organizational or GHG project quantification, including GHG quantification, monitoring and reporting carried out in accordance with ISO 14064-1 or ISO 14064-2. This standard also specifies requirements for selecting GHG validators/verifiers, establishing the level of assurance, objectives, criteria and scope, determining the validation/verification approach, assessing GHG data, information, information systems and controls, evaluating GHG assertions and preparing validation/verification statements.

**ISO 14065:2007, Greenhouse Gases (Requirements for Bodies Validating GHG Assertions)**

This standard specifies principles and requirements for bodies that undertake validation or verification of greenhouse gas (GHG) assertions

**Regional**

**California Climate Action Registry (CCAR) General Reporting Protocol (GRP)**

The GRP is an easy-to-follow user's manual that outlines the principles, concepts, calculation methodologies and procedures required for effective participation in the California Registry.

**Midwestern Regional GHG Reduction Accord**

Nine Midwestern governors and two Canadian premiers have signed on to participate or observe in the Midwestern Greenhouse Gas Reduction Accord (Accord), as first agreed to in November 2007 in Milwaukee, Wisconsin.

**Regional Greenhouse Gas Initiative (RGGI)**

This is a mandatory, market-based effort in the United States to reduce greenhouse gas emissions. Ten Northeastern and Mid-Atlantic states will cap and then reduce CO2 emissions from the power sector 10% by 2018.